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# HOW TO READ THE COURSE DESCRIPTIONS

This section contains complete information for all UAF courses. Unless otherwise indicated, course frequency refers to the offering of courses at the Fairbanks campus. The courses listed in this catalog are not offered at all UAF sites but may be offered if demand warrants and qualified faculty are available.

Courses are regularly offered at Bristol Bay Campus at Dillingham, Chukchi Campus at Kotzebue, Kuskokwim Campus at Bethel and Northwest Campus at Nome. Through the Interior Alaska Campus, courses are available at Fort Yukon, Galena, McGrath, Nenana and Tok.

Information about the frequency of courses at these community sites can be obtained from the local UAF representative.

## Course Numbers

The first numeral of a course numbered in the hundreds indicates the year in which a student typically takes the course. For example, WRTG F111X is usually for first-year students and ENGL F318 is for third-year students. Freshman and sophomore students are cautioned to register for upper-division (300- and 400-) level courses only if they have adequate preparation and background to undertake advanced study in the field in which those courses are offered.

| | |
|---|---|
| **000-049** | **Non-credit courses**: zero-credit and CEU courses |
| **050-099** | **Developmental courses:** Preparatory courses that do not apply to associate, baccalaureate or graduate degree requirements. |
| **100-299** | **Lower-division courses** |
| **300-499** | **Upper-division courses:** First-year and sophomore students may be required to obtain special permission to take 300- and 400-level courses unless the courses are required in the first two years of their curriculum as printed in this catalog. |
| **500-599** | **Post-baccalaureate professional courses:** 500-level courses are intended as post-baccalaureate experiences for professionals to continue their education at a level distinct from graduate level education. 500-level special topics and independent study courses (593, 597) do not apply toward any degree, certification or credential program. 500-level courses are not interchangeable with 600-level courses for graduate degree programs. |
| **600-699** | **Graduate courses:** A few well-qualified undergraduates may be admitted to graduate courses with approval of the instructor. Students may not apply such a course to requirements for both a baccalaureate and a graduate degree. |
| **700-799** | **Graduate/Professional Courses:** Courses with these numbers are primarily intended for students in doctoral-level programs and demand a level of analysis, synthesis, research or professional knowledge and skills beyond those required for 600-level courses. 700-level courses are applicable to master's and doctoral degrees and to graduate and professional certificates, in accordance with their requirements. |

### STACKED AND CROSS-LISTED COURSES

Some courses are offered by an interdisciplinary program (such as Women, Gender and Sexuality Studies (http://catalog.uaf.edu/bachelors/bachelors-degree-programs/womens-gender-studies/)) with a specific disciplinary content (e.g., History (http://catalog.uaf.edu/bachelors/bachelors-degree-programs/history/)). Some courses containing interdisciplinary content are sponsored by several departments (e.g., ACNS F223X/ANS F223X/MUS F223X). These courses are "cross-listed" and are designated in the class listings by **"cross-listed with____."**

Courses are also sometimes offered simultaneously at different levels (for example: 100/200 or 400/600) with the higher level credit requiring additional effort and possibly a higher order of prerequisites from students. Such courses are referred to as "stacked" and are designated in the class listings by **"stacked with ___."** In the case of 400/600-level stacked courses, graduate student enrollment and a higher level of effort and performance is required on the part of students earning graduate credit.

Courses simultaneously stacked and cross-listed are designated in the class listing as **"Stacked with____ and cross-listed with____."**

For all stacked courses, the course syllabus (not the catalog) must stipulate course content and requirements for each level. The catalog should indicate the difference in prerequisites for each level.

Graduate students may not take any 600-level courses for credit if they have already received 400-level credit for that course in their undergraduate work. Individual exceptions to this rule include those courses where there has been a major shift in focus and should be judged by the instructor and the department.

## SPECIAL OR RESERVED NUMBERS

Courses with the suffix X (WRTG F111X, MATH F113X), meet specific general education requirements.

Courses identified with these special or reserved numbers may be available at all levels (e.g., 193, 293, 393, etc.) at the discretion of any department, although offerings above the level of approved programs must be approved in advance by the Provost (e.g., 600-level offerings in areas without approved graduate programs or 300- and 400-level courses in areas without approved baccalaureate programs). These courses may be repeated for credit.

| Courses ending with: | Reserved for: |
|---|---|
| **000-049** | **Zero Credit Courses** |
| **000C-049C** | **Continuing Education Course (CEU)** |
| **92** | **Seminar**: covering various topics which may include group discussions and guest speakers |
| **93** | **Special Topics**: normally offered one time only |
| **94** | **Trial Course**: offered in anticipation of becoming a permanent course |
| **97** | **Individual Study**: in subject areas not normally available |
| **98** | **Non-thesis Research/Project**: preparing for professional practice |
| **99** | **Thesis/Dissertation**: preparing for scholarly or research activity |

# Course Credits

A credit hour represents an amount of work that reasonably approximates not less than:

1. One hour of classroom or other faculty instruction and a minimum of two hours of out-of-class student work each week for approximately 15 weeks, or the equivalent amount of work over a different amount of time; or
2. At least an equivalent amount of work for other academic activities, including laboratory work, internships, practice, studio work and other academic work.

Laboratory classes require a minimum of 2,400 science lab minutes per credit (three hours per week per credit), or a minimum of 1,600 non-science lab minutes (two hours per week per credit) plus 800 minutes (one hour per week) of study and/or preparation outside of class. A course submission with a lab component must include a justification (in terms of required student work minutes outside of lab) if the laboratory does not require at least 2,400 lab minutes per credit.

The following standards establish the minimum requirements for an academic unit of credit:

1. 800 minutes of lecture or equivalent instructional activities plus 1,600 minutes of student work outside of class.
2. 2,400 minutes of science laboratory
3. 1,600 minutes of laboratory (non-science lab) plus 800 minutes of student work outside of class
4. 2,400-4,800 minutes of supervised practicum
5. 2,400-8,000 minutes of internship (or externship, clinical)
6. 2,400-4,800 minutes of supervised scholarly activity

Credit hours may not be divided, except half-credit hours may be granted at the appropriate rate. For short courses and classes of less than one semester in duration, course hours may not be compressed into fewer than three days per credit. Any existing semester-long course that is to be offered in a format that is compressed to less than six weeks must be approved by the college or school's curriculum council and the appropriate Faculty Senate committee. Any new course proposal must indicate the course compression format(s) in which the course will be taught. Only approved course formats will be allowed for scheduling.

Given the above information, the formula used for computing credit/contact hours is 800 minutes (13.3 hours) per credit. This equates to approximately one hour of lecture per week for a normal 14-week semester. For courses that do not employ lectures but are intended to achieve learning outcomes equivalent to those of a lecture course (e.g, some e-learning classes), 800 minutes of structured instructional activities are expected per credit, in addition to at least 1,600 minutes per credit of other work that the student completes independently. "Structured instructional activities" is not restricted to mean synchronous interaction with an instructor, but rather faculty-designed instructional activity intended to facilitate student learning.

Following the title of each course, the number of credits is listed for each semester. Thus "3 credits" means 3 credits may be earned. Credit may not be given more than once for a course unless the course has been designated as repeatable for credit. Figures in parentheses at the end of course descriptions indicate the number of lecture, laboratory and practicum, internship or scholarly activity hours, respectively, the class meets each week

for one semester. For example (2+3) indicates that a class has two hours of lecture and three of laboratory work each week. A designation of (1+0+6) indicates that the course meets for one hour of lecture each week and six hours of practicum, internship or other scholarly activity.

# Course Prerequisites

Course prerequisites indicate what previous preparation is needed to enroll in a course. An instructor has the right to waive a course prerequisite if the instructor documents that the student possesses the background required to succeed in the class. An instructor also has the right to drop students from the course if they do not meet the prerequisite or have not received a grade of C- or better in all prerequisite courses. Students who take a course at a higher level than a corresponding prerequisite course required for a degree program are not exempt from taking that required course.

When reading prerequisites, the semicolon (";") means "and." The comma (",") means "or." For example:

MATH F101; MATH F102 means MATH F101 AND MATH F102

MATH F101, MATH F102 means MATH F101 OR MATH F102

If a prerequisite may be taken concurrently, "(may be taken concurrently)" will be listed after the specific prerequisite course.

# Identifying Courses

General education requirements have course numbers ending in X.

## SPECIFIC DEGREE REQUIREMENTS

Courses that may be used to satisfy specific degree requirements (e.g., humanities elective for the B.A. degree, or natural science elective for the B.S. degree) are identified in the course description section by the following degree requirement designators:

**h—humanities**

**s—social science**

**m—mathematics**

**n—natural science**

**an—Alaska Native-themed**

For example, you may use ANTH F309 to satisfy the “social science elective” requirement for a Bachelor of Arts degree. Some courses, including all special topics and individual study courses, are not given course classifications.

# Course Frequency

A frequency of offering designator such as “Offered Fall” or “Offered Alternate Spring” precedes many course descriptions. Every effort is made to ensure this designator is correct. However, students should review the current class schedule or check with the course department for the most accurate and up-to-date information on course offerings.

# COURSE DESCRIPTIONS

## How to Read the Course Descriptions (p. 3)

## Accounting (ACCT)

**College of Business and Security Management**
Department of Accounting and Information Systems (https://www.uaf.edu/som/degrees/undergraduate/acct/)
907-474-7461

**ACCT F261X Principles of Financial Accounting** (s)
3 Credits
Offered Fall, Spring and Summer
During this course we will study accounting from two different methodical approaches: the preparer approach (i.e. a look at how an accounting system is created to record, process and report accounting information) and the user approach (i.e. a look at how various people use the information generated by accountants).
**Prerequisites:** Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F262 Principles of Managerial Accounting**
3 Credits
Offered Fall, Spring and Summer
Study of the generation and analysis of accounting information and its uses by managers as they engage in planning, control and decision-making activities in business and non-business organizations. Topics include product costing, cost-volume-profit analysis, relevant costs for decision-making and capital budget decisions.
**Prerequisites:** ACCT F261X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F271 Fiscal Management for Emergency Management Operations**
3 Credits
Offered Fall, Spring and Summer
Students will learn about the basic accounting and financial requirements for public organizations such as fire, police and similar functions of local governments. The major topics covered include: understanding financial reports, budgeting preparation, and grants and contracts administration.
**Prerequisites:** Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.
**Cross-listed with** HSEM F271.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F330 Income Tax**
3 Credits
Offered Fall and Spring
Survey of basic concepts of federal taxation with emphasis on taxation of individuals and the impact of taxes on business and investment planning.
**Prerequisites:** ACCT F361.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F342 Managerial Cost Accounting**
3 Credits
Offered Fall and Spring
Cost accounting with managerial emphasis on planning, control and decision making. Topics include cost-volume-profit analysis, costing systems, profit planning, flexible budgets, standard costs, responsibility accounting, inventory costing alternatives and relevant costs for decision making.
**Prerequisites:** ACCT F262.
**Special Notes:** For accounting majors: No credit may be earned for more than one of ACCT F342 or ACCT F352.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F352 Management Accounting**
3 Credits
Business policy profit planning, resource planning, control concepts, reporting for management control and impact of public reporting on management decisions.
**Prerequisites:** ACCT F261X; ACCT F262.
**Special Notes:** For non-accounting majors only: No credit may be earned for more than one of ACCT F342 or ACCT F352.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F356 Internship in Accounting**
1-3 Credits
Offered As Demand Warrants
Supervised accounting work experience in an approved position related to the student's career interests. Number of credits earned depends upon the type of position and time worked. No student may count more than 9 internship credits towards an undergraduate degree, with these credits being electives.
**Prerequisites:** Permission of the CBSM advisor.
**Special Notes:** Internship credits may not be taken as one of the two required senior-level accounting electives.
**Lecture + Lab + Other:** 0 + 6-14 + 0

**ACCT F361 Intermediate Accounting I**
3 Credits
Offered Fall and Spring
Discussions of financial accounting topics from the perspective of both accounting practice and theory. Working capital and fixed asset accounts are emphasized. Ethical and international accounting issues are emphasized throughout the sequence.
**Prerequisites:** ACCT F262.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F362 Intermediate Accounting II**
3 Credits
Offered Fall and Spring
Discussion of financial accounting topics from the perspective of both accounting practice and theory. Long-term liabilities and stockholders equity are emphasized. Ethical and international accounting issues are emphasized throughout.
**Prerequisites:** ACCT F361.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F401 Advanced Accounting**
3 Credits
Offered Fall and Spring
Accounting for business combinations: parent-subsidiary and home office/branch relationships, partnerships and multinational enterprises.
**Prerequisites:** ACCT F362.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F404 Advanced Cost Accounting and Controllership**
3 Credits
Offered As Demand Warrants
Study of the controllership function with emphasis on advanced cost and managerial accounting topics related to contemporary organizations.
**Prerequisites:** ACCT F342.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F414 Governmental and Nonprofit Accounting**
3 Credits
Offered Spring
Accounting for governmental units, public schools, colleges and universities, health care providers, voluntary health and welfare organizations and other nonprofit organizations.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; COJO F131X, COJO F141X; ACCT F362; ACCT F452, ACCT F472.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F430 Advanced Taxes**
3 Credits
Offered Fall
Advanced study of income taxation, emphasizing federal taxation of corporations and partnerships.
**Prerequisites:** ACCT F330.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F452 Auditing**
3 Credits
Offered Spring
Introduction to the professional standards and procedures applicable to an auditor's examination of financial statements. Compliance and Operational auditing, ethical and legal responsibilities, and international auditing issues emphasized.
**Prerequisites:** ACCT F362; AIS F316; BA F325; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACCT F472 Internal and Government Auditing**
3 Credits
Offered Fall
Internal auditing including financial, compliance and performance audits. An overview of auditing concepts and practice is discussed with specific application to internal auditing and governmental auditing, including federal and state single audits. For auditor practitioners and students without field experience in auditing.
**Prerequisites:** ACCT F362; BA F325; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

# Accounting and Information Systems (AIS)

**College of Business and Security Management**
Department of Accounting and Information Systems
Accounting Program (https://www.uaf.edu/som/degrees/undergraduate/acct/)
907-474-7461

**AIS F101 Effective Personal Computer Use**
1 Credit
Offered Fall, Spring and Summer
Using and understanding advanced computing software applications. Course develops conceptual and practical knowledge of advanced presentation/communications software, database programs and operating systems.
**Lecture + Lab + Other:** 1 + 0 + 0

**AIS F310 Management of Information Systems**
3 Credits
Offered Fall and Spring
The role information technology plays in organizations including its impact on information systems, management and business strategy. A conceptual model of system design is introduced and basic business internal controls are surveyed.
**Prerequisites:** AIS F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**AIS F316 Accounting Information Systems**
3 Credits
Offered Fall and Spring
Accounting systems for business and public entities. Emphasis on internal control functions and design concepts.
**Prerequisites:** AIS F101; ACCT F262.
**Lecture + Lab + Other:** 3 + 0 + 0

**AIS F324 Advanced MS Excel**
1 Credit
Offered Fall, Spring and Summer
Advanced features of the Microsoft Excel spreadsheet program. Includes spreadsheet design and layout, customized graphics, customized reports using database features, optimization/statistical techniques and programming with the Excel macro language. Student is assumed to have basic proficiency with Microsoft Excel.
**Prerequisites:** AIS F101; ACCT F262.
**Lecture + Lab + Other:** 1 + 0 + 0

**AIS F342 MS Excel for Finance**
1 Credit
Offered Fall and Spring
In this course, students will develop proficiency in Microsoft Excel for financial analysis. This class is especially well-suited to aspiring finance and accounting professionals; it serves to reinforce material covered in financial management and introductory accounting, while building related applied expertise in Excel.
**Prerequisites:** AIS F101; AIS F324; BA F325 (may be taken concurrently).
**Lecture + Lab + Other:** 1 + 0 + 0

# Aerospace Engineering (AERO)

**College of Engineering and Mines**
Electrical and Computer Engineering (https://www.uaf.edu/cem/programs/electrical-engineering/)
907-474-6098

**AERO F254 Unmanned Aircraft Systems (UAS) Investigation**
3 Credits
Offered As Demand Warrants
An introductory analysis of unmanned air systems (UAS), including typical missions and performance expectations for various classes of UAS. Students investigate subsystem choices for a UAS and how these affect mission performance. Includes discussion of external factors impacting UAS design choices, including support infrastructure, flight operations and data requirements.
**Cross-listed with** ME F254.
**Lecture + Lab + Other:** 3 + 0 + 0

**AERO F256 Unmanned Aircraft Systems (UAS) Design**
3 Credits
Offered As Demand Warrants
A multidisciplinary team of students will design, build, test and deliver an unmanned aircraft system (UAS) in support of university research mission requirements. Students will learn basic concepts related to the systems engineering design process. Graded events include team briefings, written reports, multimedia products and a finished UAS product.
**Prerequisites:** AERO F254; ME F254.
**Cross-listed with** CS F254 and ME F256.
**Lecture + Lab + Other:** 3 + 0 + 0

**AERO F258 Unmanned Aircraft Systems (UAS) Operations**
3 Credits
Offered As Demand Warrants
Covers the use of unmanned aircraft systems (UAS), sensors, and support infrastructure required to conduct a selected mission set. Emphasis is on mission analysis, planning, and conduct, including definition of requirements/constraints, identification of appropriate assets, flight planning considerations, and data analysis requirements. Teams coordinate resources for mission and report results.
**Cross-listed with** CS F258; GEOS F258; ME F258.
**Lecture + Lab + Other:** 3 + 0 + 0

**AERO F654 UAS Systems Design**
3 Credits
Offered As Demand Warrants
Course covers the analysis of unmanned air vehicle subsystems, including support infrastructure elements comprising an unmanned air system. Course contains mission planning considerations, including flight planning and data requirements. Focus is on remote sensing missions which may be accomplished by appropriate UAS. Students participate in a UAS design/build/fly workshop.
**Prerequisites:** Graduate Standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**AERO F656 Aerospace Systems Engineering**
3 Credits
Offered As Demand Warrants
A multidisciplinary team of students will perform a preliminary design study of a major aerospace system. Design considerations will include requirements for project management, aerospace vehicle design, power, attitude control, thermal control, communications, computer control and data handling.
**Prerequisites:** Graduate Standing.
**Cross-listed with** ME F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**AERO F658 Unmanned Aircraft Systems (UAS) Operations**
3 Credits
Offered Spring
Covers application of unmanned aircraft systems (UAS) to satisfy scientific research or public service missions. Students analyze mission requirements and recommend appropriate UAS vehicles, subsystems, sensors and data analysis tools to accomplish a specified mission. Students design mission profiles, conduct representative missions, produce required data products and present mission results.
**Prerequisites:** Graduate Standing.
**Cross-listed with** CS F658.
**Lecture + Lab + Other:** 3 + 0 + 0

# Airframe and Powerplant (AFPM)

**Community and Technical College**
Airframe and Powerplant Program (https://www.ctc.uaf.edu/programs/aviation-maintenance/)
907-455-2800

**AFPM F111 General Airframe and Powerplant**
3 Credits
Offered As Demand Warrants
Shop practices, basic math, applied physics, FAA regulations, basic electricity, aircraft weight and balance, ground operations and servicing, cleaning and corrosion control, and materials and process. Preparation for the FAA Mechanics Airframe Structures Written, Oral and Practical Exam.
**Prerequisites:** Experience requirements of FAR 65.77.
**Lecture + Lab + Other:** 3 + 0 + 0

**AFPM F145 Basic Mathematics**
1 Credit
Offered Fall
Review of applied and technical mathematics related to the construction and engines of aircrafts. Common, decimal, fractions and mixed numbers; extracting square roots and raising numbers to a given power; solving ratios, proportions and percentage problems; fundamental algebraic operations.
**Prerequisites:** Admission to A & P program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F146 Basic Electricity**
2 Credits
Offered Fall
Electrical theory and concepts for the aviation mechanic. Ohm's law, electrical circuits, diagrams, batteries and a variety of electrical components.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F147 Physics for Mechanics**
0.5 Credit
Offered Fall
Applications of mechanics; levers, sound, fluid and heat dynamics. Basic aircraft structures and aerodynamics. (Course does not fulfill natural science requirements for any degree.)
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F148 Aircraft Drawing**
1 Credit
Offered Fall
Basic drafting. Drawings, symbols and schematic diagrams, sketches of repairs and alterations, blueprint information, graphs and charts.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F149 Fluid Lines and Fittings**
0.5 Credit
Offered Fall
Rigid and flexible fluid lines and fittings, fabrication and installation.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F150 Materials and Processes**
2 Credits
Offered Fall
Basic shop practices, including selection, identification and installation of aircraft hardware and materials, precision measuring tools and operations, basic heat treating processes, forms of nondestructive inspections.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F151 Cleaning and Corrosion Control**
1 Credit
Offered Fall
Basic aircraft cleaning materials, methods and corrosion control.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F152 Federal Aviation Regulations**
1 Credit
Offered Fall
Federal Aviation Regulations for maintenance of aircraft. Maintenance forms and records, publications, privileges and limitations of aircraft mechanics.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F153 Weight and Balance**
1 Credit
Offered Fall
Weighing procedures, weight, arms, moments, center of gravity computations and placarding. Aircraft loading, required forms, weighing.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F154 Ground Operations and Servicing**
0.5 Credit
Offered Fall
Starting, moving, servicing, securing and fueling aircraft.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F205 Airframe Structures**
3 Credits
Offered As Demand Warrants
Aircraft wood, dope, fabric finishes, welding, sheet metal, assembly and rigging and inspection. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
**Prerequisites:** Experience requirements of FAR 65.77.
**Lecture + Lab + Other:** 3 + 0 + 0

**AFPM F206 Airframe System and Components**
2 Credits
Offered As Demand Warrants
Aircraft electrical, hydraulic and pneumatic systems. Landing gear, instruments, fuel, communication and navigation, cabin atmosphere control, and fire protection systems. Inspection, checking, troubleshooting, repair and servicing. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
**Prerequisites:** Experience requirements of FAR 65.77.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F215 MOS Powerplant Theory/Maintenance**
2 Credits
Offered As Demand Warrants
Jet engine fundamentals, analysis and testing. Inspecting turbo jets, turbo shaft and turbo fan engines. Overhaul, inspection and fundamentals of reciprocating engines. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
**Prerequisites:** Experience requirements of FAR 65.77.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F216 MOS Powerplant System/Components**
3 Credits
Offered As Demand Warrants
Fuel metering, induction systems, propellers, control systems and powerplant electricity. Repair, inspection, service and troubleshooting. Preparation for the FAA Mechanics Airframe Structures written, oral and practical exam.
**Prerequisites:** Experience requirements of FAR 65.77.
**Lecture + Lab + Other:** 3 + 0 + 0

**AFPM F230 Aircraft Electrical Systems**
2.5 Credits
Offered Spring
Wiring, control, indication and protection devices for AC and DC systems. Inspection, troubleshooting service and repair of these systems.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 2.5 + 0 + 0

**AFPM F231 Powerplant Electrical Systems**
1.5 Credits
Offered Fall
Installation, inspection, testing, servicing engine electrical system wiring, controls, indicators and protective devices. Repair and service of electrical generating systems.
**Prerequisites:** Admission to A&P program.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**AFPM F235 Aircraft Reciprocating Engines**
4.5 Credits
Offered Spring
History and development of the aircraft reciprocating engine. Repair, overhaul and inspection of various types of engines. Operation and troubleshooting of engines.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 4.5 + 0 + 0

**AFPM F240 Turbine Engines**
2 Credits
Offered Summer
Development, theory and operation of turbine engines. Engine design, performance, accessories and subsystems. Engine maintenance and overhaul.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F244 Lubricating Systems**
1.5 Credits
Offered Spring
Identification and selection of lubricants for aircraft powerplants. Inspection, service, troubleshooting and repair of the lubrication systems and components.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**AFPM F245 Ignition Systems**
2 Credits
Offered Summer
Overhaul, inspection and troubleshooting of reciprocating and gas turbine ignition systems. Repair and bench testing of components.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F246 Fuel Metering Systems**
2 Credits
Offered Spring
Fundamental operation of fuel metering systems in aircraft powerplants. Technical data to repair and overhaul carburetors and components. Inspecting, troubleshooting and adjusting turbine engine fuel metering systems and electronic fuel controls.
**Prerequisites:** Admission to the A & P Program.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F248 Induction Systems**
0.5 Credit
Offered Spring
Operation and service of aircraft induction, preheat, anti-ice and supercharger systems.
**Prerequisites:** Admission to A&P program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F249 Powerplant Cooling Systems**
0.5 Credit
Offered Spring
Inspection, service and repair of engine cooling systems -- both air and liquid cooled installations.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F250 Powerplant Exhaust Systems**
0.5 Credit
Offered Spring
Inspection, service and repair of engine exhaust systems. Includes operations of turbo compounded engines, thrust reversers and noise suppressors.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F251 Fuel Systems**
1.5 Credits
Offered Fall
Inspection, servicing, troubleshooting and repair of aircraft and engine fuel systems and components.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**AFPM F252 Propellers**
2 Credits
Offered Spring
Identification and nomenclature of aircraft propellers. Operation, control and repair of both reciprocating and turbine engine installations.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 2 + 0 + 0

**AFPM F253 Transport Category Aircraft**
1 Credit
Offered Spring
Introduction to transport category aircraft systems and components.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F254 Ice and Rain Control Systems**
0.5 Credit
Offered Spring
Inspection, operation and troubleshooting of de-ice and anti-ice systems.
**Prerequisites:** Admission to A&P program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F255 Fire Protection Systems**
0.5 Credit
Offered Fall
Inspection, servicing, troubleshooting and repair of aircraft and engine fire detection and extinguishing systems.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F256 Communications and Navigation Systems**
0.5 Credit
Offered Spring
Operation of aircraft avionics, autopilots and antennas, including inspection and installation.
**Prerequisites:** Admission to A&P program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F257 Instrument Systems**
0.5 Credit
Offered Fall
Inspection, troubleshooting, removal and replacement of aircraft and engine instruments and indicating systems.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F258 Cabin Atmosphere Control Systems**
1 Credit
Offered Spring
Aircraft pressurization, air conditioning, heating and oxygen systems. Operation, inspection, troubleshooting, service and repair.
**Prerequisites:** Admission to A&P program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F259 Hydraulic and Pneumatic Systems**
1.5 Credits
Offered Spring
Operation of hydraulic and pneumatic systems and uses in aircraft. Identification of hydraulic fluids, seals, hydraulic and pneumatic control devices, inspection and servicing and troubleshooting.
**Prerequisites:** Admission to A&P program.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**AFPM F260 Aircraft Landing Gear Systems**
1.5 Credits
Offered Spring
Simple and complex landing gear systems. Operation, service and repair of mechanical and hydraulic retraction mechanisms. Wheel, tire and brake service. Aircraft speed and configuration warning systems, electric brake controls, anti-skid systems, landing gear position and warning systems.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**AFPM F261 Nonmetallic Structures**
1 Credit
Offered Summer
Inspection, service and repair of wood structures. Preliminary and secondary repair of interior and service of plastic, honeycomb, bonded, and composite and laminated structures.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F262 Aircraft Coverings**
1 Credit
Offered Summer
Selection, application, inspection and testing of fabric and fiberglass coverings and methods of repair.
**Prerequisites:** Admissions to A & P Program.
**Lecture + Lab + Other:** 1 + 0 + 0

**AFPM F263 Aircraft Finishes**
0.5 Credit
Offered Summer
Identification and selection of aircraft finishing materials. Application of paints, dopes, primers and trim.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F264 Sheet Metal Structures**
3 Credits
Offered Spring
Aircraft sheet metal fabrication, inspection and repair, including rivets and fasteners.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 3 + 0 + 0

**AFPM F265 Aircraft Welding**
1.5 Credits
Offered Summer
Contemporary welding methods on aircraft structures. Oxyacetylene, arc, inert gas and brazing techniques. Inspection of welded structure and safety procedures.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**AFPM F266 Assembly and Rigging**
1.5 Credits
Offered Fall
Aerodynamic theory and function of aircraft control surfaces. Fabrication and installation of control devices for fixed and rotary wing aircraft; jacking and control surface balance.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**AFPM F267 Airframe Inspections**
0.5 Credit
Offered Summer
Inspection and return of aircraft to service. Procedural and legal aspects of 100 hour, annual and periodic inspections.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F270 Airframe Testing**
0.5 Credit
Offered Summer
Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F271 Powerplant Inspections**
0.5 Credit
Offered Summer
Methodology and record keeping for inspection of aircraft reciprocating and gas turbine engines.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F272 Powerplant Testing**
0.5 Credit
Offered Summer
Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license.
**Prerequisites:** Admission to A & P Program.
**Lecture + Lab + Other:** 0.5 + 0 + 0

**AFPM F325 Inspection Authorization Preparation**
2 Credits
Offered As Demand Warrants
Prepares FAA certificated Airframe and Powerplant mechanics eligible for an inspection authorization under FAR 65.91 for the FAA tests to obtain their inspection authorization. Course also includes practical aspects of the privileges and limitations of the holder of an IA.
**Prerequisites:** FAA A & P Certificate, meet additional requirements of FAR 65.91.
**Lecture + Lab + Other:** 1 + 2 + 0

# Alaska Native Languages (ANL)

**College of Rural and Community Development**
Department of Alaska Native Studies and Rural Development (https://www.uaf.edu/dansrd/)
907-474-6528 or toll-free 1-866-478-2721

**ANL F101 Introduction to Alaska Native Language Study** (an)
3 Credits
Offered As Demand Warrants
This course introduces concepts and develops skills needed for language learning and the study of the form, cultural context and history of Alaska Native Languages. Survey of history and status of Alaska Native Languages, and brief introduction to learning one or more Alaska Native Languages.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F108 Beginning Athabascan Literacy** (an, h)
1-3 Credits
Offered As Demand Warrants
Introduction to reading and writing in one of the Athabascan languages. For speakers of the language who want to become literate.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ANL F121 Conversational Alaska Native Language I** (an, h)
1-3 Credits
Offered Fall
Introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations.
**Special Notes:** Does not satisfy core curriculum requirements.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ANL F122 Conversational Alaska Native Language II** (an, h)
1-3 Credits
Offered Spring
Continued introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations.
**Prerequisites:** ANL F121 in the same language.
**Special Notes:** Does not satisfy core curriculum requirements.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ANL F131 Unangan Language I** (h)
3 Credits
Offered As Demand Warrants
An introduction to Eastern Unangam Tunuu. Students are introduced to some basic grammar, including noun and verb formation and inflection, basic word order, postpositional phrases, simple questions, statements, and direct requests, and the expression of singular, dual, and plural number in nouns and verbs.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F132 Unangan Language II** (h)
3 Credits
Offered As Demand Warrants
A continuation of Unangan Language I. Topics include using suffixes and helping verbs to provide more precision about time, certainty, preference and quantity, nominalizations/participles, complex possessive phrases and deriving adjectives from verbs.
**Prerequisites:** ANL F131.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F141X Beginning Dene / Athabascan I** (an, h)
5 Credits
Offered Fall
Introduction to an Alaska Dene (Athabascan) language. Class will deal with one of the eleven Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read and write the language.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**ANL F142X Beginning Dene / Athabascan II** (an, h)
5 Credits
Offered Spring
Continued introduction to an Alaska Dene (Athabascan) language. Class will deal with one of the eleven Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read and write the language.
**Prerequisites:** ANL F141X in the same language.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**ANL F150 Interpretive Communication** (an, s)
1 Credit
Offered As Demand Warrants
Communication processes in Yup'ik and English speaking cultures. Solutions to identify problem areas in cross-cultural communication. Situations such as conversations, meetings, translating and interpreting. Interpreting meaning in what is communicated between people of different sociocultural backgrounds. Kuskokwim Campus only.
**Lecture + Lab + Other:** 1 + 0 + 0

**ANL F151 Interethnic Communications** (an, s)
3 Credits
Offered As Demand Warrants
Understanding differences in cross-cultural interaction. Application of cross-cultural interactions to various communication settings. Concentrates on Yup'ik ways of communication. Kuskokwim Campus only.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F199 Practicum in Native Language Education** (an)
3 Credits
Offered As Demand Warrants.
Individualized work experience. Variable credit (depending on the quantity and quality of the work experience). Offered on campus and via distance delivery. When offered via distance delivery, a local mentor (usually principal or teacher) must be willing to work with the student on the local level. Also offered as pass/fail as ANL F199P.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F208 Advanced Athabascan Literacy** (an, h)
1-3 Credits
Offered As Demand Warrants
Expository and creative writing for native speakers; reading Athabascan literature; elicitation, transcription and editing of cultural materials from Elders.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ANL F221 Intermediate Conversational Alaska Native Language** (an, h)
1-3 Credits
Offered As Demand Warrants
Continuation of ANL F121, ANL F122. Focus on conversational skills in an Alaska Native language. On completion the student should not only be able to function at a low level of fluency but should also have the skills necessary to increase fluency through continued use of the language.
**Prerequisites:** ANL F121; ANL F122.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ANL F241 Intermediate Dene / Athabascan I** (an, h)
3 Credits
Offered Fall
Continuation of beginning Dene / Athabascan. Class will deal with one of the eleven Dene / Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. Development of conversational ability, additional grammar and vocabulary.
**Prerequisites:** ANL F141X and ANL F142X in the same language.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F242 Intermediate Dene / Athabascan II** (an)
3 Credits
Offered Spring
Continuation of Intermediate Dene / Athabascan I. Class will deal with one of the eleven Dene / Athabascan language spoken in Alaska. Literacy and grammatical analysis for speakers. Development of conversational ability, additional grammar and vocabulary.
**Prerequisites:** ANL F241.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F251X Introduction to Athabascan Linguistics** (an, h)
3 Credits
Offered Fall
An introduction to the linguistic structure of the Athabascan family of languages, drawing on examples from the Athabascan languages of Alaska. Writing systems, word structure, texts, and language relationships. Techniques for accessing linguistic reference materials and the role of linguistic documentation in language revitalization and language learning.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F255X Introduction to Alaska Native Languages** (an)
3 Credits
Offered Spring
Overview of languages native to Alaska. Focus on a specific language will depend on student body. Includes history, present and future prospects of languages, basic language structure, issues affecting language endangerment and revitalization, and oral and written literature.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F256 Introduction to Alaska Native Languages: History, Status and Maintenance** (an)
3 Credits
Offered As Demand Warrants
Overview of languages native to Alaska. Focus on a specific language or language area (relevant to a regional student body). History, status and factors affecting the future maintenance of Alaska's languages. Topics include educational policies, lexical development, language status (including language maintenance and revival issues).
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F287 Teaching Methods for Alaska Native Languages** (an, h)
3 Credits
Offered As Demand Warrants
Methodological approaches and practice in teaching Native language and literacy to both speakers and non-speakers.
**Prerequisites:** Knowledge of a Native language.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F288 Curriculum and Materials Development for Alaska Native Languages** (an, h)
3 Credits
Offered As Demand Warrants
Preparation and evaluation of curriculum and classroom materials for teaching Native languages.
**Prerequisites:** ANL F287; Knowledge of a Native language.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F289 Practicum in Native Language Education II** (an)
3,4 Credits
Offered As Demand Warrants
Individualized work experience. Supervised teaching with an experienced teacher overseeing student instructional activities and assisting with the class as needed.
**Prerequisites:** ANL F199; ANL F287; ANL F288.
**Special Notes:** Course may be repeated once for credit.
**Lecture + Lab + Other:** 3,4 + 0 + 10

**ANL F315 Alaska Native Languages: Eskimo-Aleut** (an, h)
3 Credits
Offered As Demand Warrants
A survey of the Native languages of Alaska, particularly Eskimo-Aleut: history, present and future, with examples of language structure, present situation and prospects as a cultural force. Open to all students.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F316 Alaska Native Languages: Indian Languages** (an, h)
3 Credits
Offered As Demand Warrants
A survey of all Native languages of Alaska; particularly of the Indian languages: Athabascan-Eyak-Tlingit, Haida and Tsimshian. History, present and future; examples of language structure, present situation and prospects as a cultural force. Open to all students.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F401 Alaska Native Language Apprenticeship** (an, h)
5 Credits
Offered As Demand Warrants
Structured study of an Alaska Native Language. Select and work intensively with a mentor (a native speaker of the language selected). Choice of mentor requires faculty approval. Meet regularly with mentor (minimum 10 hours per week) and participate in regular training sessions to work toward fluency.
**Prerequisites:** One year university-level study in language of internship.
**Lecture + Lab + Other:** 0.5 + 10 + 10

**ANL F402 Alaska Native Language Apprenticeship II** (an, h)
5 Credits
Offered As Demand Warrants
Structured study of an Alaska Native language. Work intensively with a native speaker as mentor. Choice of mentor requires faculty approval. Meet regularly with mentor (minimum 10 hours per week) and participate in regular training sessions to work toward fluency. Continuation of ANL F401 requiring successful completion of that course.
**Prerequisites:** ANL F401.
**Lecture + Lab + Other:** 0.5 + 10 + 10

**ANL F452 Principles of Linguistic Analysis for Alaska Native Languages** (an)
3 Credits
Offered As Demand Warrants
Systematic principles of phonology, morphology, syntax, and semantics for Athabascan-Eyak-Tlingit, Haida, Tsimshian, and Eskimo-Aleut language family. The specific Alaska Native language emphasized is student interest dependant. Includes exposure to a variety of references and tools available for research in Alaska Native languages and linguistics.
**Prerequisites:** LING F101X or ANL F251X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F601 Seminar in Language Revitalization**
3 Credits
Offered As Demand Warrants
Language teaching and acquisition strategies appropriate to under-documented and less commonly taught languages. Students write an applied research proposal related to local language endangerment issues and strategies for improving teaching either at the school or community level. Emphasis on students' class presentation and research ideas.
**Prerequisites:** LING F450; ANTH F451 or LING F601.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F608 Indigenous Knowledge Systems**
3 Credits
Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various Indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska.
**Prerequisites:** Graduate standing.
**Cross-listed with** CCS F608; ED F608; RD F608.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F651 Topics in Athabascan Linguistics**
3 Credits
Offered As Demand Warrants
Graduate level introduction to important topics in Athabascan linguistics, including both foundational literature and current research. Topics may include laryngeal features; tonogenesis; syntax-morphology interface; argument structure; lexical semantics; and discourse. Course may be repeated once.
**Prerequisites:** LING F601; graduate standing.
**Recommended:** LING F603; LING F604.
**Cross-listed with** LING F651.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F690 Seminar in Cross-Cultural Studies**
3 Credits
Offered Fall and Spring
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program.
**Prerequisites:** Advancement to candidacy; permission of student's graduate committee.
**Cross-listed with** CCS F690; ED F690; RD F690.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANL F698 Non-thesis Research/Project**
1-9 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ANL F699 Thesis**
1-9 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

# Alaska Native Studies (ANS)

**College of Rural and Community Development**
Department of Alaska Native Studies and Rural Development (https://www.uaf.edu/dansrd/)
907-474-6528 or toll-free 1-866-478-2721

**ANS F100 Preparing for College and Student Success**
1 Credit
Offered As Demand Warrants
Presentations on time and financial management, test-taking strategies, study techniques, UAF and community resources, GPA calculation, UAF catalog information, core requirements and goal-setting. Provides students with the information and skills necessary for a successful UAF experience. Instruction by the staff of Rural Student Services. Native leaders as guest speakers.
**Lecture + Lab + Other:** 1 + 0 + 0

**ANS F101 Introduction to Alaska Native Studies** (an, h)
3 Credits
Offered Fall
Introductory information on the Alaska Native community. Overview of significant Native issues. Review of pertinent literature and resources.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F111X History of Colonization in Alaska: The Indigenous Response** (an, s)
3 Credits
Offered Fall
The history of the colonization of Alaska from contact to the signing of the Alaska Native Claims Settlement Act in 1971. This course examines Alaska history, how colonization and federal Indian policy shaped the state and some of the ways that Alaska Natives responded to and dealt with the changes.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F112 Alaska Native Claims Settlement Act: Land Claims in the 21st Century** (an)
1 Credit
Offered Fall
Familiarize students with the land claims process and important Alaska Native Claims Settlement Act content, with focus on contemporary situations and explanation of land claims processes ongoing or recently completed in locations outside Alaska.
**Cross-listed with** RD F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**ANS F113 Alaska Natives, Indigenous Peoples and International Laws** (an)
1 Credit
Offered Spring Odd-numbered Years
Familiarize students with international law and its importance for Indigenous Peoples. Special emphasis on international legal instruments of importance for Alaska Natives.
**Cross-listed with** RD F113.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**ANS F114 Alaska Natives, Indigenous Peoples and North American Legal Systems** (an)
1 Credit
Offered Spring Even-numbered Years
Familiarize students with domestic law and its effects on Indigenous Peoples' governance in the United States. Emphasis on Alaska Natives and the relationship between Tribal legal systems and state and federal governments. Examination of how law is made and why Tribal laws differ from those in neighboring jurisdictions.
**Cross-listed with** RD F114.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**ANS F150 Topics in Alaska Regional Cultural History** (an, s)
3 Credits
Offered As Demand Warrants
Cultural history of the peoples of a selected region of Alaska, which will vary depending on demand and instructor expertise. Methods including physical anthropology, ethnohistory, linguistics, archaeology, social anthropology, ethnography, ecology and climatology will be used. Includes the issues of culture-change due to Alaska Native and Euro-American contacts.
**Recommended:** ANS F242X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F160 Alaska Native Dance** (an, h)
1 Credit
Offered As Demand Warrants
Traditional Native Alaskan dancing, singing and drumming of songs from Alaska's major Indigenous groups taught by guest Native Elders and dancers. If there is sufficient interest, a dance group will be assembled using class members for spring presentations primarily in the Fairbanks area, including the Festival of Native Arts.
**Lecture + Lab + Other:** 0 + 2 + 0

**ANS F161X Introduction to Alaska Native Performance** (an, h)
3 Credits
Offered Fall
For Native and non-Native students with no prior acting or theatre experience. Includes both academic and practical components to examine traditional Alaska Native theatre, mythology, ritual, ceremony and performance methods. Application of exercises and developmental scenes drawn from Alaska Native heritage.
**Cross-listed with** FLPA F161X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F202X Aesthetic Appreciation of Alaska Native Performance** (an, h)
3 Credits
Offered Fall
Understanding and application of the cultural principles of Alaska Native oral narrative performances. Topics are arranged by the five broad Alaska Native regions and include lectures on culture, principles of visual arts analysis of oral narratives, musical expression and hands-on involvement in Alaska Native theatrical arts.
**Prerequisites:** Placement in WRTG F111X.
**Attributes:** UAF Core Aesthetic Appreciatio, UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F223X Alaska Native Music** (an, h)
3 Credits
Offered Spring
Introductory course devoted to the study of Indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles.
**Cross-listed with** MUS F223X; ACNS F223X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F225 Applied Communication Skills**
3 Credits
Offered Spring
Oral and written communications for rural development practitioners. In this course students will practice four types of oral and written communications: business presentations and business and technical writing; academic presentations and writing; policy presentations and legal and policy writing; and presenting and writing for community audiences.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X.
**Cross-listed with** RD F225.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F242X Indigenous Cultures of Alaska** (an, s)
3 Credits
Offered Fall and Spring
The term Alaska Natives is used to refer to a broad spectrum of Alaska's Indigenous population, living in diverse geographic regions and each culturally distinct. Each cultural region has its own unique history, language, culture(s), political landscapes, and experiences. This course is intended to provide a broad overview of Alaska's first peoples.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F245 Fisheries and Marine Wildlife Development in Rural Alaska** (an, s)
3 Credits
Offered Fall
Introduction to fisheries development issues in rural Alaska communities, including basic concepts, strategies and contemporary cases. Topics include management of salmon and other fisheries, community development quotas, and sustainable development efforts.
**Prerequisites:** WRTG F111X.
**Cross-listed with** RD F245.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F250 Current Alaska Native Leadership Perspectives** (an, s)
3 Credits
Offered As Demand Warrants
Prominent leaders in the Native community are brought into direct classroom contact with students to discuss important issues in rural Alaska and the larger Native community.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F251 Practicum in Alaska Native Cultural Expression** (an)
1-3 Credits
Offered Fall and Spring
Provides individual supervised activities in the formal organization, promotion and expression of Alaskan Native cultural heritage. May be repeated to a maximum of three credits.
**Prerequisites:** Permission of the department head.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ANS F268 Alaska Native Art Studio I** (an, h)
3 Credits
Offered Fall and Spring
Studio art course exploring the practice of traditional and contemporary Alaska Native art forms; including design, technology, and cultural expression. Rooted in experiential learning, students will learn by creating and utilizing tools specific to Alaska Native cultures. A strong emphasis will be placed on gaining technical skills and traditional knowledge.
**Cross-listed with** ART F268.
**Lecture + Lab + Other:** 1 + 4 + 0

**ANS F300 Alaska Native Writers Workshop** (an, h)
3 Credits
Offered Fall
Four writing methods essential to communication for Alaska Native Studies students. Emphasis on the student's development of composition abilities in a variety of Native and Western forms. Publication of student work a possibility.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F310 Alaska Native and Comparative Indigenous Land Settlements** (an, s)
3 Credits
Offered Spring Even-numbered Years
Alaska Native corporation goals and methods as they implement the Alaska Native Claims Settlement Act and establish themselves within the larger political economy. An examination of other Indigenous land claims agreements in the circumpolar north and beyond.
**Prerequisites:** ANS F242X or PS F263 or ANS F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F315 Tribal People and Development** (an, s)
3 Credits
Offered Spring Odd-numbered Years
Impact of socioeconomic development processes on tribal peoples in less developed world societies. Implications of these processes for Alaska Native people.
**Prerequisites:** Junior standing.
**Cross-listed with** RD F315.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F325 Alaska Native and Comparative Tribal Self-Government** (an, s)
3 Credits
Offered Spring Odd-numbered Years
Indigenous political systems, customary law and justice in Alaska emphasizing the organization of Alaska Native governance under federal Indian law and Alaska state-chartered local government. Comparisons between Alaska Native political development and those of tribes in the contiguous 48 states and northern hemisphere tribal people.
**Prerequisites:** ANS F111X, PS F263, TG F201.
**Cross-listed with** PS F325.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F329 Indigenous Alaska Native Language and Culture Revitalization** (an)
3 Credits
Offered Spring Odd-numbered Years
The course will focus on contemporary issues, principles and practice models in the revival maintenance and revitalization of Indigenous languages and cultures in Alaska and from an international perspective. A variety of language revitalization approaches and methods will be considered, including linguistic documentation, teaching language courses, immersion and master-apprentice programs.
**Prerequisites:** ANS F242X, WRTG F111X; Junior Standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F340 Contemporary Indigenous Literature in North America** (h)
3 Credits
Offered Fall
Contemporary Indigenous literature in North America including novels, short stories, poetry, film, audio expression and genre fluid texts. Works will be discussed in their cultural contexts and explore connecting themes such as historical trauma, survivance, resurgence and decolonization.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F340.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F341 Community Research Toolbox**
3 Credits
Offered Spring
Community research approaches and techniques. Emphasis on the role and need for community-based research and associated ethical issues. Students use a hands-on approach to learn about research techniques, including interviewing, surveying and utilizing existing data in support of community-based research. Emphasizes academic writing and communicating with community audiences.
**Prerequisites:** RD F225.
**Crosslisted with** RD F340.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F347 Voices of Native American Peoples** (h)
3 Credits
Offered Spring Even-numbered Years
Exploration of the forms by which Native American peoples have narrated their life experiences. Includes oral narratives, written autobiographies, memoirs and speeches, and an introduction to the social, historical and cultural content surrounding these texts. Readings selected from all of North America with an emphasis on Alaska Natives.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F347.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F348 Native North American Women** (s)
3 Credits
Offered As Demand Warrants
Interdisciplinary examination of the relationship between Native American women and their social settings and cross-cultural experiences. Includes issues of political, economic and social solutions as employed by women in a large multi-ethnic nation-state.
**Prerequisites:** ANS F101; ANTH F100X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SOC F101X.
**Cross-listed with** WGS F348.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F349 Narrative Art of Alaska Native Peoples (in English translation)** (an, h)
3 Credits
Offered Fall Even-numbered Years
Traditional and historical tales by Aleut, Eskimo, Athabascan Eyak, Tlingit, Haida and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F349.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F350 Cross-cultural Communication: Alaska Perspectives** (an, s)
3 Credits
Offered Spring Odd-numbered Years
Culture influences on communication patterns. Examines how misunderstandings may develop from differently organized ways of speaking and thinking when cultures come in contact. Alaskan focused, with its diversity of cultures and languages, as a microcosm for examining these issues, particularly as they affect Native and non-Native communication in institutional settings.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F351 Advanced Practicum in Alaska Native Cultural Expression** (an)
1-3 Credits
Offered Fall and Spring
Individual supervised activities in advanced organization, promotion and expression of Alaskan Native cultural heritage projects (Festival of Native Arts leadership, Theater magazine, etc.). Continuation of ANS F251.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ANS F360 Advanced Alaska Native Dance** (an, h)
1 Credit
Offered As Demand Warrants
Advanced Alaska Native dance techniques with emphasis on the cultural meanings of the performance.
**Prerequisites:** ANS F160.
**Lecture + Lab + Other:** 1 + 0 + 0

**ANS F361 Advanced Alaska Native Performance** (an, h)
3 Credits
Offered As Demand Warrants
In-depth study of Alaska Native theatre techniques and tradition, including traditional dance, song and drumming techniques, mask characterizations and performance application and presentation of a workshop production developed by the students during the semester.
**Prerequisites:** ANS F161X, FLPA F161X.
**Cross-listed with** FLPA F361.
**Lecture + Lab + Other:** 2 + 3 + 0

**ANS F365 Alaska Native Art History** (an, h)
3 Credits
Offered Fall
The material culture of Alaska Native people from pre-colonial times to the present. Students will explore the effects of colonialism on the art forms of different Alaska Native cultural groups. Students will have an opportunity to contribute to the ongoing histories of Alaska Native art through group research projects.
**Prerequisites:** Sophomore standing or higher.
**Cross-listed with** ANTH F365; ART F365.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F366 Northwest Coast Indian Art** (h)
3 Credits
Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture.
**Cross-listed with** ANTH F366; ART F366.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F367 Inuit Art** (an, h, s)
3 Credits
Offered Fall
Indigenous art from Northern Alaska, Canada, Greenland and the Bering Strait region of Russia, from the earliest known to contemporary.
**Cross-listed with** ANTH F367; ART F367.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F368 Alaska Native Art Studio II** (an, h)
3 Credits
Offered Fall and Spring
This course is a continuing exploration of the designs, technologies, and meanings of the diverse Alaska Native arts. Through the creative process students will start examining the complex issues of creating art within a cultural context. A strong emphasis will be placed on developing a student individual style.
**Prerequisites:** ANS F268, ART F268.
**Cross-listed with** ART F368.
**Lecture + Lab + Other:** 1 + 4 + 0

**ANS F375 Native American Religion and Philosophy** (an, h)
3 Credits
Offered Summer Even-numbered Years
Philosophical aspects of Native American world views. Systems of belief and knowledge, explanations of natural phenomena, relationship of humans to natural environment through ritual and ceremonial observances.
**Recommended:** PHIL F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F381 Indigenous World in Film** (an, h)
3 Credits
Offered Spring Even-numbered Years
The history and appreciation of Indigenous films, with emphasis on Alaska Native contributions through select films, readings and guest speakers. Analysis of social impacts of portrayals and treatment of Indigenous peoples while learning to critically analyze films through understanding film techniques and terminology. Preview of film industry business and opportunities.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** ART F200X, MUS F200X, or FLPA F200X.
**Cross-listed with** FLPA F381.
**Lecture + Lab + Other:** 1.5 + 2-4 + 0

**ANS F401 Cultural Knowledge of Native Elders** (an, h)
3 Credits
Offered Fall
Study with prominent Native tradition-bearers in Native philosophies, values and oral traditions. Traditional knowledge elicited through the cultural heritage documentation process. Analysis of existing interactions between cultural traditions and contemporary American life as experienced by Native Elders.
**Prerequisites:** ANS F111X; ANS F242X; upper-division standing.
**Cross-listed with** RD F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F420 Alaska Native Education** (an, s)
3 Credits
Offered Fall and Spring
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required.
**Prerequisites:** ANS F242X; junior standing.
**Cross-listed with** ED F420.
**Stacked with** ED F606.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F425 Federal Indian Law and Alaska Natives** (an, s)
3 Credits
Offered Fall Odd-numbered Years
The special relationship between the federal government and Native Americans based on land transactions and recognition of tribal sovereignty. Federal Indian law and policy evolving from this relationship. Legal rights and status of Alaska Natives.
**Prerequisites:** PS F101X, TG F112, TG F201 or HIST F110X.
**Recommended:** PS F263.
**Cross-listed with** PS F425.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F435 Participatory Policy-making in Tribal, State and Federal Government**
3 Credits
Offered Spring Even-numbered Years
This course analyzes the policy-making and lobbying processes of the American political system, with a focus on the relationship between tribes, U.S. Congress, federal agencies and the U.S. Supreme Court. Uses comparative case studies of national, state of Alaska and tribal issues, policies and laws impacting rural Alaskans.
**Prerequisites:** RD F300; senior standing.
**Cross-listed with** RD F435.
**Special Notes:** Recommended RD F110.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F450 Comparative Indigenous Rights and Policies** (s)
3 Credits
Offered Spring Odd-numbered Years
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination.
**Prerequisites:** Upper-division standing.
**Cross-listed with** PS F450.
**Stacked with** ACNS F657; PS F650.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F458 The Politics of Indigenous Identity** (an)
3 Credits
Offered Spring Odd-numbered Years
Examines Indigenous identity from four different perspectives: legal, biological, cultural and self-identity. The course will be a journey of self-discovery for students as they research their discovery for students as they research their personal identities whether they be Indigenous identities or other identities.
**Prerequisites:** Upper-division standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F461 Native Ways of Knowing** (an, h)
3 Credits
Offered Spring Odd-numbered Years
Focus on how culture and worldview shape who we are and influence the way we come to know the world around us. Emphasis on Alaska Native knowledge systems and ways of knowing.
**Prerequisites:** Upper-division standing.
**Cross-listed with** ED F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F465 Community Healing and Wellness** (an)
3 Credits
Offered Fall
The history of education and the impact of religion and assimilation policies on the emotional and physical health of Alaska Natives and their communities. Traditional wellness issues and systems will also be researched from a global perspective.
**Prerequisite:** Junior standing.
**Crosslisted with** RD F465.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F467 Tribal Responses to Violence: Safety, Justice and Advocacy** (an)
3 Credits
Offered Fall Odd-numbered Years
This course examines the crisis of violence against Native people and within Native communities. The role of sexual and other violence will be explored, impacts of trauma, legal and jurisdictional barriers and developments in victim-centered and restorative justice. Students will investigate response systems, relevant policies and issues, and develop solutions.
**Prerequisites:** Senior standing.
**Stacked with** RD F667.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F468 Alaska Native Art Studio III** (an, h)
3 Credits
Offered Fall and Spring
Students will refine their artistic practice guided with in-depth mentorship from faculty. Through individualized study, students will continue their exploration and development of their artwork within a cultural context. Strong emphasis will be placed on the individual development of a body of artwork inspired by the cultures they draw from.
**Prerequisites:** ART F368.
**Cross-listed with** ART F468.
**Lecture + Lab + Other:** 1 + 4 + 0

**ANS F474 Applied Community Research**
3 Credits
Offered Fall
Development and preliminary groundwork for the rural development senior project. Students will develop a full prospectus and conduct preliminary research for their senior project to be completed in RD F475 Rural Development Senior Project.
**Prerequisites:** RD F340; RD F352; senior standing.
**Crosslisted with** RD F474.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F475 Alaska Native Social Change** (an, s)
3 Credits
Offered As Demand Warrants
Tradition and change in Native social institutions in contemporary society. Methods of identifying and analyzing significant Native social change processes for public understanding.
**Prerequisites:** ANS F242X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANS F478 Alaska Native Studies Senior Thesis**
3 Credits
Offered Spring
This is a capstone course that allows students to draw together knowledge acquired in Alaska Native studies courses to apply them to expand or extend students' knowledge or to develop a tangible product that benefits others.
**Prerequisites:** Senior standing; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ANS F350; RD F474.
**Lecture + Lab + Other:** 3 + 0 + 0

# American Sign Language (ASLG)

**Community & Technical College**
Associate of Arts (https://www.ctc.uaf.edu/programs/associate-of-arts/)
907-455-2800

**ASLG F101X American Sign Language I** (h)
3 Credits
Offered As Demand Warrants
Visual-gestural language used by most deaf Americans. Acquisition of receptive and expressive conversational skills. Cultural aspects of everyday life experiences of deaf people.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F110 American Sign Language Practice** (h)
1 Credit
Offered As Demand Warrants
Skill development in use of American Sign Language. Conducted entirely in sign language with aspects of deaf culture included. All skill levels. May be repeated twice for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**ASLG F202X American Sign Language II** (h)
3 Credits
Offered As Demand Warrants
Expressive and receptive conversational skills. Understanding the culture that is an integral part of the language. Continuation of American Sign Language I.
**Prerequisites:** ASLG F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F203 American Sign Language III** (h)
3 Credits
Offered As Demand Warrants
Grammar, conceptual structure and lexical items of American Sign Language. Cultural awareness and expressive and receptive signing skills for communicating and understanding American Sign Language in diverse contexts. Continuation of ASLG F101X and ASLG F202X.
**Prerequisites:** ASLG F202X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F204 American Sign Language IV** (h)
3 Credits
Offered As Demand Warrants
Spontaneous and interactive use of American Sign Language. Grammar, structure and lexical components. Cultural aspects supporting communication in American Sign Language at an advanced level. A continuation of ASLG F203.
**Prerequisites:** ASLG F203.
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F205 American Sign Language V** (h)
3 Credits
Offered As Demand Warrants
Highly advanced analysis of American Sign Language, including classifiers, grammar and lexicon. Expanded receptive and expressive skill development based in extensive cultural knowledge of the Deaf community in America.
**Prerequisites:** ASLG F204.
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F220 Deaf Culture**
3 Credits
Offered As Demand Warrants
Exploration of the Deaf-World through various lenses provided by multidisciplinary fields of anthropology, sociology, history and cultural studies. Students will be asked to inquire into the diversity, complexities and commonalities of deaf cultural experiences through rigorous questioning of fundamental issues pertaining to cultural practices, ideology, power, identity and heritage.
**Prerequisites:** WRTG F111X, ASLG F202X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F230 Deaf History**
3 Credits
Offered As Demand Warrants
Deaf history in America from 1800 to 1950, this course addresses the emergence, growth and survival of America's Deaf community. Topics include schools, labor, community ties, eugenics and organizations, students will learn the significance of the "Deaf" place as well as parallels with other minority groups and associated trends.
**Prerequisites:** WRTG F111X; ASLG F202X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F240 ASL Literature**
3 Credits
Offered As Demand Warrants
This course is designed as a thorough exploration of the literary traditions in the deaf community. Attention will be given to the unique face-to-face nature of signed literature and its numerous traditional forms. Students will become versed in the stylists, poetics and cultural contexts of signed literature in its live as well as video-text formats.
**Prerequisites:** WRTG F111X; ASLG F202X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ASLG F260 ASL Lab**
1 Credit
Offered As Demand Warrants
Skill development and refinement in both expressive and receptive ASL and the grammar of ASL through structured activities which will supplement what is learned in ASLG F202 each week. Conducted entirely in Sign Language.
**Prerequisites:** ASLG F202X (may be taken concurrently).
**Lecture + Lab + Other:** 0 + 3 + 0

# Anthropology (ANTH)

**College of Liberal Arts**
Department of Anthropology (https://www.uaf.edu/anthro/)
907-474-7288

**ANTH F100X Individual, Society and Culture** (s)
3 Credits
Offered Fall and Spring
An examination of the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts.
**Prerequisites:** Placement in WRTG F111X.
**Attributes:** UAF Core Indv, Soci Culture, UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F101X Introduction to Anthropology** (s)
3 Credits
Offered As Demand Warrants
Human societies and cultures based on the findings of the four subfields of the discipline: archaeological, biological, cultural and linguistic.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F102 Introduction to Ethnobotany** (an)
3 Credits
Offered Summer
This blended online and hands-on course surveys concepts of botany and ethnobotany in the context of Alaska Native cultures, including: plant biology and taxonomy, scientific and ethnobotanic plant collection methods, traditional plant uses (working with Alaska Native Elders), and how the resulting ethical awareness contributes to other fields of study.
**Cross-listed with** EBOT F100.
**Lecture + Lab + Other:** 2 + 3 + 0

**ANTH F105 Introduction to the History and Culture of the Seward Peninsula**
1 Credit
Offered As Demand Warrants
Cultural history of the Seward Peninsula peoples for the last 10,000 years using physical anthropology, ethnography, ethnohistory, linguistics, archaeology, ecology and climatology. Eskimo and Euroamerican cultures which have existed in western Alaska.
**Cross-listed with** HIST F105.
**Lecture + Lab + Other:** 1 + 0 + 0

**ANTH F111X Ancient Civilizations** (s)
3 Credits
Offered Fall
Major civilizations of the Old and New World from a comparative, anthropological perspective. Antecedents and influences of these civilizations on their neighbors. Economics, science, religion and social organization of these civilizations.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F211X Fundamentals of Archaeology** (s)
3 Credits
Offered Fall
Methods and techniques of archaeological field and laboratory research.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 2 + 3 + 0

**ANTH F214 World Prehistory** (s)
3 Credits
Offered Spring Even-numbered Years
Explores the archaeological evidence from the Old and New Worlds for the development of human culture, from the very beginning of humankind to the rise of ancient urban societies.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F215 Fundamentals of Social/Cultural Anthropology** (s)
3 Credits
Offered Spring
Introduction to the basic concepts, subfields and techniques of social/cultural anthropology. Includes non-Western and Western ethnographic topics, and discussion of career options.
**Recommended:** ANTH F211X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F221 Fundamentals of Biological Anthropology** (n)
3 Credits
Offered Fall
Survey of genetics, evolutionary mechanisms, adaptation, primate studies, the human fossil record and human variation. Provides a basic understanding of humans from a biological, evolutionary and temporal perspective.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F223 Sociolinguistics: Language and Social Inequality**
3 Credits
Offered As Demand Warrants
An Introduction to the concepts and methods of linguistic anthropology and sociolinguistics. It draws from these disciplines to investigate the role of language variation in social inequality. Covers concepts including language varieties, speech styles, language ideologies, the creation of standard languages and portrayals of ethnolinguistic groups in media.
**Prerequisites:** ANTH F100X or LING F101X.
**Cross-listed with** LING F223.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F225 Anthropology and Race** (s)
3 Credits
Offered As Demand Warrants
Building on four-field anthropological practice, students in this course will study social concepts of race, racism, and the construction of racial hierarchies from historical and contemporary perspectives across cultures. Students will also learn to differentiate social concepts of race from the scientific study of human variation.
**Prerequisites:** ANTH F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F230 Cultural Perspectives on Storytelling** (h)
3 Credits
Offered As Demand Warrants
Study and collection of folklore and oral history. Importance of oral tradition in human communication and the advantages and disadvantages of recording and studying it. Sociocultural anthropology and anthropological linguistics in relation to oral traditions. Methods of folklorists, historians and academicians. Field project required.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F242 Native Cultures of Alaska** (an, s)
3 Credits
Offered Fall and Spring
The traditional Aleut, Eskimo and Indian (Athabascan and Tlingit) cultures of Alaska. Eskimo and Indian cultures in Canada. Linguistic and cultural groupings, population changes, subsistence patterns, social organization and religion in terms of local ecology. Pre-contact interaction between groups.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F254 Applied Ethnobotany Fall**
2 Credits
Offered Fall
This is the fall section of a year-round course cycle consisting of two non-sequential applied courses (fall and spring) that explore the seasonally-appropriate cultural uses of plants in a Native and non-native, mainly Alaskan, context. Emphasis will be placed on the underlying scientific aspects of harvesting and using plants.
**Prerequisites:** EBOT F100.
**Cross-listed with** EBOT F250.
**Lecture + Lab + Other:** 2 + 0 + 0

**ANTH F255 Applied Ethnobotany Spring**
2 Credits
Offered Spring
This is the spring section of a year-round course cycle consisting of two nonsequential courses that explore the seasonally appropriate cultural uses of plants. Students will deepen their understanding of human-plant relationships through individual hands-on projects which will guide them into further studies in ethnobotany and related disciplines.
**Prerequisites:** EBOT F100.
**Cross-listed with** EBOT F251.
**Lecture + Lab + Other:** 2 + 0 + 0

**ANTH F260 Fundamentals of Linguistic Anthropology: Language in Culture and Communication** (s)
3 Credits
Offered Spring
An introduction to the study of the language and culture nexus. Questions addressed include: How does the language you speak affect how you think and view the world? How do ways of speaking structure culture? What do we know about how human language evolved? How does language encode cultural meaning?
**Prerequisites:** ANTH F100X, ANTH F101X, ANTH F215, SOC F101X or LING F101X.
**Cross-listed with** LING F260.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F301 World Ethnography** (s)
3 Credits
Offered As Demand Warrants
Survey of ethnographic research on peoples and cultures of selected geographic regions of the world, in both historical and contemporary perspective. Content of the course varies and is contingent on available faculty expertise. Course may be repeated once for credit when content varies.
**Prerequisites:** ANTH F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F302 Siberia: Past, Present, Future** (s)
3 Credits
Offered As Demand Warrants
Survey of anthropological research on peoples and cultures of Siberia and the Russian Far East. This includes sections on colonial histories as well as a major focus on contemporary lives and future prospects. While the emphasis is on the Indigenous peoples of Siberia, settler populations will be discussed as well.
**Prerequisites:** ANTH F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F305 Culture, Health and Healing** (s)
3 Credits
Offered Spring
An examination of culturally diverse meanings, behaviors, experiences and therapeutic systems associated with health and healing from the perspective of medical anthropology. Includes sections on prehistory and evolutionary medicine, but focuses primarily on contemporary ethnographic health studies from around the world. The course is available via eCampus.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F308 Language and Gender** (s)
3 Credits
Offered As Demand Warrants
Examination of relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X, LING F216X, ANTH F100X, ANTH F101X or WGS F201X.
**Cross-listed with** LING F308; WGS F308.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F309 Circumpolar Archaeology** (s)
3 Credits
Offered Fall Odd-numbered Years
Archaeology of the circumpolar world from initial occupations through the historic period. Cultural and chronological variability in human adaptation to high latitudes. Causes and consequences of population movement, environmental change and cultural interaction in the Old and New World, as understood through archaeology.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F315 Human Biological Variation** (n)
3 Credits
Offered As Demand Warrants
Biology of recent and modern human populations, including systematics, behavior, ecology and inter- and intrapopulation genetic and morphological variations. Human adaptations to heat, cold, high altitudes and changing nutritional and disease patterns. Human skeletal biology, including metrical and non-metrical variation, aging and sexing skeletal remains, and paleopathology.
**Prerequisites:** ANTH F221 or BIOL F103X.
**Lecture + Lab + Other:** 2 + 3 + 0

**ANTH F320 Language and Culture in Alaska** (s)
3 Credits
Offered As Demand Warrants
Course surveys relationships between language, culture, and society with special focus on languages and cultures of Alaska. We review the study of linguistic anthropology, consider cultural variation in socialization to language, multilingualism, language change, language shift, cultural variation in conversational practices and relationships between language and identity (gender, ethnicity, nationalism).
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F336 Ethnomycology** (s)
3 Credits
Offered Spring
An integrated perspective of humanities and social sciences on human-fungi relationships, with concentration on the role of mushrooms in food, medicine, art, commerce, spirituality, and recreation in societies around the world, past and present. Mushroom harvesting in communities around Alaska is one of the extensively covered topics.
**Prerequisites:** EBOT F100 or ANTH F100X.
**Cross-listed with** EBOT F336.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F352 Native Peoples of North America** (s)
3 Credits
Offered As Demand Warrants
An introduction to the Native inhabitants of North America from their initial appearance on the continent during the late Pleistocene to European contact. The course provides a cross-cultural examination of the social, political, economic and religious aspects of the traditional lifeways of these Native peoples prior to their protohistoric destabilization.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F360 Indigenous Art and Culture** (h)
3 Credits
Offered As Demand Warrants
Examination of art as a medium of cultural criticism, knowledge, wisdom, learning, and expression of social, spiritual, ecological, and aesthetic relationships in Indigenous societies of North, Central and South America, Africa, Eurasia, Australia and Oceania, and the Arctic.
**Cross-listed with** ART F360.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F365 Alaska Native Art History** (an, h)
3 Credits
Offered Fall
The material culture of Alaska Native people from pre-colonial times to the present. Students will explore the effects of colonialism on the art forms of different Alaska Native cultural groups. Students will have an opportunity to contribute to the ongoing histories of Alaska Native art through group research projects.
**Prerequisites:** Sophomore standing or higher.
**Cross-listed with** ANS F365; ART F365.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F366 Northwest Coast Indian Art** (h)
3 Credits
Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture.
**Cross-listed with** ANS F366; ART F366.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F367 Inuit Art** (an, h, s)
3 Credits
Offered Fall
Indigenous art from Northern Alaska, Canada, Greenland and the Bering Strait region of Russia, from the earliest known to contemporary.
**Cross-listed with** ANS F367; ART F367.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F370 Virtual Ethnographic Field School**
3 Credits
Offered As Demand Warrants
This asynchronous class offers a virtual ethnographic "field school" experience. It features authentic multimedia data collected in Alaska. Students get hands-on practice with methods and analytic techniques that include: participant observation, semi-structured interviews, linguistic analysis, multimodal interaction analysis, spatial mapping, visual/semiotic analysis, etc.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F383 History and Cultures of Northern Dené** (an, s)
3 Credits
Offered As Demand Warrants
Contemporary conditions and traditional heritage of the Dené (Athabascan) populations of Alaska and Canada. Impact of cross-cultural interactions and participation in global processes.
**Prerequisites:** ANTH F242.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F384 History of Anthropology**
3 Credits
Offered Fall
Major theoretical approaches in anthropology chronologically from formulation of the discipline of anthropology to current theory. Nature of the discipline, its goals and methods, and the relevance of theoretical perspectives to interpretations in anthropology.
**Prerequisites:** ANTH F215.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F389 Klingon, Elvish and Dothraki: The Art and Science of Language Creation** (s)
3 Credits
Offered As Demand Warrants
Exposure to linguistics and linguistic anthropology through inventing a language. The range of human linguistic and cultural variation will inform design of the sound system, grammar, orthography, lexicon and cultural context for the language. The class as a whole will collaboratively create a basic ConWorld, lexicon, grammar and writing system.
**Prerequisites:** WRTG F111X; one semester of foreign language; ENGL F318, LING F101X, LING F223 or ANTH F260.
**Cross-listed with** LING F389.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F401 Birth Across Cultures** (s)
3 Credits
Offered As Demand Warrants
Consideration of childbirth in cross-cultural perspective, including how birth is shaped by personal and cultural meanings at the same time that it is embedded in local, national, and transnational relations of political and economic power and social hierarchies based on gender, class, and ethnicity.
**Prerequisites:** ANTH F100X, ANTH F101X, SOC F101X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F402 Anthropology of Art** (s)
3 Credits
Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.
**Prerequisites:** Senior standing.
**Cross-listed with** ART F402.
**Stacked with** ANTH F602, ART F602.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F403 Political Anthropology** (s)
3 Credits
Offered As Demand Warrants
Political systems and the law. Case studies from nonindustrial societies, developing nations and parapolitical systems or encapsulated societies, such as Native peoples in the U.S. Political structures and institutions; social conflict, dispute settlement, social control and the law, political competition over critical resources; and ethnicity.
**Prerequisites:** ANTH F215; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Stacked with** ANTH F603.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F405 Archaeological Method and Theory** (s)
3 Credits
Offered Spring Even-numbered Years
Archaeological methods and analysis as the framework for different perspectives in archaeology. Application to specific research problems.
**Prerequisites:** ANTH F211X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Stacked with** ANTH F605.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F407 Kinship and Social Organization** (s)
3 Credits
Offered Spring Odd-numbered Years
Forms of relatedness in diverse sociocultural systems. Principles of organizing individuals into social groups and roles. Forms and functions of family, marriage, incest taboo around the world. Classical and new approaches to the study of kinship; alliance theory, symbolic kinship, kinship and gender, the substance of kinship, kinship and biotechnology.
**Prerequisites:** ANTH F215.
**Stacked with** ANTH F607.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F409 Anthropology of Religion** (s)
3 Credits
Offered Fall Odd-numbered Years
Religion or supernatural belief from the perspective of anthropology. Religion in the context of circumpolar societies as well as a global phenomenon. Religious practitioners, ritual, belief systems and the relationship of religious phenomena to other aspects of social life. New relational and cognitive approaches to the study of religion.
**Prerequisites:** ANTH F100X; ANTH F215.
**Stacked with** ANTH F609.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F411 Senior Seminar in Anthropology** (s)
3 Credits
Offered Spring
The integrated nature of anthropological inquiry. Includes a four-field approach to anthropology in a discussion-intensive setting. Student may focus on an interdisciplinary theme or a topic other than their own specialization.
**Prerequisites:** COJO F131X or COJO F141X, Anthropology major with senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F412 Human-environment Research Methods**
3 Credits
Offered Fall Even-numbered Years
Basic overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, text analysis, surveys, scales, cognitive anthropology and ethnoecology, social networks, behavioral observation and visual methods.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper level standing.
**Cross-listed with** FISH F412.
**Stacked with** FISH F613.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F415 Zooarchaeology and Taphonomy**
3 Credits
Offered Fall Even-numbered Years
Identification of bones, how vertebrate bone remains may be used to study archaeological site formation processes, site organization, subsistence practices and animal procurement strategies. Preservation in modern depositional environments, paleoecology, vertebrate mortality profiles and demographic structure, site seasonality, bone breakage, taphonomy and faunal remains, and human land use practices.
**Prerequisites:** ANTH F211X.
**Stacked with** ANTH F628.
**Lecture + Lab + Other:** 2 + 3 + 0

**ANTH F422 Human Osteology**
4 Credits
Offered Fall Odd-numbered Years
Growth, development and alteration of the human skeleton. Determination of age, sex, stature and genetic ancestry from bones and teeth. Skeletal remains for diagnosis of disease and identification of cultural practices.
**Prerequisites:** ANTH F221.
**Stacked with** ANTH F625.
**Lecture + Lab + Other:** 3 + 3 + 0

**ANTH F423 Human Origins** (s)
4 Credits
Offered Spring Odd-numbered Years
Analysis of the hominoid fossil record from the early Miocene to the beginning of the Holocene. Examination of comparative hominoid and hominin skeletal and dental anatomy, systematics and long-term bio-behavioral adaptations, including biomechanical changes and technocultural innovations. Consideration of cultural and historical biases in interpretation of the human fossil record.
**Prerequisites:** ANTH F221 and ANTH F422; Junior standing.
**Stacked with** ANTH F623.
**Lecture + Lab + Other:** 3 + 3 + 0

**ANTH F424 Analytical Techniques**
3 Credits
Offered Fall Even-numbered Years
Classification, sampling, collection and analysis of anthropological data: parametric and nonparametric significance tests and measures of association, analysis of frequency data, estimating resemblance using multiple variables, computer simulations and analysis.
**Prerequisites:** ANTH F211X or ANTH F221; any college level mathematics course.
**Stacked with** ANTH F624.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F426 Bioarchaeology** (n)
3 Credits
Offered Spring Even-numbered Years
Innovative methods for studying past interactions between biological and cultural factors, as revealed through human and faunal skeletal and plant remains. From these data sources, health, diet, social organization and interactions and life histories of past populations, as well as the environments in which they lived, are reconstructed and examined.
**Prerequisites:** ANTH F211X; ANTH F221.
**Stacked with** ANTH F626.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F427 Anthropology of Death** (s)
3 Credits
Offered As Demand Warrants
Consideration of the "death experience" as manifested in mortuary practices. Theoretical approaches and ethnographic field studies related to commemoration and integration of death into the social relationships experienced in daily life. Their use for constructing analogies to interpret social behavior of members of past populations from archaeologically derived funerary remains.
**Prerequisites:** ANTH F100X; ANTH F211X; ANTH F215 or ANTH F101X; WRTG F211X, WRTG F212X or WRTG F213X.
**Stacked with** ANTH F627.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F428 Ecological Anthropology** (n)
3 Credits
Offered As Demand Warrants
Biological, environmental and cultural factors and their interplay in defining the human condition, with examples from the Arctic and other populations.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F432 Field Methods in Descriptive Linguistics I** (h)
3 Credits
Offered Spring Odd-numbered Years
Introduction to issues in field linguistics and specific issues around documenting little studied and endangered languages. Focus on making recordings, transcription, elicitation with consultants and ethics in the field. Projects build up to documenting an unfamiliar language with a consultant and designing and carrying out a research project.
**Prerequisites:** LING F318; LING F320.
**Cross-listed with** LING F431.
**Stacked with** ANTH F632; LING F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F434 Field Methods in Descriptive Linguistics II**
3 Credits
Offered As Demand Warrants
Second semester of Field Methods sequence. Planning a field project, including selecting a field site, making community contacts, intellectual property and repatriation. In class group elicitation with a speaker of a non-Indo-European language. Projects may involve either work with a consultant or archival research on languages no longer spoken.
**Prerequisites:** LING F431, ANTH F432.
**Cross-listed with** LING F434.
**Stacked with** LING F634; ANTH F634.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F435 Political Media and Discourses of the American Right** (s)
3 Credits
Offered As Demand Warrants
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** LING F435; COJO F435.
**Stacked with** LING F635; COJO F640; ANTH F635.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F445 Gender in Cross-cultural Perspective** (s)
3 Credits
Offered Spring Even-numbered Years
Gender is examined as both cultural construction and social relationship through studies that explore gender diversity, roles, experiences, and expressions in a broad variety of societies and contexts, past and present. Includes a range of theoretical and methodological approaches in anthropology for exploring and understanding gender cross-culturally.
**Prerequisites:** ANTH F215 or WGS F201X.
**Cross-listed with** WGS F445.
**Stacked with** ANTH F645.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F446 Economic Anthropology** (s)
3 Credits
Offered Fall Even-numbered Years
Relationships between economic and other social relations. Pre-industrial societies. Relevance of formal economics to small-scale societies and developing nations. Exchange, formal and substantive economics, market economics, rationality, political economy and the economics of development.
**Prerequisites:** A cultural anthropology class.
**Stacked with** ANTH F646.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F450 Language Policy and Planning** (s)
3 Credits
Offered Fall Odd-numbered Years
Consideration of minority languages, including Alaskan Native Languages, in light of their histories, current status, and factors affecting future maintenance.
**Prerequisites:** COJO F131X or COJO F141X.
**Cross-listed with** LING F450.
**Stacked with** LING F650; ANTH F654.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F451 Quaternary Seminar**
3 Credits
Offered As Demand Warrants
Discussion of the Quaternary Period (relatively recent past -- spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.
**Prerequisites:** GEOS F315; GEOS F304; GEOS F322.
**Cross-listed with** GEOS F452.
**Stacked with** ANTH F651; GEOS F651.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F460 Cross-cultural Filmmaking** (h)
3 Credits
Offered As Demand Warrants
Explore filmmaking through cultural knowledge, decolonized methodologies, and documentary filmmaking techniques to create content reflective of cultural and/or scientific knowledge. Develop film work with a theoretical base for cultural understanding, scientific communications, and educational potentials. Basic pre-production, production, and post-production processes will be explored within a multi-cultural communications framework.
**Prerequisites:** Junior, senior or graduate standing.
**Cross-listed with** ART F460; FLPA F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F465 Geoarchaeology**
3 Credits
Offered As Demand Warrants
Geological context of archaeological sites and the geologic factors that affect their preservation, with emphasis on Alaska. Includes a one or two-day weekend field trip in late April or early May.
**Prerequisites:** GEOS F101X, an introductory course in archaeology.
**Cross-listed with** GEOS F465.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F470 Oral Sources: Issues in Documentation** (h)
3 Credits
Offered Fall Even-numbered Years
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions, personal narratives, the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to deliver recordings.
**Prerequisites:** At least one undergraduate ANTH course and one undergraduate HIST course.
**Cross-listed with** ACNS F470.
**Stacked with** ANTH F670; ACNS F670.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F472 Culture and History in the North Atlantic** (s)
3 Credits
Offered Spring Odd-numbered Years
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands.
**Prerequisites:** ANTH F100X.
**Recommended:** ANTH F215.
**Stacked with** ANTH F672; ACNS F672.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F482 Anthropology of Energy** (s)
3 Credits
Offered As Demand Warrants
Advanced introduction to the anthropology of energy. Includes both a historical anthropological overview of the development of the modern concept of energy, a culturally comparative perspective on the use and conceptualization of energy and study of the cultural ways in which energy is collectively used and contested.
**Prerequisites:** ANTH F215.
**Stacked with** ANTH F682.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F485 Discourse in Society: Analyzing Language in Social Context** (s)
3 Credits
Offered Fall Even-numbered Years
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.
**Prerequisites:** LING F101X, ANTH F260 or ANTH F320.
**Cross-listed with** LING F485.
**Stacked with** ANTH F685, LING F685.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F490 Archaeological Field School**
6 Credits
Offered Summer
Introduction to practical and important elements of archaeological fieldwork including excavation, cataloging, mapping and other field survey techniques. Basic laboratory techniques include identifying cultural remains, cataloging finds and basic artifact analyses. Field trips will visit additional cultural sites, and evening lectures will include regional prehistory, history, geomorphology and ecology.
**Prerequisites:** ANTH F211X or equivalent introductory course in anthropology or archaeology.
**Lecture + Lab + Other:** 2 + 1 + 3

**ANTH F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**ANTH F602 Anthropology of Art**
3 Credits
Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.
**Prerequisites:** Senior standing.
**Stacked with** ANTH F402; ART F402.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F603 Political Anthropology**
3 Credits
Offered As Demand Warrants
Political systems and the law. Case studies from nonindustrial societies, developing nations and parapolitical systems or encapsulated societies, such as Native peoples in the U.S. Political structures and institutions; social conflict, dispute settlement, social control and the law, political competition over critical resources; and ethnicity.
**Prerequisites:** Graduate standing.
**Stacked with** ANTH F403.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F605 Archaeological Method and Theory**
3 Credits
Offered Spring Even-numbered Years
Archaeological methods and analysis as the framework for different perspectives in archaeology. Application to specific research problems.
**Prerequisites:** ANTH F211X.
**Stacked with** ANTH F405.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F606 Folklore and Mythology: Anthropological Perspective**
3 Credits
Offered As Demand Warrants
Intensive introduction to anthropological theory concerning oral traditions and the verbal arts. Attention is paid to classic historical approaches, but discussion of contemporary focus on context and performance is highlighted. Students will research topics of individual interest.
**Prerequisites:** Upper-division undergraduate anthropology course.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F607 Kinship and Social Organization**
3 Credits
Offered Spring Odd-numbered Years
Forms of relatedness in diverse sociocultural systems. Principles of organizing individuals into social groups and roles. Forms and functions of family, marriage, incest taboo around the world. Classical and new approaches to the study of kinship; alliance theory, symbolic kinship, kinship and gender, the substance of kinship, kinship and biotechnology.
**Prerequisites:** Graduate standing.
**Stacked with** ANTH F407.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F609 Anthropology of Religion**
3 Credits
Offered Fall Odd-numbered Years
Religion or supernatural belief from the perspective of anthropology. Religion in the context of circumpolar societies as well as a global phenomenon. Religious practitioners, ritual, belief systems and the relationship of religious phenomena to other aspects of social life. New relational and cognitive approaches to the study of religion.
**Prerequisites:** Graduate standing.
**Stacked with** ANTH F409.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F610 Northern Indigenous Peoples and Contemporary Issues**
3 Credits
Offered Fall Odd-numbered Years
Applications of contemporary analytical perspectives in anthropology and related fields of humanities and social sciences to examine cultural vitality, social change, and local, regional, and global processes that are affecting and being addressed by northern Indigenous societies in Russia, Alaska, Canada, Greenland, Norway, Sweden, Finland, and Japan.
**Prerequisites:** Graduate standing or upper-division standing.
**Cross-listed with** ACNS F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F616 Anthropologic Background for Resilience and Adaptation**
1 Credit
Offered Fall
Provides the anthropological background that is necessary for understanding the role of anthropology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in anthropology.
**Prerequisites:** Graduate student enrollment.
**Lecture + Lab + Other:** 1 + 0 + 0

**ANTH F617 Resilience Internship**
2 Credits
Offered As Demand Warrants
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.
**Prerequisites:** ANTH F667, BIOL F667, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or NRM F668.
**Cross-listed with** BIOL F613; ECON F613; NRM F613.
**Lecture + Lab + Other:** 2 + 0 + 0

**ANTH F623 Human Origins** (s)
4 Credits
Offered Spring Odd-numbered Years
Analysis of the hominoid fossil record from the early Miocene to the beginning of the Holocene. Examination of comparative hominoid and hominin skeletal and dental anatomy, systematics and long-term bio-behavioral adaptations, including biomechanical changes and technocultural innovations. Consideration of cultural and historical biases in interpretation of the human fossil record.
**Prerequisites:** Graduate standing.
**Stacked with** ANTH F423.
**Lecture + Lab + Other:** 3 + 3 + 0

**ANTH F624 Analytical Techniques**
3 Credits
Offered Fall Even-numbered Years
Classification, sampling, collection and analysis of anthropological data: parametric and nonparametric significance tests and measures of association, analysis of frequency data, estimating resemblance using multiple variables, computer simulations and analysis.
**Prerequisites:** Graduate standing in Anthropology.
**Stacked with** ANTH F424.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F625 Human Osteology**
4 Credits
Offered Fall Odd-numbered Years
Growth, development and alteration of the human skeleton. Determination of age, sex, stature and genetic ancestry from bones and teeth. Skeletal remains for diagnosis of disease and identification of cultural practices.
**Prerequisites:** ANTH F221; graduate standing.
**Stacked with** ANTH F422.
**Lecture + Lab + Other:** 3 + 3 + 0

**ANTH F626 Bioarchaeology**
3 Credits
Offered Spring Even-numbered Years
Innovative methods for studying past interactions between biological and cultural factors, as revealed through human and faunal skeletal and plant remains. From these data sources, health, diet, social organization and interactions and life histories of past populations, as well as the environments in which they lived, are reconstructed and examined.
**Prerequisites:** Graduate standing.
**Recommended:** ANTH F415; ANTH F625.
**Stacked with** ANTH F426.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F627 Anthropology of Death** (s)
3 Credits
Offered As Demand Warrants
Consideration of the "death experience" as manifested in mortuary practices. Theoretical approaches and ethnographic field studies related to commemoration and integration of death into the social relationships experienced in daily life. Their use for constructing analogies to interpret social behavior of members of past populations from archaeologically derived funerary remains.
**Stacked with** ANTH F427.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F628 Zooarchaeology and Taphonomy**
3 Credits
Offered Fall Even-numbered Years
Identification of bones, how vertebrate bone remains may be used to study archaeological site formation processes, site organization, subsistence practices and animal procurement strategies. Preservation in modern depositional environments, paleoecology, vertebrate mortality profiles and demographic structure, site seasonality, bone breakage, taphonomy and faunal remains, and human land use practices.
**Prerequisites:** Graduate standing.
**Stacked with** ANTH F415.
**Lecture + Lab + Other:** 2 + 3 + 0

**ANTH F629 Structures of Anthropological Argument**
3 Credits
Offered Fall
Reading and analysis of examples from various paradigms in anthropology, past and present. Presents a thorough grounding in forms of anthropological argument and preparation for the research and writing process. Includes evolutionary, Boasian, structural-functional, structural as well as subdisciplinary linguistic, archaeological and biological forms of argument.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F630 Anthropological Field Methods**
3 Credits
Offered As Demand Warrants
Concentration on the practical concerns and aspects of conducting anthropological field research. Includes the relevant literature and significant discussions on the different aspects of fieldwork. In addition, students will gain practical experience in the problems, techniques and methods of fieldwork involving people from similar or distinct cultural backgrounds.
**Prerequisites:** Graduate standing in Anthropology.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F631 Linguistic Anthropology: Language, Thought and Action**
3 Credits
Offered As Demand Warrants
Course surveys the history of linguistic anthropology and the methods and questions that have driven and distinguished the field. Topics include an introduction to the subfields of linguistics, the evolution of language, human vs. animal communication, language socialization, linguistic relativity, semiotics, language socialization and language ideologies.
**Prerequisites:** Graduate standing.
**Cross-listed with** LING F640.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F632 Field Methods in Descriptive Linguistics I**
3 Credits
Offered Spring Odd-numbered Years
Introduction to issues in field linguistics and specific issues around documenting little studied and endangered languages. Focus on making recordings, transcription, elicitation with consultants and ethics in the field. Projects build up to documenting an unfamiliar language with a consultant and designing and carrying out a research project.
**Prerequisites:** LING F318; LING F320.
**Cross-listed with** LING F631.
**Stacked with** ANTH F432; LING F431.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F634 Field Methods in Descriptive Linguistics II**
3 Credits
Offered As Demand Warrants
Second semester of Field Methods sequence. Planning a field project, including selecting a field site, making community contacts, intellectual property and repatriation. In class group elicitation with a speaker of a non-Indo-European language. Projects may involve either work with a consultant or archival research on languages no longer spoken.
**Prerequisites:** ANTH F632 or LING F631.
**Cross-listed with** LING F634.
**Stacked with** ANTH F434; LING F434.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F635 Political Media and Discourses of the American Right**
3 Credits
Offered As Demand Warrants
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts.
**Prerequisites:** Graduate standing.
**Cross-listed with** LING F635; COJO F640.
**Stacked with** ANTH F435; COJO F435; LING F435.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F637 Methods in Ethnohistorical Research**
3 Credits
Offered As Demand Warrants
Students of anthropology are introduced to the methods of historical research, particularly the critical evaluation of written documents, problems of archaic language and paleography, and methods for assessing art and folklorist tradition as sources of history. Oral history and the data of language and archaeology are considered.
**Prerequisites:** Graduate standing in anthropology.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F645 Gender in Cross-cultural Perspective**
3 Credits
Offered Spring Even-numbered Years
Gender is examined as both cultural construction and social relationship through studies that explore gender diversity, roles, experiences, and expressions in a broad variety of societies and contexts, past and present. Includes a range of theoretical and methodological approaches in anthropology for exploring and understanding gender cross-culturally.
**Prerequisites:** Graduate standing.
**Stacked with** ANTH F445; WGS F445.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F646 Economic Anthropology**
3 Credits
Offered Fall Even-numbered Years
Relationships between economic and other social relations. Pre-industrial societies. Relevance of formal economics to small-scale societies and developing nations. Exchange, formal and substantive economics, market economics, rationality, political economy and the economics of development.
**Prerequisites:** Graduate standing.
**Stacked with** ANTH F446.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F647 Sustainability in the Changing North**
3 Credits
Offered As Demand Warrants
Explores the basic principles of sustainability of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.
**Prerequisites:** Graduate standing.
**Cross-listed with** BIOL F647; ECON F647; NRM F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F649 Integrated Assessment and Adaptive Management**
3 Credits
Offered As Demand Warrants
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management.
**Prerequisites:** Graduate student standing in a natural science, social science or interdisciplinary program at UAF or another university.
**Recommended:** ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.
**Cross-listed with** BIOL F649; ECON F649; NRM F649.
**Special Notes:** In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F651 Quaternary Seminar**
3 Credits
Offered As Demand Warrants
Discussion of the Quaternary Period (relatively recent past -- spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.
**Prerequisites:** Graduate standing.
**Cross-listed with** GEOS F651.
**Stacked with** ANTH F451; GEOS F452.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F652 Research Design and Professional Development Seminar**
3 Credits
Offered Spring
How to develop problem-based research in anthropology and prepare research proposals, grant proposals and publications along with critical evaluations of similar material. Topics include preparation of oral presentations for professional meetings, lectures and seminars; curriculum vitae preparation; and project budgeting.
**Prerequisites:** Upper-division anthropology course.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F653 Current Perspectives in Cultural Resource Management**
3 Credits
Offered As Demand Warrants
Cultural resource management. Includes historic preservation and environmental law. Reviews pertinent legislation pertaining to the protection of historic properties and presents a series of real world problems confronted by archaeologists. Cultural resource management will be treated historically within a context of the development of American archaeology.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F654 Language Policy and Planning**
3 Credits
Offered Fall Odd-numbered Years
Consideration of minority languages, including Alaskan Native Languages, in light of their histories, current status, and factors affecting future maintenance.
**Cross-listed with** LING F650.
**Stacked with** LING F450.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F667 Resilience Seminar I**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor.
**Prerequisites:** Enrolled in Resilience and Adaptation Graduate Program.
**Recommended:** ANTH F647, BIOL F647, ECON F647 or NRM F647 (taken concurrently).
**Cross-listed with** BIOL F667; ECON F667; NRM F667.
**Lecture + Lab + Other:** 2 + 0 + 0

**ANTH F668 Interdisciplinary Research Methods-Resilience Seminar II**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.
**Prerequisites:** ANTH F647, BIOL F647, ECON F647 or NRM F647; ANTH F667, BIOL F667, ECON F667 or NRM F667.
**Cross-listed with** BIOL F668; ECON F668; NRM F668.
**Lecture + Lab + Other:** 2 + 0 + 0

**ANTH F670 Oral Sources: Issues in Documentation**
3 Credits
Offered Fall Even-numbered Years
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions, personal narratives, the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to deliver recordings.
**Prerequisites:** At least one undergraduate ANTH course and one undergraduate HIST course.
**Cross-listed with** ACNS F670.
**Stacked with** ANTH F470; ACNS F470.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F672 Culture and History in the North Atlantic**
3 Credits
Offered Spring Odd-numbered Years
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F672.
**Stacked with** ANTH F472.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F675 Political Ecology**
3 Credits
Offered As Demand Warrants
Introduction to the field of political ecology. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of enclosure and privatization, environmental values, conservation, environmental justice, and colonialism and economic development.
**Prerequisites:** Graduate standing.
**Cross-listed with** FISH F675.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F682 Anthropology of Energy** (s)
3 Credits
Offered As Demand Warrants
Advanced introduction to the anthropology of energy. Includes both a historical anthropological overview of the development of the modern concept of energy, a culturally comparative perspective on the use and conceptualization of energy and study of the cultural ways in which energy is collectively used and contested.
**Stacked with** ANTH F482.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F685 Discourse in Society: Analyzing Language in Social Context** (s)
3 Credits
Offered Fall Even-numbered Years
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.
**Prerequisites:** ANTH F631, ANTH F670, LING F602, LING F631 or LING F640.
**Cross-listed with** LING F685.
**Stacked with** ANTH F485, LING F485.
**Lecture + Lab + Other:** 3 + 0 + 0

**ANTH F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**ANTH F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Applied Arts (APAR)

**Community and Technical College**
Associate of Arts (https://www.ctc.uaf.edu/programs/associate-of-arts/)
907-455-2800

**APAR F107 Beading**
1 Credit
Offered As Demand Warrants
Application of beads to various materials, three kinds of stitches and use of a bead loom.
**Lecture + Lab + Other:** 1 + 1 + 0

**APAR F140 Clothing Construction**
1 Credit
Offered As Demand Warrants
Techniques of clothing construction for the home sewer. Development of sewing skills necessary to create garments for the beginner as well as the more experienced sewer.
**Lecture + Lab + Other:** 1 + 0 + 0

**APAR F150 Introduction to Traditional Crafts**
1-3 Credits
Offered As Demand Warrants
Introduction to traditional crafts such as basket weaving, birch bark basket-making, beading, carving, canoe or kayak making, etc. Topics vary based on community need and interest and will be identified each semester. Course may be repeated for credit with each new topic.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**APAR F157 Skin Sewing**
1-2 Credits
Offered As Demand Warrants
Fundamentals of skin sewing. Projects (e.g. slippers, mukluks, mittens, fur hats, vests and ruffs) dependent upon student ability and experience.
**Lecture + Lab + Other:** 1-2 + 0 + 0

# Applied Business (ABUS)

**Community and Technical College**
Applied Business (https://www.ctc.uaf.edu/programs/business-applied/)
907-455-2800

**ABUS F051 Bookkeeping For Business**
3 Credits
Offered As Demand Warrants
Basic concepts and procedures of practical bookkeeping. Recording and reporting financial data for service and merchandising business. Covers businesses owned by one individual only (sole proprietorships.)
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F070 Job Readiness Skills**
1 Credit
Offered As Demand Warrants
Pre-employment and human relation skills necessary for job success, including how to identify career choices and employment opportunities; how to prepare a resume, job applications, cover and follow-up letters; and how to develop human relation skills. The student will select, prepare and be interviewed for jobs which match his/her skills identified through a self-assessment inventory. Available at Northwest Campus. Also offered pass/fail as ABUS F070P.
**Lecture + Lab + Other:** 1 + 0 + 0

**ABUS F101 Principles of Accounting I**
3 Credits
Offered Fall, Spring and Summer
Accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor. A preparer's approach emphasizes the use of debits and credits to account for the details of business transactions.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F102A Keyboarding: Touch Typing**
1-3 Credits
Offered Fall and Spring
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F102B Keyboarding: Skill Building**
1-3 Credits
Offered Fall and Spring
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F102C Keyboarding: Document Formatting**
1-3 Credits
Offered Fall and Spring
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F116 Using 10-Key Calculators**
1 Credit
Offered Fall and Spring
Using the efficient 10-key touch method to solve business problems on a calculator. Emphasis is placed on developing occupational proficiency in the use of calculating machines for initial job placement.
**Lecture + Lab + Other:** 1 + 0 + 0

**ABUS F134 Alphabetic Filing**
1 Credit
Offered Fall and Spring
Mastery and use of ARMA filing rules as they apply to alphabetic, subject, numeric and geographic filing.
**Lecture + Lab + Other:** 0 + 3 + 0

**ABUS F141 Payroll Accounting**
1-3 Credits
Offered Fall, Spring and Summer
Payroll records and laws. Methods to compile and calculate payroll information, earnings, deductions and net wages. City, state and federal tax report forms. For payroll personnel.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F151 Village-based Entrepreneurship**
1-3 Credits
Offered As Demand Warrants
Technical and personal requirements for establishing and maintaining a small business in a rural village; advantages and disadvantages of operating a small business in a rural village. May be offered in three, 1 credit modules (a, b and c).
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F154 Human Relations**
3 Credits
Offered Fall, Spring and Summer
Attitudes, self-concepts, personal communication styles, motivation, interactions, positive reinforcements, team building and leadership development.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F155 Business Math**
1-3 Credits
Offered Fall, Spring and Summer
Review of basic math computation skills applied to various business areas. Emphasis on applications.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F158 Introduction to Tourism**
1-3 Credits
Offered Spring
An overview of components, concepts and issues in tourism and hospitality. Introduces a broad range of topics, including the history and impacts of tourism, marketing, planning, customer service, and career and business development, with a focus on Alaska and British Columbia, Canada.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F160 Principles of Banking**
3 Credits
Offered Fall and Spring
Banking in today's economy. Language and documents of banking, check processing, teller functions, deposits, credit and payment functions, loans, investments, trust, the Federal Reserve System and other regulatory agencies.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F161 Personal and Business Finance**
3 Credits
Offered Fall, Spring and Summer
Explores the management of personal and family finances, including financial planning, budgeting, time value of money, consumer buying, personal credit, savings and investment, home ownership and mortgages, insurance, estate planning, retirement, consumer fraud, and laws.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F170 Business English**
3 Credits
Offered Fall and Spring
Comprehensive review of grammar, punctuation, capitalization and spelling, with emphasis on business and office occupations.
**Recommended:** Placement into WRTG F090 or higher.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F175 Customer Service**
3 Credits
Offered Fall, Spring and Summer
Presents customer service as integral to business success. Preparation for effective interaction with customers. Includes trends, interpretation of trends and development of fundamental skills necessary to achieve excellence.
**Recommended:** BA F151X; ABUS F154.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F178 Professionalism**
3 Credits
Offered Fall
Presents professionalism and personal effectiveness as integral to success in business, professional and entrepreneurial environments. Emphasizes conscious competency and ongoing self-development not only as a speaker and presenter but also as a leader in the workplace and community.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F179 Fundamentals of Supervision**
3 Credits
Offered Fall, Spring and Summer
Effective supervisory concepts including planning, organizing and staffing functions. Communicating and delegating effectively, morale, productivity, decision making, positive position discipline and performance goals development.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F182 Office Procedures**
3 Credits
Offered Fall and Spring
Duties and responsibilities of general office employees including filing, processing mail, telephone communication, meeting the public, office supplies, banking, employment procedures and grooming.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F183 Professional Skills for Job Hunt**
1-3 Credits
Offered Fall
Practical information necessary to help students choose meaningful employment as well as build their own employment portfolio. Materials used will allow students to learn more about themselves, engage in personal assessment and learn how this information relates to different careers. Students will complete projects related to finding meaningful employment.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F188 Personal Income Tax**
1 Credit
Offered As Demand Warrants
Taxable income, deductions, credit, exemptions, and computation. Computer use, record keeping methods, tax forms and new tax laws.
**Lecture + Lab + Other:** 1 + 0 + 0

**ABUS F189 The Business of Gaming and Content Creation**
3 Credits
Offered Fall
Introduces students to basics of creating and maintaining a content production-based business online. Covers technical requirements, equipment, community management, marketing and branding, and the business fundamentals to monetize and scale original content. Touches on history and trends shaping the evolving landscape of streaming, content creation, and running a business online.
**Special Notes:** This course is presented as part of the IAC Content Creation Occupational Endorsement.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F199 Practicum in Applied Business**
1-3 Credits
Offered Fall, Spring and Summer
Supervised training and work experience. Analysis of work experience and relationship of the job to career and academic goals. Managerial concepts, problems of working with groups and individuals, organizational structures, communications and planning.
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 0 + 0 + 0

**ABUS F201 Principles of Accounting II**
3 Credits
Offered Fall and Spring
Introduction to accounting concepts and procedures for a business. Emphasis is on the accounting cycle and the recording, summarizing and interpretation of accounting data.
**Recommended:** ABUS F101 or ACCT F261X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F202 Principles of Accounting III**
3 Credits
Offered Fall
Continuation of elementary accounting concepts and procedures with the introduction of cost accounting principles for manufacturing and service operations. Job order costing, process costing, cost-volume profit, budgeting and variances are introduced.
**Recommended:** ABUS F101 and F201; or ACCT F261X and ACCT F262.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F203 Accounting Capstone**
3 Credits
Offered Spring and Summer
Accounting procedures in retail, service and trade businesses. The complete accounting cycle, including record keeping, posting and preparation of financial statements, bank reconciliation, payroll computations and closing books. Accounts receivable, accounts payable, purchasing, credit and other accounting requirements.
**Recommended:** ABUS F101; ABUS F141; ABUS F220; ABUS F201 (or concurrent enrollment).
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F210 Income Tax**
3 Credits
Offered Fall and Spring
Income tax fundamentals. Includes how to complete basic income tax forms/schedules for individuals and small business owners. Covers taxable income, deductions, credits, exemptions, computation, record keeping methods, new tax laws and strategies to reduce taxes.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F220 Microcomputer Accounting: QuickBooks**
3 Credits
Offered Fall and Spring
Basic microcomputer principles. Includes entering transactions, analyzing results, correcting errors and organizing business finances. QuickBooks is a widely used accounting software application.
**Recommended:** ABUS F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F223 Real Estate Law**
3 Credits
Offered Fall
Sources of real estate law: estates and interests in land; methods of describing land; conveyances, deeds and mortgages; liens and encumbrances; residential rentals and commercial leases; multi-unit communities; brokerages and real property transactions; appraisals; and other laws relevant to real estate. Review of relevant cases involving real estate disputes.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F231 Introduction to Personnel**
1-3 Credits
Offered Fall
Company organizational structure, job analysis, staffing and organization, employee growth and development, employee supervision and developing leadership skills. May be offered in three one credit modules.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F232 Contemporary Management Issues**
3 Credits
Offered Fall and Spring
Management functions, including planning, organizing, staffing, directing and controlling, human aspects of management, and decision making.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F233 Financial Management**
3 Credits
Offered Fall and Spring
Fundamental understanding of the concepts, techniques and practices in financial management. Financial statements analysis, cash flow and financial planning, concept of time value of money, risk and return, bond valuation, capital budgeting, internal financial controls and audit.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F234 Introduction to Investing**
3 Credits
Offered Spring
An in-depth study of investment for personal use. The overall investment environment is described and conceptual tools needed by investors are presented. Popular investment vehicles such as common stocks, bonds, preferred stocks, convertible securities, and mutual funds are addressed.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F235 Fund Accounting for Nonprofits**
3 Credits
Offered Fall
Accounting for nonprofit organizations, governmental units, health care providers, voluntary health and welfare organizations, public schools, colleges, universities and other organizations using fund accounting.
**Recommended:** ABUS F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F241 Applied Business Law I**
3 Credits
Offered Fall and Spring
Legal aspects of business problems. Principles, institutions and administration of law in contracts, agency, employment, personal sales and property ownership.
**Crosslisted with** PLS F241.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F242 Employment Law**
3 Credits
Offered Fall
Labor and employment law with emphasis on case analysis.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F256 Small Hotel, Bed and Breakfast, and Lodge Operations**
1-3 Credits
Offered Spring
Introduction to hospitality industry focusing on the development and operation of small hotels, bed and breakfast accommodations, and lodge operations. May be offered in three 1 credit modules.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F260 Marketing Practices**
3 Credits
Offered Fall and Spring
Designed to give students a real-world view of basic marketing principles and practices. Emphasizes planning strategy and application of marketing concepts in analysis of case studies. Examines nature of marketing and its environment, selecting target markets and developing a market mix: product, price, promotion and distribution.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F263 Public Relations**
3 Credits
Offered Fall and Spring
Public relations is image making, repairing and promoting. PR involves promotion, selling, advertising and creating public, corporate, government, church and other institutional images. Public relations professionals need skills in psychology, writing, mass media theory, image construction, persuasion and audience analysis. Introduces public relations and the role it plays in our world and society.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F264 Filing/Records Management**
3 Credits
Offered Fall and Spring
Instruction in basic alphabetic storage with filing rules and cross-referencing and procedures for retrieving records manually. Includes adaptations of the alphabetic storage method including geographic, numeric and subject; storing and retrieving special records (card files, visible records, microrecords); organization and operation of records management programs and control of records systems.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F265 Current and Emerging Trends in Applied Marketing**
3 Credits
Offered Spring
Students receive in-depth coverage of current marketing trends, such as social media marketing, digital marketing, and green marketing, with the overarching goal to gain industry competency and applicable knowledge. Objectives include historical reference, ethics, best practices, tactics, strategy, analytics management, with the opportunity to obtain industry-related certifications.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F267 Transportation and Logistics Management**
1-3 Credits
Offered Spring
Understanding of issues and challenges concerning structure and management of air, sea, rail and highway transportation systems. Emphasis on effective management of the transporting of people and goods intra-Alaska and to destinations that are served from Alaska.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F268 Rural Tourism: Planning and Principles**
1-3 Credits
Offered As Demand Warrants
Introduction to rural tourism planning and principles. Students examine rural tourism attractions and trends, tourism planning and policy formation, quality standards, and cultural and environmental impacts of tourism.
**Cross-listed with** RD F268.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F269 Food and Beverage Management**
1-3 Credits
Offered Spring
Development of a successful food and beverage system from its inception to operation. Menu planning, purchasing, preparation, service and food/beverage cost control.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F271 Business Communications**
3 Credits
Offered Fall, Spring and Summer
Composition and evaluation of various kinds of common communications between a business person and associates, customers and dealers. Included are interoffice memos, letters, reports and oral communications.
**Recommended:** Placement in WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F272 Small-Business Planning**
3 Credits
Offered Fall
Elements of small-business planning processes including the components of a written business plan.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F273 Entrepreneurship and Small Business**
3 Credits
Offered Fall and Spring
Entrepreneurship and management, starting a new business, buying an existing business or franchise. Managing, marketing, staffing, financing, budgeting, pricing, operational analysis and controls.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F274 Business in the Digital World**
1-3 Credits
Offered Spring
Exploration of trends in internet commerce, websites, social media and digital advertisement. Analysis of the elements needed to build and manage a successful e-commerce or small business. Website planning and creation include information design, navigation design and site presentation.
**Recommended:** Basic knowledge of internet and social media.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F275 Applied International Business**
3 Credits
Offered As Demand Warrants
Case study and research-oriented approach to cultural, economic, political, social, logistical and other business issues in the ever-changing international business environment.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F277 Dynamics of Leadership**
3 Credits
Offered Fall and Spring
The study of leadership behavior with application of methods, facts and principles of leadership to individuals and groups in organizational and work settings. Drawing from several areas of behavioral science, this course, while designed for business students, is also suitable for other fields, general education, and personal enrichment.
**Lecture + Lab + Other:** 3 + 0 + 0

**ABUS F288 Professional Certification Preparation**
1-3 Credits
Offered As Demand Warrants
Prepares students for national or industry specific certification examination. Course may be taken three times for a maximum of 4 credits. Course is intended as preparation for certification exam.
**Recommended:** Experience or course work in exam area.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ABUS F299 Practicum in Applied Business**
1-9 Credits
Supervised training and work experience (local or foreign study abroad). Analysis of work experience and relationship of the job to career and academic goals. Managerial concepts, problems of working with groups and individuals, organizational structures, communications and planning.
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 0 + 0 + 0

# Applied Management (BAM)

**College of Business and Security Management**
Applied Management (https://www.uaf.edu/cbsm/degrees/undergraduate/bam/)
907-474-4622

**BAM F308 Professional Development: How to Prepare for a Job and Other Survival Skills**
1 Credit
Offered Fall, Spring and Summer
Learn how to compose and analyze essential business and personal communications with an emphasis on those related to the job search, including resumes, letters and emails. Learn and apply job seeking and career advancement skills related to interviews, business etiquette, and personal brand.
**Prerequisites:** WRTG F111X; COJO F131X, COJO F141X or COJO F121X; BA F151X (may be taken concurrently), ACCT F261X (may be taken concurrently) or AIS F101 (may be taken concurrently).
**Crosslisted with** BA F308.
**Lecture + Lab + Other:** 1 + 0 + 0

**BAM F309 Professional Development: Finding a Career**
1 Credit
Offered As Demand Warrants
Further your understanding of business and personal communications, with an emphasis on communications used in the typical workplace, including letters, reports and memoranda. Learn and apply career advancement skills related social media presence, advanced interviewing techniques and site visits.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.
**Cross-listed with** BA F309.
**Lecture + Lab + Other:** 1 + 0 + 0

**BAM F310 Professional Development: Being Successful in Your Career**
1 Credit
Offered As Demand Warrants
Master business and personal communications needed for career advancement and success in a typical work environment. Learn and negotiations, networking, meeting and presentation facilitation, on-the-job conflict management, ethics, using social media, and interpersonal communications on the job.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.
**Cross-listed with** BA F310.
**Lecture + Lab + Other:** 1 + 0 + 0

**BAM F320 Management**
3 Credits
Offered As Demand Warrants
This course introduces and explores the concepts, theories, and principles of management. We will study the basic managerial functions of planning, organization, staffing, directing, and controlling resources to accomplish organizational goals. Special consideration given to the different roles managers provide and the unique skills required to carry out those roles.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BAM F352 Accounting and Finance**
3 Credits
Offered As Demand Warrants
This course introduces non-business managers to the basics of accounting and financing. Topics that will be covered include cost accounting, budgeting, cash flows, and how to read a basic financial report.
**Prerequisites:** MATH F122X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BAM F435 Entrepreneurship**
3 Credits
Offered As Demand Warrants
This course will provide students with the steps toward starting and growing their own business and entrepreneurial ventures for other businesses. They will learn methods, mindset and approaches necessary to form a business. Upon completion, students will have the resources, behaviors and confidence to develop a new venture.
**Prerequisites:** BA F151X; ACCT F261X or BAM F352.
**Crosslisted with** BA F435.
**Lecture + Lab + Other:** 3 + 0 + 0

**BAM F462 Project Management**
3 Credits
Offered As Demand Warrants
This course is designed to cover key components of project management with emphasis on the practical approach to managing and delivering projects. We will focus on concepts, techniques, and best practices that allow the project manager to deliver simple or complex projects and lead project teams successfully.
**Prerequisites:** BAM F320 or BA F390; BAM F352 or ACCT F261X; WRTG F111X; BA F343; upper division standing.
**Cross-listed with** BA F464.
**Lecture + Lab + Other:** 3 + 0 + 0

# Applied Photography (APHO)

**Community & Technical College**
Associate of Arts (https://www.ctc.uaf.edu/programs/associate-of-arts/)

907-455-2800

**APHO F074 Process/Print Color Negatives**
1 Credit
Offered As Demand Warrants
Developing print film using the Kodak Flexicolor C-41 and Hobby-pac processes. Making proof sheets and enlargements using Extaprint 2, Hobby-pac and Ektaflex processes. Students must have a camera and two rolls of film.
**Lecture + Lab + Other:** 1 + 0 + 0

# Arabic (ARAB)

**Community & Technical College**
Associate of Arts (https://www.ctc.uaf.edu/programs/associate-of-arts/)
907-455-2800

**ARAB F100A Elementary Arabic 1A** (h)
3 Credits
Offered As Demand Warrants
Designed for beginning students of the Arabic language and culture, with emphasis on the fundamentals of the spoken language, vocabulary and grammatical structure. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**ARAB F100B Elementary Arabic 1B** (h)
3 Credits
Offered As Demand Warrants
Continuation of ARAB F100A. Increasing emphasis on the fundamentals of the spoken language, vocabulary and grammatical structure, and expanded information on culture. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Prerequisites:** ARAB F100A.
**Lecture + Lab + Other:** 3 + 0 + 0

# Arctic and Northern Studies (ACNS)

**College of Liberal Arts**
Arctic and Northern Studies (https://www.uaf.edu/arctic/)
907-474-7126

**ACNS F125 Our Changing Climate: Past, Present, Future** (s)
3 Credits
Offered Spring
Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.
**Prerequisites:** Placement in WRTG F111X.
**Cross-listed with** HONR F125, NRM F125, RD F125.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F201 The Circumpolar North: An Introductory Overview**
3 Credits
Offered Fall
This course introduces students to the circumpolar North as a region by exploring themes related to the environment and climate change; politics and international relations; history; geography; nonrenewable and renewable energy; literature; and Indigenous cultures, customs, and issues.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F205 Leadership, Citizenship and Choice**
3 Credits
Offered Spring
History of democratic principles in America and how people can contribute to political and community life in the local, state and national arenas, as leaders and citizens. Examines ethical dilemmas of leadership, and political and social issues facing Alaska and American societies. Course includes an experiential learning component.
**Cross-listed with** PS F205.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F223X Alaska Native Music** (an, h)
3 Credits
Offered Spring
Introductory course devoted to the study of Indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles.
**Cross-listed with** ANS F223X; MUS F223X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F424 Field Artists of the North** (h)
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from explorer artists of yesteryear to today's field artists using varieties of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of field artists.
**Prerequisites:** ART F105X; a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203); COJO F131X or COJO F141X.
**Cross-listed with** ART F424.
**Stacked with** ART F624; ACNS F624.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F425 Visual Images of the North**
3 Credits
Offered As Demand Warrants
This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** ART F425.
**Stacked with** ART F625; ACNS F625.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F426 Environmental Psychology and Human Well-being** (s)
3 Credits
Offered As Demand Warrants
This course explores the effects of the environment on human behavior, health, and well-being. Critical evaluation of human interactions with nature and consideration of arctic environments are emphasized. Students will explore the unique relationships between humans and nature while examining the role of nature on health, mental health, and behavior.
**Prerequisites:** PSY F101X; WRTG F111X; WRTG F211X, WRTG F213X.
**Crosslisted with** PSY F426.
**Stacked with** PSY F626; ACNS F626.
**Special Notes:** Research Methods such as PSY F275 is recommended prior to taking this course.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F429 Geography of the Arctic and Circumpolar North** (s)
3 Credits
Offered Fall
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.
**Prerequisites:** GEOS F111X.
**Cross-listed with** GEOG F429; ACNS F429.
**Stacked with** ACNS F629; GEOG F629.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F449 Northern and Environmental Literature** (h)
3 Credits
Offered Spring Odd-numbered Years
Intensive study of particular aspects of Alaska and circumpolar writing, ecocritical theory and the literature of environmental studies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F449.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F453 Fire, Ice, and the Fate of Humanity: A History of Energy and Climate Change** (s)
3 Credits
Offered Spring
This course examines how energy regimes and climatic changes have structured the history of the world, with a focus on North America. From the Little Ice Age to the Atomic Age and the Anthropocene, energy and climate have contoured the fate of humanity.
**Crosslisted with** HIST F453; HONR F453.
**Stacked with** ACNS F653.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F466 The Russian Arctic**
3 Credits
Offered Spring Even-numbered Years
Through readings, discussion and writing this course will explore topics such as: the Russian Empire's and the Soviet Union's exploration and colonization of the Arctic, Indigenous peoples, and the ways in which the Arctic was imagined in Imperial, Soviet and post-Soviet Russian culture.
**Cross-listed with** HIST F466.
**Stacked with** ACNS F666.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F470 Oral Sources: Issues in Documentation** (h)
3 Credits
Offered Fall Even-numbered Years
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions, personal narratives, the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to deliver recordings.
**Prerequisites:** At least one undergraduate ANTH course and one undergraduate HIST course.
**Cross-listed with** ANTH F470.
**Stacked with** ANTH F670; ACNS F670.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F476 Russian Culture and Society in the 21st Century** (h)
3 Credits
Offered As Demand Warrants
Study of contemporary Russian culture and society through selected literary texts and media representations; examination of the idea of the "Russian North" and its place in Russian culture; consideration of Russian politics and current events. Students will gain knowledge about present-day Russia and its peoples from perspectives, sources and media. Russian Studies majors must complete RUSS F202 and Arctic and Northern Studies majors must complete two ACNS courses.
**Prerequisite:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; junior standing.
**Cross-listed with** RUSS F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F484 Perspectives on the North** (s)
3 Credits
Offered Fall
Explores topics of interest and concern throughout the circumpolar north, including social, historical, environmental, ethnocultural, economic, political and geographic issues in Alaska, Canada, Scandinavia and Russia. Readings represent a variety of perspectives on the topics, including Indigenous and non-Indigenous, as well as insider and outsider, geographic/national and gender.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Stacked with** ACNS F600, HIST F600.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F492 Seminar**
1-6 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ACNS F492P Seminar**
1-6 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ACNS F600 Perspectives on the North**
3 Credits
Offered Fall
Explores topics of interest and concern throughout the circumpolar north, including social, historical, environmental, ethnocultural, economic, political and geographic issues in Alaska, Canada, Scandinavia and Russia. Readings represent a variety of perspectives on the topics, including Indigenous and non-Indigenous, as well as insider and outsider, geographic/national and gender.
**Cross-listed with** HIST F600.
**Stacked with** ACNS F484.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F601 Research Methods and Sources in the North**
3 Credits
Offered Spring and Summer
Development of students' research skills so they can engage in their own research on northern issues. Includes techniques of interviewing, conducting surveys, and sampling; qualitative and quantitative methods of research design; and familiarity with library sources and archival records. Each student will develop a research project. Course is available online.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F603 Public Policy**
3 Credits
Offered As Demand Warrants
The processes of policy development, implementation and change are analyzed with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students develop expertise in specific policy area, completing oral presentations related their policy interests.
**Prerequisites:** Graduate Standing.
**Cross-listed with** PS F603.
**Stacked with** PS F403.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F604 Modern Scandinavia**
3 Credits
Offered Spring Odd-numbered Years
Examines geographical, political, economic, cultural and social forces, as well as the impact of individuals, on the transformation of Scandinavian states from autocratic monarchies to some of the most democratic and egalitarian states in the world.
**Cross-listed with** HIST F604.
**Stacked with** HIST F404.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F610 Northern Indigenous Peoples and Contemporary Issues**
3 Credits
Offered Fall Odd-numbered Years
Applications of contemporary analytical perspectives in anthropology and related fields of humanities and social sciences to examine cultural vitality, social change, and local, regional, and global processes that are affecting and being addressed by northern Indigenous societies in Russia, Alaska, Canada, Greenland, Norway, Sweden, Finland, and Japan.
**Prerequisites:** Graduate standing or upper-division standing.
**Cross-listed with** ANTH F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F611 Environmental History**
3 Credits
Offered As Demand Warrants
Discussion of significant works of environmental history. Cultural history of the landscape in world civilization with emphasis on Western Europe and North America. Discussion of interdisciplinary approaches to the history of environment and cooperative work across disciplines.
**Cross-listed with** HIST F611.
**Stacked with** HIST F411.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F613 Wilderness and Environmental Psychology**
3 Credits
Examines the relationships between people and the natural and built environments. Topics include the effects of arctic environments on physical and psychological health; preferences for different types of natural settings; the design of residential and community environments in northern climates; and the symbolism of settings and effects on political controversies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F620 Images of the North**
3 Credits
Offered Spring Even-numbered Years
Interdisciplinary approaches to the variety of images created about and by the people and environment of the circumpolar North. The course will analyze conceptualizations of the North as expressed in a number of media, employing methodologies from many disciplines. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Cross-listed with** ENGL F620.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F624 Field Artists of the North**
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from explorer artists of yesteryear to today's field artists using varieties of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of field artists.
**Prerequisites:** ART F105X; studio art course such as ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or COJO F203.
**Cross-listed with** ART F624.
**Stacked with** ART F424.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F625 Visual Images of the North**
3 Credits
Offered As Demand Warrants
This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions.
**Cross-listed with** ART F625.
**Stacked with** ART F425; ACNS F425.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F626 Environmental Psychology and Human Well-being**
3 Credits
Offered As Demand Warrants
This course explores the effects of the environment on human behavior, health, and well-being. Critical evaluation of human interactions with nature and consideration of arctic environments are emphasized. Students will explore the unique relationships between humans and nature while examining the role of nature on health, mental health, and behavior.
**Prerequisites:** PSY F101X; WRTG F111X; WRTG F211X, WRTG F213X; graduate standing.
**Crosslisted with** PSY F626.
**Stacked with** PSY F426; ACNS F426.
**Special Notes:** Research Methods such as PSY F275 is recommended prior to taking this course.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F629 Geography of the Arctic and Circumpolar North**
3 Credits
Offered Fall
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.
**Prerequisites:** Graduate standing.
**Cross-listed with** GEOG F629.
**Stacked with** ACNS F429; GEOG F429; GEOS F429.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F630 Rural and Alaska Native Psychology**
3 Credits
Offered As Demand Warrants
Introduces rural psychology, including diversity of rural communities, with emphasis on Alaska Native populations and the rural circumpolar North. Introduces rural research collaborations, health promotion, prevention and behavioral health, including cultural and contextual considerations affecting research and services, and the significance of Alaska Native values, knowledge and ways of life.
**Prerequisites:** ACNS F601 (may be taken concurrently).
**Stacked with** PSY F430.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F647 U.S. Environmental Politics**
3 Credits
Offered Spring Even-numbered Years
U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth and other topics.
**Prerequisites:** Graduate Standing.
**Cross-listed with** PS F647.
**Stacked with** PS F447.
**Special Notes:** Course is also available online.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F652 International Relations of the North**
3 Credits
Offered As Demand Warrants
This course examines the international relations of Arctic states and topics related to the circumpolar north. It covers environmental changes and their effects on human security and Indigenous lives, energy exploration and development, northern security and emerging shipping routes. It also addresses national Arctic strategies and the Arctic Council.
**Prerequisites:** Graduate standing.
**Cross-listed with** PS F652.
**Stacked with** PS F452.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F653 Fire, Ice, and the Fate of Humanity: A History of Energy and Climate Change**
3 Credits
Offered Spring
This course examines how energy regimes and climatic changes have structured the history of the world, with a focus on North America. From the Little Ice Age to the Atomic Age and the Anthropocene, energy and climate have contoured the fate of humanity.
**Stacked with** ACNS F453; HIST F453; HONR F453.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F654 International Law and the Environment**
3 Credits
Offered As Demand Warrants
This course addresses international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment; and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment.
**Prerequisites:** Graduate standing.
**Recommended:** Undergraduate course in international law, organization or politics.
**Cross-listed with** PS F654.
**Stacked with** PS F454.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F655 Political Economy of the Global Environment**
3 Credits
Offered Fall Even-numbered Years
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations and development assistance by organizations such as the World Bank.
**Prerequisites:** Graduate standing.
**Cross-listed with** PS F655.
**Stacked with** PS F455.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F656 Science, Technology and Politics**
3 Credits
Offered As Demand Warrants
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of Western science. Both historical and comparative aspects are included. Course is also available online.
**Prerequisites:** Graduate standing.
**Recommended:** PS F101X.
**Cross-listed with** PS F656.
**Stacked with** PS F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F657 Comparative Indigenous Rights and Policies**
3 Credits
Offered Spring Odd-numbered Years
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination.
**Prerequisites:** Graduate Standing.
**Cross-listed with** PS F650.
**Stacked with** ANS F450; PS F450.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F658 Comparative Environmental Politics**
3 Credits
Offered Fall Odd-numbered Years
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution capacity, political processes and organizations, and international commitments all potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online.
**Prerequisites:** Graduate standing.
**Recommended:** PS F201X.
**Cross-listed with** PS F658.
**Stacked with** PS F458.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F660 Government and Politics of Canada**
3 Credits
Offered As Demand Warrants
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations).
**Prerequisites:** Graduate standing.
**Cross-listed with** PS F660.
**Stacked with** PS F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F661 History of Alaska**
3 Credits
Offered Fall
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Act of 1980.
**Cross-listed with** HIST F662.
**Stacked with** HIST F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F662 Alaska Government and Politics**
3 Credits
Offered Spring Odd-numbered Years
This course examines Alaska's government and politics, as a case of American state and local government, and governance in the circumpolar North. It covers topics such as the state's political history, constitution, political parties, interest groups, elections, governorship, legislature, judiciary, bureaucracy and local governments.
**Prerequisites:** Graduate standing.
**Cross-listed with** PS F662.
**Stacked with** PS F462.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F663 Imperial Russia, 1700-1917**
3 Credits
Offered As Demand Warrants
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia's complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multi-national state, and the emergence of revolutionary movement.
**Prerequisites:** Graduate standing.
**Cross-listed with** HIST F663.
**Stacked with** HIST F463.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F664 Soviet and Post-Soviet Russia**
3 Credits
Offered As Demand Warrants
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social and cultural nature of the Soviet state.
**Prerequisites:** Graduate standing.
**Cross-listed with** HIST F664.
**Stacked with** HIST F464.
**Special Notes:** Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F666 The Russian Arctic**
3 Credits
Offered Spring Even-numbered Years
Through readings, discussion and writing this course will explore topics such as: the Russian Empire's and the Soviet Union's exploration and colonization of the Arctic, Indigenous peoples, and the ways in which the Arctic was imagined in Imperial, Soviet and post-Soviet Russian culture.
**Stacked with** HIST F466; ACNS F466.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F668 Government and Politics of Russia**
3 Credits
Offered As Demand Warrants
This course examines the history, politics, economics and geography of Russia, with focus on changes in Russian government, society, and domestic and foreign policy over time. Students will learn the nature of the evolving Russian regime, leadership, economic forces and the political struggles in governance and democracy.
**Prerequisites:** PS F201X; graduate standing.
**Cross-listed with** PS F668.
**Stacked with** PS F468.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F669 Arctic Politics and Governance**
3 Credits
Offered Fall
This course traces current developments in Arctic politics and governance from multiple perspectives, including exploring interests, processes, and behaviors of Arctic governments and non-state actors, individually and collectively. The course surveys the formal and informal institutions that govern resource development, pollution, shipping, state-indigenous relations and security. A background in comparative politics and/or international relations is also recommended.
**Prerequisites:** PS F450, PS F452 or PS F454; graduate standing.
**Cross-listed with** PS F669.
**Stacked with** PS F469.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F670 Oral Sources: Issues in Documentation**
3 Credits
Offered Fall Even-numbered Years
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions, personal narratives, the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to deliver recordings.
**Prerequisites:** At least one undergraduate ANTH course and one undergraduate HIST course.
**Cross-listed with** ANTH F670.
**Stacked with** ANTH F470; ACNS F470.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F672 Culture and History in the North Atlantic**
3 Credits
Offered Spring Odd-numbered Years
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F672.
**Stacked with** ANTH F472.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F675 Historiography Capstone** (s)
3 Credits
Offered Fall
Seminar discussions and lectures introduce philosophical approaches to history. Examines various methodological approaches to historical inquiry. Includes the nature of historical evidence, questioning of the role of truth and objectivity in history, an examination of the role of the historian in interpreting historical evidence, and different interpretations of historical events and actions. Designed for history majors and minors, and graduate students seeking to conduct historical research.
**Prerequisites:** Graduate standing.
**Stacked with** HIST F475.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F681 Polar Exploration and Its Literature**
3 Credits
Offered Spring Even-numbered Years
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort.
**Prerequisites:** Graduate standing.
**Cross-listed with** HIST F681.
**Stacked with** HIST F481.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F683 20th-century Circumpolar History**
3 Credits
Offered As Demand Warrants
A comparative history of the circumpolar North, including Alaska, Siberia, Scandinavia, Greenland and Canada. Focus on social, economic, political and environmental issues of the 20th century, such as exploration, aboriginal land claims, subsistence, military strategy, transportation, oil development, Arctic haze and scientific research in the Arctic.
**Prerequisites:** Graduate standing.
**Cross-listed with** HIST F683.
**Stacked with** HIST F483.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F685 Interdisciplinary Ph.D. Seminar**
1 Credit
Offered Fall and Spring
Seminar provides guidance to INDS Ph.D. students, creating a cohort experience as they explore various approaches to interdisciplinary research. Seminar sessions will alternate among guidance offered by the instructor, guest lectures by researchers and other experts, student presentations of their research, and less-formal student sharing of academic experiences.
**Lecture + Lab + Other:** 1 + 0 + 0

**ACNS F689 Thesis Writing Workshop**
3 Credits
Offered Fall
This course provides an opportunity for graduate students to develop their research, writing, and communication skills in a workshop context. Throughout the course, students will read academic work and submit their own academic work related to their thesis or dissertation that has been re-drafted and re-submitted multiple times.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ACNS F690 Researching and Writing Northern History**
3 Credits
Offered Spring Odd-numbered Years
Exploration of the craft and methodology of historical research in the North. Course may be repeated for credit when content varies.
**Prerequisites:** Graduate standing.
**Stacked with** HIST F490.
**Lecture + Lab + Other:** 1 + 3 + 0

**ACNS F692 Seminar**
3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ACNS F698 Non-thesis Research/Project**
1-12 Credits
Fall and Spring and Summer
**Lecture + Lab + Other:** 0 + 0 + 0

**ACNS F699 Thesis**
1-12 Credits
Offered Fall and Spring and Summer
**Lecture + Lab + Other:** 0 + 0 + 0

# Arctic Skills (ARSK)

**Community & Technical College**
Arctic Skills (https://www.ctc.uaf.edu/programs/ems-paramedicine/)
907-455-2800

**ARSK F147A Arctic Survival**
1-2 Credits
Offered As Demand Warrants
Focus on preparation and development of knowledge and skills to cope effectively with difficulties and dangers travelers are frequently exposed to in arctic climates. Topics include appropriate survival kits, clothing options, nutrition and hydration needs, shelter construction, signal development, cold weather injuries and safety issues related to modes of transportation.
**Special Notes:** Recommended College level reading skills.
**Lecture + Lab + Other:** 1-2 + 0 + 0

**ARSK F147B Arctic Survival**
1-2 Credits
Offered As Demand Warrants
Focus on preparation and development of knowledge and skills to cope effectively with difficulties and dangers travelers are frequently exposed to in arctic climates. Topics include appropriate survival kits, clothing options, nutrition and hydration needs, shelter construction, signal development, cold weather injuries and safety issues related to modes of transportation.
**Special Notes:** Recommended College level reading skills.
**Lecture + Lab + Other:** 1-2 + 0 + 0

**ARSK F170 EMT: Emergency Medical Technician I**
6 Credits
Offered As Demand Warrants
Basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels.
**Cross-listed with** EMS F170.
**Lecture + Lab + Other:** 4 + 4 + 0

# Art (ART)

**College of Liberal Arts**
Art Department (https://www.uaf.edu/art/)
907-474-7530

**ART F105X Beginning Drawing** (h)
3 Credits
Offered Fall, Spring and Summer
This is an introductory class that introduces students to fundamental drawing concepts, materials, techniques, vocabulary, functions, and range of visual aesthetics. No prior experience with drawing is required or expected.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F127 Introduction to Weaving** (h)
3 Credits
Offered Fall and Spring
Fundamentals of weaving taught through basic techniques and processes for four-shaft loom woven structures. Includes loom terminology and function, warping and threading, basic pattern drafting and designing, color and texture. Introduces tapestry techniques.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F161 Two-dimensional Digital Design** (h)
3 Credits
Offered Fall and Spring
This course provides an introduction to design principles and digital skills necessary for fine arts students. The course covers fundamentals of visual design, drawing, and painting techniques on computer. Special fees apply.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F162 Color and Design** (h)
3 Credits
Offered Fall and Spring
Fundamentals of pictorial form, color principles and interactions. Emphasis on traditional art media rendered two dimensionally on paper. This course is recommended for students becoming B.A., B.F.A. Drawing, Painting, and Printmaking majors.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F163 Three-dimensional Design** (h)
3 Credits
Offered Fall and Spring
This hands-on course introduces fundamental concepts and organization of three-dimensional forms, including applied art and industrial design. Various materials such as wire, clay, silicone, and paper are explored. This course is recommended for students becoming B.A. or B.F.A. Art majors and students interested in exploring material manufacturing processes.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F200X Explorations in Art** (h)
3 Credits
Offered Fall, Spring and Summer
Understanding and appreciation of art through exploration of its diverse styles, influences and developments. Topics include the creative process, artistic forms of expression, historical and cultural contexts, the role of the artist in society and popular movements and trends.
**Prerequisites:** Placement in WRTG F111X; sophomore standing.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F201 Beginning Ceramics** (h)
3 Credits
Offered Fall, Spring and Summer
Foundation experience with clay. Overview of the medium of ceramics and its possibilities.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F205 Intermediate Drawing** (h)
3 Credits
Offered Fall and Spring
Exploration of pictorial composition and creative interpretation of subjects.
**Prerequisites:** ART F105X.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F207 Beginning Printmaking** (h)
3 Credits
Offered Fall and Spring
Concepts and techniques of printmaking. Subject areas taken from relief, intaglio, serigraphy and lithography.
**Prerequisites:** ART F105X; ART F161, ART F162, ART F163.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F209 Beginning Metalsmithing and Jewelry** (h)
3 Credits
Offered Fall, Spring and Summer
Basic techniques of fine metalsmithing and jewelry.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F211 Beginning Sculpture** (h)
3 Credits
Offered Fall and Spring
Basic sculpture techniques and principles.
**Prerequisites:** ART F105X; ART F161, ART F162, ART F163.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F213 Beginning Painting** (h)
3 Credits
Offered Fall and Spring
This course will address painting techniques in a variety of mediums. Emphasis will be placed on composition, painting materials and hazardous waste procedures. The techniques covered in this course will prepare students for future study in upper division courses and help them develop a professional portfolio of work.
**Prerequisites:** ART F105X; ART F161, ART F162, ART F163.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F223 Watercolor Painting** (h)
3 Credits
Offered As Demand Warrants
Painting in various transparent and opaque media (watercolor, tempera, polymer, casein). Emphasis on techniques and subjects.
**Prerequisites:** ART F105X; ART F161, ART F162, ART F163.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F227 Woven Fabric Design** (h)
3 Credits
Offered Fall and Spring
Continuation of ART F127. Exploration of color and texture in loom structures. Includes basic fiber technology and color theory. Topics vary each semester and include blocks, units, laces, twills and R.A.G.S. recycle. Course may be repeated for credit when topic changes.
**Prerequisites:** ART F127.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F231 Previsualization and Preproduction** (h)
3 Credits
Offered Fall
Previsualization is a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment. It enables filmmakers to visually explore creative ideas, plan technical solutions and communicate a shared vision for efficient production, laying a foundation for cinema production.
**Cross-listed with** FLPA F231.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F233 Beginning Field Painting** (h)
1 Credit
Offered As Demand Warrants
This introductory course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.
**Recommended:** ART F105X; ART F213.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**ART F240 Beginning Molding and Casting Iron for Sculpture and Design** (h)
1 Credit
Offered Summer
This course will present the student with an individualized level of self-expression, style, and the mastery of the fundamental techniques involved in creating molds for sculptural application. The students are introduced to hot and cold casting methods for use in multimedia projects and traditional iron designs.
**Prerequisites:** ART F163.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**ART F261X History of World Art I** (h)
3 Credits
Offered Fall
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261X - ART F262X may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F262X History of World Art II** (h)
3 Credits
Offered Spring
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261X - ART F262X may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F268 Alaska Native Art Studio I** (an, h)
3 Credits
Offered Fall and Spring
Studio art course exploring the practice of traditional and contemporary Alaska Native art forms; including design, technology, and cultural expression. Rooted in experiential learning, students will learn by creating and utilizing tools specific to Alaska Native cultures. A strong emphasis will be placed on gaining technical skills and traditional knowledge.
**Cross-listed with** ANS F268.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F271 Beginning Computer Art** (h)
3 Credits
Offered Fall
Basic techniques of computer art. The course covers basic animation, motion graphics, digital painting and digital design.
**Prerequisites:** ART F161.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F283 Basic Darkroom Photography** (h)
3 Credits
Offered Fall and Spring
Photography fundamentals, including use of an adjustable camera, film and exposure techniques, filters and flash techniques. Darkroom procedures including black and white film processing and printing, photograph design and composition. Students must have use of an adjustable camera.
**Cross-listed with** COJO F203.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F284 Basic Digital Photography** (h)
3 Credits
Offered Fall, Spring and Summer
Introduction of technical and aesthetic aspects of basic digital photography using digital SLR cameras and editing photos through Adobe Photoshop suites. Students are expected to have intermediate computer knowledge. Topics include controlling digital SLRs on manual settings, photographing creatively, basic and advanced editing techniques, negative scanning and digital printing.
**Cross-listed with** COJO F204.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F301 Intermediate Ceramics** (h)
3 Credits
Offered Fall, Spring and Summer
Continuation of beginning ceramics. Emphasis on developing proficiency in ceramic studio practices and processes.
**Prerequisites:** ART F201.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F305 Advanced Drawing** (h)
3 Credits
Offered Fall and Spring
Development and refinement of individual problems in drawing. Can be repeated for credit with permission of instructor.
**Prerequisites:** ART F205.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F307 Intermediate Printmaking** (h)
3 Credits
Offered Fall, Spring and Summer
Continuation of ART F207 with emphasis on refinement of technique and color printing.
**Prerequisites:** ART F207.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F309 Intermediate Metalsmithing and Jewelry** (h)
3 Credits
Offered Fall, Spring and Summer
Further investigation of material processes and techniques; some emphasis on design.
**Prerequisites:** ART F209.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F311 Intermediate Sculpture** (h)
3 Credits
Offered Fall, Spring and Summer
Exploration in materials and concepts of sculpture. Emphasis on personal creativity and skill development.
**Prerequisites:** ART F211.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F313 Intermediate Painting** (h)
3 Credits
Offered Fall, Spring and Summer
Continued development of expressive skills in painting in any media. Emphasis on pictorial and conceptual problems.
**Prerequisites:** ART F213; COJO F131X, COJO F141X.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F333 Intermediate Field Painting** (h)
1 Credit
Offered As Demand Warrants
This intermediate course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.
**Prerequisites:** ART F213, ART F233.
**Recommended:** ART F105X; ART F205.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**ART F347 Lighting Design** (h)
3 Credits
Offered As Demand Warrants
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained. Student will spend approximately $40 for materials for this class.
**Prerequisites:** COJO F131X, COJO F141X.
**Recommended:** FLPA F241.
**Cross-listed with** FLPA F347.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F360 Indigenous Art and Culture** (h)
3 Credits
Offered As Demand Warrants
Examination of art as a medium of cultural criticism, knowledge, wisdom, learning, and expression of social, spiritual, ecological, and aesthetic relationships in Indigenous societies of North, Central and South America, Africa, Eurasia, Australia and Oceania, and the Arctic.
**Cross-listed with** ANTH F360.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F363 History of Modern Art** (h)
3 Credits
Offered Spring Odd-numbered Years
Development of modern art forms and theories in the visual arts from the late 19th century to the present. Concentration on the artistic pluralism of 20th century art forms: Cubism, Futurism, Surrealism, Expressionism, Constructivism, Nonobjective Art, Abstract Expressionism, Pop Art, Realism and many other "isms."
**Prerequisites:** ART F262X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F364 Italian Renaissance Art** (h)
3 Credits
Offered Spring Even-numbered Years
Development of the Renaissance from early Florentine to the High Renaissance of Venice. Study of art by Massacio, Michelangelo, DaVinci, Titian, etc.
**Prerequisites:** ART F261X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F365 Alaska Native Art History** (an, h)
3 Credits
Offered Fall
The material culture of Alaska Native people from pre-colonial times to the present. Students will explore the effects of colonialism on the art forms of different Alaska Native cultural groups. Students will have an opportunity to contribute to the ongoing histories of Alaska Native art through group research projects.
**Prerequisites:** Sophomore standing or higher.
**Cross-listed with** ANS F365; ANTH F365.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F366 Northwest Coast Indian Art** (h)
3 Credits
Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture.
**Cross-listed with** ANS F366; ANTH F366.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F367 Inuit Art** (an, h, s)
3 Credits
Offered Fall
Indigenous art from Northern Alaska, Canada, Greenland and the Bering Strait region of Russia, from the earliest known to contemporary.
**Cross-listed with** ANS F367; ANTH F367.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F368 Alaska Native Art Studio II** (an, h)
3 Credits
Offered Fall and Spring
This course is a continuing exploration of the designs, technologies, and meanings of the diverse Alaska Native arts. Through the creative process students will start examining the complex issues of creating art within a cultural context. A strong emphasis will be placed on developing a student individual style.
**Prerequisites:** ANS F268, ART F268.
**Cross-listed with** ANS F368.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F371 Digital Imaging** (h)
3 Credits
Offered As Demand Warrants
This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills and knowledge useful for digital photography, digital video compositing and digital painting will be covered.
**Prerequisites:** ART F161, ART F271, ART F284, COJO F204, FLPA F260, COJO F290.
**Cross-listed with** COJO F371; FLPA F371.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F401 Advanced Ceramics** (h)
3 Credits
Offered Fall, Spring and Summer
Emphasis on developing as aesthetically perceptive and technically proficient ceramic artist. Individual and group projects include kiln firings. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F301.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F402 Anthropology of Art** (s)
3 Credits
Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.
**Prerequisites:** Senior standing.
**Cross-listed with** ANTH F402.
**Stacked with** ANTH F602, ART F602.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F407 Advanced Printmaking** (h)
3 Credits
Offered Fall and Spring
Individual development of technical and creative processes. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F307; COJO F131X, COJO F141X.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F409 Advanced Metalsmithing and Jewelry** (h)
3 Credits
Offered Fall, Spring and Summer
Materials and processes; introduction to holloware skills and forging. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F309.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F411 Advanced Sculpture** (h)
3 Credits
Offered Fall and Spring
Principles, practices and concepts of sculpture. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F311.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F412 Portrait Photography**
3 Credits
Offered As Demand Warrants
This course will teach the student who has basic or advanced exposure and printing skills to further their understanding of the principles and techniques of portrait photography. Students will work with SLR or DSLR cameras and editing through a digital photo suite such as Adobe Photoshop. Students will learn to perfect their exposures and portrait skills, work with models, and handle studio strobes and equipment using traditional and digital media. Assignments will focus on both technical and aesthetic concerns. In-class critiques will provide feedback on students' work and weekly slide shows will provide insight on historical and contemporary portrait photographers.
**Prerequisites:** COJO F203/ART F283, COJO F204/ART F284.
**Cross-listed with** COJO F412.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F413 Advanced Painting** (h)
3 Credits
Offered Fall and Spring
Individual experimentation and technical/conceptual development in painting. Can be repeated for credit with permission of instructor.
**Prerequisites:** ART F313; COJO F131X, COJO F141X.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F417 Lithography** (h)
3 Credits
Offered As Demand Warrants
An exploration of stone and metal plate lithography. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F105X; ART F207.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F419 Life Drawing** (h)
3 Credits
Offered As Demand Warrants
Drawing from life; study of artistic anatomy. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F305.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F424 Field Artists of the North** (h)
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from explorer artists of yesteryear to today's field artists using varieties of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of field artists.
**Prerequisites:** ART F105X; a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213, COJO F203); COJO F131X, COJO F141X.
**Cross-listed with** ACNS F424.
**Stacked with** ART F624; ACNS F624.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F425 Visual Images of the North**
3 Credits
Offered As Demand Warrants
This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Cross-listed with** ACNS F425.
**Stacked with** ART F625; ACNS F625.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F427 Relief** (h)
3 Credits
Offered As Demand Warrants
Woodcut and monotype with emphasis on color. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F105X; ART F207; ART F213.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F433 Advanced Field Painting** (h)
1 Credit
Offered As Demand Warrants
This advanced course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.
**Prerequisites:** ART F313, ART F333.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**ART F437 Intaglio** (h)
3 Credits
Offered As Demand Warrants
Intaglio printmaking with emphasis on experimentation and color photo intaglio printing. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F105X; ART F162; ART F207.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F440 Advanced Molding and Casting Iron for Sculpture and Design** (h)
1 Credit
Offered Summer
This course will present the student with an individualized level of self-expression, style, and the mastery of the different techniques involved in creating molds for sculptural application. The students are continuing to develop hot and cold casting skills for use in multimedia projects and traditional iron designs.
**Prerequisites:** ART F211.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**ART F447 Silkscreen** (h)
3 Credits
Offered As Demand Warrants
Silkscreen printing with photo process. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F105X; ART F162; ART F207.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F453 Kiln Design and Construction** (h)
3 Credits
Offered As Demand Warrants
Kiln design and construction including building and firing a kiln. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F201.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F456 Ceramic Materials**
3 Credits
Offered Fall Even-numbered Years
A thorough understanding of the materials used to make clay bodies and glazes is an essential tool for the ceramic artist. Through lectures, readings and lab work the student will better understand how different materials work together and how to safely utilize these materials in their own artistic practice.
**Stacked with** ART F656.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F458 Elementary Internship**
3-15 Credits
Supervised teaching in elementary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on the number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Post-baccalaureate students must be admitted to the Art K-12 licensure program. Passing Praxis I scores.
**Prerequisites:** COJO F131X, COJO F141X; successful completion of methods practicum and methods course-work with a C or better.
**Cross-listed with** ED F452.
**Lecture + Lab + Other:** 1 + 0 + 42

**ART F460 Cross-cultural Filmmaking** (h)
3 Credits
Offered As Demand Warrants
Explore filmmaking through cultural knowledge, decolonized methodologies, and documentary filmmaking techniques to create content reflective of cultural and/or scientific knowledge. Develop film work with a theoretical base for cultural understanding, scientific communications, and educational potentials. Basic pre-production, production, and post-production processes will be explored within a multi-cultural communications framework.
**Prerequisites:** Junior, senior or graduate standing.
**Cross-listed with** ANTH F460; FLPA F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F463 Seminar in Art History** (h)
3 Credits
Offered Fall Odd-numbered Years
A forum for discussion of a particular historical period or art historical idea. Topics vary each semester and will not be repeated during a two-year period. Topics include art since 1945, women in twentieth-century art, the American landscape tradition, etc.
**Stacked with** ART F663.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F464 History of Photography** (h)
3 Credits
Offered As Demand Warrants
This course will provide an exploration of the history, impact and development of the photographic process, spanning from the earliest observations of optics, through the development of the first permanent image, and all the way to the most recent advances in digital technology.
**Prerequisites:** WRTG F111X.
**Cross-listed with** COJO F464.
**Stacked with** ART F664, COJO F664.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F465 Advanced Photography Seminar**
3 Credits
Offered Spring
Advanced discussion of photojournalism and photographic topics with field, studio and darkroom sessions. Topics will range from the photographic essay to the history of photography and working in series. Weekly classroom meetings will be supplemented by field, studio and darkroom sessions.
**Prerequisites:** COJO F203, ART F283, COJO F204, ART F284.
**Cross-listed with** COJO F405.
**Stacked with** COJO F605, ART F665.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F467 Photoprocess Printmaking** (h)
3 Credits
Offered As Demand Warrants
Production of etchings, lithographs and silkscreen prints using photo mechanical processes. Elements of electrophotography and desktop publishing explored. May be repeated for credit with permission of instructor.
**Prerequisites:** ART F105X; ART F207; ART F262X.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F468 Alaska Native Art Studio III** (an, h)
3 Credits
Offered Fall and Spring
Students will refine their artistic practice guided with in-depth mentorship from faculty. Through individualized study, students will continue their exploration and development of their artwork within a cultural context. Strong emphasis will be placed on the individual development of a body of artwork inspired by the cultures they draw from.
**Prerequisites:** ART F368.
**Cross-listed with** ANS F468.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F469 Architecture: Art, Design, Technology and Social Impact** (h)
3 Credits
Offered Fall Even-numbered Years
Concepts of environmental, urban and industrial design. Relationship of human and natural environment is stressed in this history of architecture with special attention given to contemporary conditions in urban areas and effects of industrialization and mechanization on human living and working spaces, artistic design and aesthetics.
**Prerequisites:** ART F261X; ART F262X, HUM F201X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F470 Handmade Photographs**
3 Credits
Offered Spring Odd-numbered Years
This course will introduce students to a wide array of historical photographic techniques and alternative processes while also providing contextual historical and contemporary information about each process. Processes covered include: Pinhole Camera Construction, Lumen Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen and various transfer methods.
**Cross-listed with** COJO F470.
**Stacked with** ART F670, COJO F670.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F471 Advanced Digital Design** (h)
3 Credits
Offered Spring
Project-oriented class in graphic design with applications from journalism to fine and commercial art. Students will be expected to have a background in programs likely to include web design, digital photography and graphic design. May be repeated for credit with permission of instructor.
**Prerequisites:** COJO F131X, COJO F141X; COJO F250; ART F371, COJO F371; one college level studio art course.
**Cross-listed with** COJO F471.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F472 3D Animation** (h)
3 Credits
Offered Fall
Concept and technique of 3D computer generated animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals.
**Prerequisites:** ART F231, FLPA F231, ART F271; COJO F131X, COJO F141X.
**Cross-listed with** FLPA F472; COJO F472.
**Special Notes:** May be repeated for credit.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F474 History of the Role of the Artist** (h)
3 Credits
Offered Spring Even-numbered Years
Survey of theory and practices of professional training and education of the artist in relationship to political, social and philosophical conditions.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Recommended:** ART F261X; ART F262X.
**Stacked with** ART F673.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F475 Digital Video Compositing** (h)
3 Credits
Offered As Demand Warrants
Digital compositing techniques for creating moving imagery. The course covers video manipulation, layering images, synthesizing realistic video imagery, integration of live action and computer generated animation. Course can be repeated for a total of nine credits with permission of instructor.
**Prerequisites:** ART F472, COJO F472, FLPA F472.
**Cross-listed with** FLPA F475.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F476 Advanced Digital Photography Portfolio** (h)
3 Credits
Offered Fall, Spring and Summer
This class provides students with the concept of producing a professional digital portfolio of their Commercial and/or Art Photography and/or Photojournalism. Students submit new images each week for editing and critique. Over the semester three smaller bodies of work will become a 20-24 image professional portfolio.
**Prerequisites:** COJO F204, ART F284.
**Cross-listed with** COJO F476.
**Stacked with** ART F676, COJO F676.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F483 Advanced Photography** (h)
3 Credits
Offered Spring
Continuation of COJO F203/ART F283. Emphasis on continuing development of photographic skills by application of basic technical skills to a variety of areas of photography.
**Prerequisites:** COJO F203, ART F283.
**Cross-listed with** COJO F402.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F484 Multimedia Theory and Practice** (h)
3 Credits
Offered As Demand Warrants
Study of techniques needed to produce multimedia for a special university or community agency project. For the purpose of this course multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. plus some mastery of a specialty in writing, art, or television production.
**Prerequisites:** Understanding of computer graphics programs like Illustrator, Freehand, etc.
**Cross-listed with** COJO F484.
**Stacked with** ART F684; COJO F684.
**Lecture + Lab + Other:** 3 + 3 + 0

**ART F487 Digital Darkroom**
3 Credits
Offered Fall
Students will develop advanced photo editing and digital darkroom skills and create quality prints through Photoshop, Lightroom, and other image techniques.
**Prerequisite:** COJO F204, ART F284.
**Cross-listed with** COJO F407.
**Stacked with** COJO F607, ART F687.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F488 Professional Practices for Visual Artists**
3 Credits
Offered Fall and Spring
This class provides a foundation of practical information for students as they begin to consider various career options in the visual arts. Topics include documentation, websites, promotion and description, exhibit installation methods, marketing, developing application materials for residencies and grants, as well as issues of health and safety.
**Prerequisites:** Junior standing.
**Stacked with** ART F688.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F489 Bachelor of Arts Capstone** (h)
0 Credit
This capstone course is the culmination of a student's general studies in the visual arts. This course will give students hands-on experience in preparing an art exhibition, resume, artist's statement and portfolio.
**Prerequisites:** Admittance to the art program, senior standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F490 Current Problems**
3 Credits
Offered Fall Even-numbered Years
A forum for discussion of aesthetic and professional problems confronted by artists. Instructor and students moderate discussion and students investigate topics. Past semesters included: approaches to figuration of contemporary painting and sculpture, health hazards for the professional artist, portfolio development, gallery access, production far from major cultural centers, etc.
**Stacked with** ART F690.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F491 Fine Art Seminar** (h)
1 Credit
Offered Fall and Spring
This course is a studio critique for BFA and MFA students. The course is structured as a hybrid seminar/critique, with weekly readings, discussions, and studio critique sessions. The course also includes writing assignments as an integrated element of contemporary studio practice preparing students for their solo exhibition.
**Prerequisites:** Acceptance into the BFA program.
**Stacked with** ART F691.
**Lecture + Lab + Other:** 1 + 0 + 0

**ART F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**ART F498 Undergraduate Research**
1-3 Credits
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ART F499 Thesis Project**
1-3 Credits
Directed work toward individual exhibition; completed outside regularly scheduled classes. Required for B.F.A. candidates.
**Prerequisites:** Senior standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F601 Ceramics**
1-6 Credits
Offered Fall and Spring
Exploration of selected topics in ceramics with lectures, demonstrations, independent research and production of ceramics at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F602 Anthropology of Art**
3 Credits
Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role.
**Prerequisites:** Senior standing.
**Cross-listed with** ANTH F602.
**Stacked with** ART F402, ANTH F402.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F603 Graduate Photography**
2-6 Credits
Offered As Demand Warrants
Exploration of selected topics in photography, with lectures, demonstrations, independent research and production of photography at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 2-8 + 0

**ART F605 Drawing**
1-6 Credits
Offered Fall and Spring
Exploration of topic in general drawing with lectures, demonstrations and independent research and production of drawing at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** ART F305; and graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F607 Printmaking**
1-6 Credits
Offered Fall and Spring
Exploration of selected topics in printmaking with lectures, demonstrations, independent research and production of printmaking at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F609 Metalsmithing**
1-6 Credits
Offered As Demand Warrants
Exploration of selected topics in metalcraft with lectures, demonstrations, independent research and production of metalcraft at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F611 Sculpture**
1-6 Credits
Offered Fall and Spring
Exploration of selected topics in sculpture with lectures, demonstrations, independent research and production of sculpture at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F613 Painting**
1-6 Credits
Offered Fall and Spring
Exploration of selected topics in painting with lectures, demonstrations, independent research and production of painting at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F619 Life Drawing**
1-6 Credits
Offered As Demand Warrants
Exploration of selected topics in drawing with lectures, demonstrations, independent research and production of drawing at a level commensurate with graduate standing. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F624 Field Artists of the North**
3 Credits
Offered As Demand Warrants
Study of field artists and their work, from explorer artists of yesteryear to today's field artists using varieties of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of field artists.
**Prerequisites:** ART F105X and a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213, COJO F203); COJO F131X, COJO F141X.
**Cross-listed with** ACNS F424.
**Stacked with** ART F424; ACNS F624.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F625 Visual Images of the North**
3 Credits
Offered As Demand Warrants
This course examines the images of the peoples and landscapes of the Circumpolar North. It centers on documentary and artistic goals, translations from original sketches to published images, the relationship between Arctic imagery and prevailing historical styles, and the influences of changing worldviews on modes of Northern representation and expressions.
**Cross-listed with** ACNS F625.
**Stacked with** ACNS F425; ART F425.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F633 Graduate Field Painting** (h)
1 Credit
Offered As Demand Warrants
This graduate course combines painting at outdoor locations with supporting lectures and indoor studios. Students will use drawings and small painted studies to produce finished oil/acrylic paintings. Concepts of space, light, color, composition, scale and elements of landscape paintings such as reflections, aerial and linear perspective will be addressed.
**Prerequisites:** ART F413; ART F433.
**Lecture + Lab + Other:** 6 + 21 + 0

**ART F656 Ceramic Materials**
3 Credits
Offered Fall Even-numbered Years
A thorough understanding of the materials used to make clay bodies and glazes is an essential tool for the ceramic artist. Through lectures, readings and lab work the student will better understand how different materials work together and how to safely utilize these materials in their own artistic practice.
**Stacked with** ART F456.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F661 Mentored Teaching in Art**
1 Credit
Offered Spring and Summer
Mentored teaching provides consistent contact of course-related issues between teaching assistants and mentoring faculty. Graduates are required to be enrolled in a mentored teaching section while teaching.
**Prerequisites:** Graduate standing.
**Special Notes:** May be repeated for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**ART F663 Seminar in Art History**
3 Credits
Offered Fall Odd-numbered Years
A forum for discussion of a particular historical period or art historical idea. Topics vary each semester and will not be repeated during a two-year period. Topics include art since 1945, women in twentieth-century art, the American landscape tradition, etc.
**Prerequisites:** Graduate standing.
**Stacked with** ART F463.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F664 History of Photography** (h)
3 Credits
Offered As Demand Warrants
This course will provide an exploration of the history, impact and development of the photographic process, spanning from the earliest observations of optics, through the development of the first permanent image, and all the way to the most recent advances in digital technology.
**Prerequisites:** Graduate standing.
**Cross-listed with** COJO F664.
**Stacked with** ART F464; COJO F464.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F665 Advanced Photography Seminar**
3 Credits
Offered Spring
Advanced discussion of photojournalism and photographic topics with field, studio and darkroom sessions. Topics will range from the photographic essay to the history of photography and working in series. Weekly classroom meetings will be supplemented by field, studio and darkroom sessions.
**Prerequisites:** COJO F203, ART F283, COJO F204, ART F284.
**Cross-listed with** COJO F605.
**Stacked with** COJO F405; ART F465.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F668 Alaska Native Art Studio**
1-6 Credits
Offered Fall and Spring
Through individualized study, students will refine their artistic practice guided with in-depth mentorship from faculty. Through the creative process and deep critical feedback, students will learn to define how their artwork is connected to the cultures they draw upon. Students will develop critical dialogue along with their studio practice.
**Prerequisites:** graduate standing.
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F670 Handmade Photographs**
3 Credits
Offered Spring Odd-numbered Years
This course will introduce students to a wide array of historical photographic techniques and alternative processes while also providing contextual historical and contemporary information about each process. Processes covered include: Pinhole Camera Construction, Lumen Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen and various transfer methods.
**Cross-listed with** COJO F670.
**Stacked with** ART F470, COJO F470.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F671 Two- and Three-dimensional Computer Design**
1-6 Credits
Offered As Demand Warrants
Visualization and animation with applications to two- and three-dimensional computer design and typography. Emphasis on visual design for electronic and print publication. Includes animation of the components of 3-D models. May be repeated for credit.
**Prerequisites:** ART F471; graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F672 Advanced Computer Visualization in Art**
1-6 Credits
Offered As Demand Warrants
Computer visualization in art with production and reproduction of projects chosen from a wide range of topics. Includes lectures, demonstrations and laboratory experience. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F673 History of the Role of the Artist**
3 Credits
Offered Spring Even-numbered Years
Survey of theory and practices of professional training and education of the artist in relationship to political, social and philosophical conditions.
**Prerequisites:** Graduate standing.
**Stacked with** ART F474.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F676 Advanced Digital Photography Portfolio** (h)
3 Credits
Offered Fall, Spring and Summer
This class provides students with the concept of producing a professional digital portfolio of their Commercial and/or Art Photography and/or Photojournalism. Students submit new images each week for editing and critique. Over the semester three smaller bodies of work will become a 20-24 image professional portfolio.
**Cross-listed with** COJO F676.
**Stacked with** ART F476, COJO F476.
**Lecture + Lab + Other:** 2 + 3 + 0

**ART F684 Multimedia Theory and Practice**
3 Credits
Offered As Demand Warrants
Study of techniques needed to produce multimedia for a special university or community agency project. For the purpose of this course multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. plus some mastery of a specialty in writing, art, or television production.
**Prerequisites:** Understanding of computer graphics programs like Illustrator, Freehand, etc.
**Cross-listed with** COJO F684.
**Stacked with** ART F484; COJO F484.
**Lecture + Lab + Other:** 3 + 3 + 0

**ART F687 Digital Darkroom**
3 Credits
Offered Fall
Students will develop advanced photo editing and digital darkroom skills and create quality prints through Photoshop, Lightroom, and other image techniques.
**Prerequisite:** COJO F204, ART F284.
**Cross-listed with** COJO F607.
**Stacked with** ART F487, COJO F407.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F688 Professional Practices for Visual Artists**
3 Credits
Offered Fall and Spring
This class provides a foundation of practical information for students as they begin to consider various career options in the visual arts. Topics include documentation, websites, promotion and description, exhibit installation methods, marketing, developing application materials for residencies and grants, as well as issues of health and safety.
**Prerequisites:** Graduate standing.
**Stacked with** ART F488.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F690 Current Problems**
3 Credits
Offered Fall Even-numbered Years
A forum for discussion of aesthetic and professional problems confronted by artists. Instructor and students moderate discussion and students investigate topics. Past semesters included: approaches to figuration of contemporary painting and sculpture, health hazards for the professional artist, portfolio development, gallery access, production far from major cultural centers, etc.
**Prerequisites:** Graduate standing.
**Stacked with** ART F490.
**Lecture + Lab + Other:** 3 + 0 + 0

**ART F691 Fine Art Seminar** (h)
1 Credit
Offered Fall and Spring
This course is a studio critique for BFA and MFA students. The course is structured as a hybrid seminar/critique, with weekly readings, discussions, and studio critique sessions. The course also includes writing assignments as an integrated element of contemporary studio practice preparing students for their solo exhibition.
**Prerequisites:** Acceptance into the BFA program.
**Stacked with** ART F491.
**Lecture + Lab + Other:** 1 + 0 + 0

**ART F692 MFA Seminar**
3 Credits
**Lecture + Lab + Other:** 1 + 4 + 0

**ART F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**ART F699 M.F.A. Thesis Project**
1-9 Credits
**Lecture + Lab + Other:** 1 + 4 + 0

# Atmospheric Sciences (ATM)

**College of Natural Science and Mathematics**
Department of Atmospheric Sciences (https://www.uaf.edu/atmos/)
907-474-7368

**ATM F101X Weather and Climate of Alaska** (n)
4 Credits
Offered Spring
Focus on the atmosphere as an important part of our environment. Study of weather and climate that covers weather observation, composition and properties of the atmosphere, weather and circulation systems, forecasting weather based on fundamental laws of physics and chemistry. Students are required to make weather observations in Alaska. The students will use their local observations as a foundation and a vantage point to understand the regional and global behavior of the atmosphere (i.e., "Observe locally and connect globally").
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**ATM F401 Introduction to Atmospheric Sciences**
3 Credits
Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering.
**Prerequisites:** CHEM F105X; CHEM F106X; MATH F302; PHYS F212X.
**Stacked with** ATM F601; CHEM F601.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F413 Atmospheric Radiation**
3 Credits
Offered Fall Odd-numbered Years
Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology.
**Prerequisites:** ATM F401 (may be taken concurrently).
**Cross-listed with** PHYS F413.
**Stacked with** ATM F613; PHYS F613.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F415 Cloud Physics**
3 Credits
Offered Spring Even-numbered Years
Basic properties of condensed water vapor in the atmosphere. Formation and behavior of clouds including atmospheric aerosols, nucleation and growth of water droplets and ice crystals, the development of precipitation, nature of mixed-phase (water and ice) clouds, radiative transfer and experiments using AFARS Lidar, Microwave Radiometer and Satellite Remote sensing.
**Prerequisites:** ATM F401 (may be taken concurrently).
**Stacked with** ATM F615.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F425 Physical Hydrometeorology**
3 Credits
Offered As Demand Warrants
Explores hydrometeorological processes, presents how to apply analysis techniques/skills to solve fundamental hydrometeorological questions (e.g. fire weather forecasting, drought forecasting, water resource management, flood forecasting). Subjects covered are hydrographs, radar images, meteograms, lysimeter, near-surface meteorology, surface energy and water budgets, stream response, groundwater, drought-indices, observational errors.
**Prerequisites:** ATM F401.
**Stacked with** ATM F625.
**Special Notes:** Recommended 400-level Physics, Calculus I to III.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F433 Atmospheric Remote Sensing**
3 Credits
Offered Fall Odd-numbered Years
The course focuses on the physical principles of remote sensing and how atmospheric measurements are made with passive and active techniques from ground-, air- and satellite-based platforms. The course explores principles of absorption, emission and scattering. Students work with remote sensing data and explore specific techniques of interest to them.
**Prerequisites:** ATM F401 (may be taken concurrently).
**Stacked with** ATM F633.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F444 Weather Analysis and Forecasting**
3 Credits
Offered Spring Even-numbered Years
Weather systems and the techniques used to understand and predict their behavior. Topics include atmospheric observations, synoptic analysis techniques, satellite image interpretation, kinematics, fronts and frontogenesis, life cycles of extratropical cyclones, mesoscale phenomena, numerical weather prediction and interpretation of forecast products.
**Prerequisites:** ATM F401; ATM F445.
**Stacked with** ATM F644.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F445 Atmospheric Dynamics**
3 Credits
Offered Fall Even-numbered Years
Examination of the fundamental forces and basic conservation laws that govern the motion of the atmosphere. Topics include momentum, continuity equations, circulation, vorticity, thermodynamics, the planetary boundary layer and synoptic scale motions in mid-latitudes.
**Prerequisites:** ATM F401 (may be taken concurrently).
**Stacked with** ATM F645.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F446 Atmospheric Dynamics II: Climate Dynamics**
3 Credits
Offered Spring Odd-numbered Years
Continuation of ATM F445/ATM F645. Includes geophysical fluid dynamics as applied to the atmosphere. Topics include linear perturbation theory, energy balance, kinetic energy cycle, dynamics of zonally symmetric and varying flow, and tropical dynamics. g., C++, FORTRAN, R, NCL).
**Prerequisites:** ATM F445; Senior Standing.
**Recommended:** experience with coding tools (e.
**Stacked with** ATM F646.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F456 Climate and Climate Change**
3 Credits
Offered Fall Odd-numbered Years
The climate of planet Earth and its changes with time. Radiative fluxes, greenhouse effects, energy budget, hydrological cycle, the atmospheric composition and climatic zones. Physical and chemical reasons for climatic change.
**Prerequisites:** Any 400 level Physics or Chemistry course or ATM F401; basic computer skills.
**Stacked with** ATM F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F473 Micrometeorology with Focus on Subarctic and Arctic Ecosystems**
3 Credits
Offered Fall Even-numbered Years
This course provides a comprehensive explanation of micrometeorology, physical mechanisms, measurement procedures and methods. The course focuses on subarctic and arctic ecosystems. Students receive training in eddy-covariance data processing for ecosystem fluxes computation. The course is oriented to students of biology and wildlife, natural resources and environmental sciences and engineering.
**Prerequisites:** Senior standing.
**Stacked with** ATM F673.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F478 Mesoscale Dynamics**
3 Credits
Offered As Demand Warrants
A comprehensive explanation of mesoscale air motions -- their phenology, basic physics and mechanisms, why they build and how mesoscale motions interact with the micro and large scale. Classical and non-classical mesoscale circulations, super cell, single and multiple cell thunderstorm dynamics and tornado formation.Special Note: Recommend 400-level physics, calculus I to III.
**Prerequisites:** ATM F401.
**Stacked with** ATM F678.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F480 Climate Change Processes: Past, Present, Future**
4 Credits
Offered Fall Odd-numbered Years
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth's climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.
**Prerequisites:** Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.
**Cross-listed with** GEOS F480.
**Stacked with** ATM F680, GEOS F680.
**Lecture + Lab + Other:** 4 + 0 + 0

**ATM F488 Undergraduate Research**
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements.
**Recommended:** A substantial level of technical/scientific background.
**Lecture + Lab + Other:** 0 + 0 + 0

**ATM F601 Introduction to Atmospheric Sciences**
3 Credits
Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering.
**Prerequisites:** Graduate standing.
**Cross-listed with** CHEM F601.
**Stacked with** ATM F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F606 Atmospheric Chemistry**
3 Credits
Offered Spring Odd-numbered Years
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion.
**Prerequisites:** ATM F601.
**Cross-listed with** CHEM F606.
**Stacked with** CHEM F406.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F610 Analysis Methods in Meteorology and Climate**
3 Credits
Offered Spring Odd-numbered Years
Introduction to standard analysis topics in Atmospheric Sciences, including basic aggregate stats, time series work, eigenmode analysis, mixed models, and extreme value analysis. Focus on manipulation of very large data sets, especially weather/climate model output. Hands-on instruction in supporting computer topics. Student presentations will be emphasized.
**Prerequisites:** ATM F601; graduate standing.
**Recommended:** Basic computer and mathematical knowledge to analyze and plot data.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F613 Atmospheric Radiation**
3 Credits
Offered Fall Odd-numbered Years
Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology.
**Prerequisites:** ATM F601 (may be taken concurrently); graduate standing.
**Cross-listed with** PHYS F613.
**Stacked with** ATM F413; PHYS F413.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F615 Cloud Physics**
3 Credits
Offered Spring Even-numbered Years
Basic properties of condensed water vapor in the atmosphere. Formation and behavior of clouds including atmospheric aerosols, nucleation and growth of water droplets and ice crystals, the development of precipitation, nature of mixed-phase (water and ice) clouds, radiative transfer and experiments using AFARS Lidar, Microwave Radiometer and Satellite Remote sensing.
**Prerequisites:** ATM F601; graduate standing.
**Stacked with** ATM F415.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F620 Climate Journal Club Seminar**
1 Credit
Offered Spring
The "Climate Group" is an informal meeting for researchers and graduate students. The seminars alternate between progress reports on ongoing research and journal club contributions. The main interests articles, formal and informal presentation by locals and visitors will be on the agenda. Participating students will be exposed to a free format discussion of modern ideas in climate related disciplines. All students are encouraged to contribute and students taking the course for credit are required to lead the discussion for one session. This may include the presentation of a research plan/results, or a discussion of a journal article. Students will be graded on at least one presentation and participation in the class.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**ATM F621 Introduction to Computational Meteorology**
1 Credit
Offered Fall
Introduces the basic knowledge on how to apply software related to atmospheric sciences problems. This includes UNIX/LINUX, FORTRAN90, NCL, Python, MATLAB and how to read data-formats (e.g., NetCDF files, grib-files, etc) for climate and remote sensing datasets. Students will learn how to run a given software and produce software modifications.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**ATM F625 Physical Hydrometeorology**
3 Credits
Offered As Demand Warrants
Explores hydrometeorological processes, presents how to apply analysis techniques/skills to solve fundamental hydrometeorological questions (e.g. fire weather forecasting, drought forecasting, water resource management, flood forecasting). Subjects covered are hydrographs, radar images, meteograms, lysimeter, near-surface meteorology, surface energy and water budgets, stream response, groundwater, drought-indices, observational errors.
**Prerequisites:** ATM F401.
**Stacked with** ATM F425.
**Special Notes:** Recommended 400-level Physics, Calculus I to III.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F631 Environmental Fate and Transport**
3 Credits
Offered Spring Even-numbered Years
Examination of the physical properties that govern the behavior, fate and transport of contaminants released into the environment. Topics include air-water partitioning and exchange, organic solvent-water partitioning, diffusion, sorption, chemical and biological transformation reactions, and modeling concepts.
**Cross-listed with** CHEM F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F633 Atmospheric Remote Sensing**
3 Credits
Offered Fall Odd-numbered Years
The course focuses on the physical principles of remote sensing and how atmospheric measurements are made with passive and active techniques from ground-, air- and satellite-based platforms. The course explores principles of absorption, emission and scattering. Students work with remote sensing data and explore specific techniques of interest to them.
**Prerequisites:** ATM F401 or ATM F601; graduate standing.
**Stacked with** ATM F433.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F644 Weather Analysis and Forecasting**
3 Credits
Offered Spring Even-numbered Years
Weather systems and the techniques used to understand and predict their behavior. Topics include atmospheric observations, synoptic analysis techniques, satellite image interpretation, kinematics, fronts and frontogenesis, life cycles of extratropical cyclones, mesoscale phenomena, numerical weather prediction and interpretation of forecast products.
**Prerequisites:** ATM F601; ATM F645.
**Stacked with** ATM F444.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F645 Atmospheric Dynamics**
3 Credits
Offered Fall Even-numbered Years
Examination of the fundamental forces and basic conservation laws that govern the motion of the atmosphere. Topics include momentum, continuity equations, circulation, vorticity, thermodynamics, the planetary boundary layer and synoptic scale motions in mid-latitudes.
**Prerequisites:** ATM F601 (may be taken concurrently); graduate standing.
**Stacked with** ATM F445.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F646 Atmospheric Dynamics II: Climate Dynamics**
3 Credits
Offered Spring Odd-numbered Years
Continuation of ATM F445/ATM F645. Includes geophysical fluid dynamics as applied to the atmosphere. Topics include linear perturbation theory, energy balance, kinetic energy cycle, dynamics of zonally symmetric and varying flow, and tropical dynamics. g., C++, FORTRAN, R, NCL).
**Prerequisites:** ATM F645; Graduate standing in Physics, Oceanography, Engineering, Natural Sciences, Atmospheric Sciences.
**Recommended:** experience with coding tools (e.
**Stacked with** ATM F446.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F647 Fundamentals of Geophysical Fluid Dynamics**
3 Credits
Offered Fall Odd-numbered Years
Introduction to the mechanics of fluid systems, the fundamental processes, Navier-Stokes' equations in rotating and stratified fluids, kinematics, conservation laws, vortex motion, irrotational flow, laminar flow, boundary layer phenomena, waves, instabilities, turbulent flows and mixing.
**Prerequisites:** Graduate standing.
**Cross-listed with** PHYS F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F656 Climate and Climate Change**
3 Credits
Offered Fall Odd-numbered Years
The climate of planet Earth and its changes with time. Radiative fluxes, greenhouse effects, energy budget, hydrological cycle, the atmospheric composition and climatic zones. Physical and chemical reasons for climatic change.
**Prerequisites:** Graduate standing; calculus, physics or related courses at F400-level, basic computer skills.
**Recommended:** ATM F601 or ATM F401; basic computer knowledge to plot and analyze climate data.
**Stacked with** ATM F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F657 Climate Change in the Arctic: Methods and Impact Assessment**
3 Credits
Offered As Demand Warrants
This course introduces graduate students to methodologies to study climate change and its environmental and, to a lesser degree, human impacts in the Arctic. Classroom study focus on boreal forest and arctic tundra, oceanic and coastal ecosystems topics, including characterization methods and impacts determinations.
**Prerequisites:** Graduate standing MA or PhD students including students in the Climate Security Certificate.
**Special Notes:** Elements of statistical analysis and computational processing will be provided during classes.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F658 Air-sea Interactions**
3 Credits
Offered Spring Even-numbered Years
Course covers the basics processes governing air-sea interactions at different temporal and spatial scales including; transfer of heat and momentum through air-sea surface, interactions of atmospheric and oceanic mixed layers, important examples of air-sea interactions; i.e. El Niño and interactions between high-latitude atmosphere and ocean.
**Prerequisites:** ATM F601; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F662 Numerical Modeling and Parameterization Methods**
3 Credits
Offered Spring Even-numbered Years
Construction of models from fundamental equations and the necessity of parameterizations. Simplification and discretization of equations, numerical methods, model-grids, analytical modeling, boundary and initial conditions, parameterizations and evaluation of model results. Scale-dependency, limitations of parameterizations and coupled modeling are elucidated. Students apply and code aspects of models themselves.
**Prerequisites:** Graduate standing; calculus, physics or related F400-level basic computer skills.
**Recommended:** ATM F601; basic knowledge in Fortran and UNIX/LINUX.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F673 Micrometeorology with Focus on Subarctic and Arctic Ecosystems**
3 Credits
Offered Fall Even-numbered Years
This course provides a comprehensive explanation of micrometeorology, physical mechanisms, measurement procedures and methods. The course focuses on subarctic and arctic ecosystems. Students receive training in eddy-covariance data processing for ecosystem fluxes computation. The course is oriented to students of biology and wildlife, natural resources and environmental sciences and engineering.
**Prerequisites:** Graduate standing.
**Stacked with** ATM F473.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F678 Mesoscale Dynamics**
3 Credits
Offered As Demand Warrants
A comprehensive explanation of mesoscale air motions -- their phenology, basic physics and mechanisms, why they build and how mesoscale motions interact with the micro and large scale. Classical and non-classical mesoscale circulations, super cell, single and multiple cell thunderstorm dynamics and tornado formation.Special Note: Recommend 400-level physics, calculus I to III.
**Prerequisites:** ATM F401 or ATM F601.
**Stacked with** ATM F478.
**Lecture + Lab + Other:** 3 + 0 + 0

**ATM F680 Climate Change Processes: Past, Present, Future**
4 Credits
Offered Fall Odd-numbered Years
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth's climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.
**Prerequisites:** Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.
**Cross-listed with** GEOS F680.
**Stacked with** ATM F480, GEOS F480.
**Lecture + Lab + Other:** 4 + 0 + 0

**ATM F688 Atmospheric Science Informal Seminar**
1 Credit
Review of ongoing research in atmospheric science to learn about research results, ideas and direction long before they are published in journals. Presentations cover the broad range of atmospheric sciences and links to other disciplines as required to answer questions on global variability, climate change and assessment studies.
**Prerequisites:** Graduate standing in physical sciences.
**Lecture + Lab + Other:** 1 + 0 + 0

**ATM F692 Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**ATM F692P Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**ATM F698 Non-thesis Research/Project**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-12

**ATM F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-12

# Automotive Technology (AUTO)

**Community & Technical College**
Automotive Technology (https://www.ctc.uaf.edu/programs/automotive-technology/)
907-455-2800

**AUTO F080 Driver and Safety Education**
2 Credits
Offered As Demand Warrants
Driver education for the beginning driver. Alaska Driver's Manual, material necessary to gain an Alaska Driver's Permit. Defensive driving methods for accident- free driving and basic mechanical information.
**Lecture + Lab + Other:** 2 + 0 + 0

**AUTO F081 Behind-the-Wheel Training**
1 Credit
Offered As Demand Warrants
Practical driver training in actual situations. Expected student outcome is obtaining a State of Alaska driver's license.Prerequisite: Must have a valid Alaska Driver's Permit.
**Lecture + Lab + Other:** 0 + 3 + 0

**AUTO F100 Introduction to Small Engine Repair**
1 Credit
Offered As Demand Warrants
Parts and functions of a small engine and its electrical system. Dismantling procedures, cleaning and reassembly techniques, gasket-making, lubrication, troubleshooting, and minor repairs.
**Lecture + Lab + Other:** 1 + 0 + 0

**AUTO F102 Introduction to Automotive Technology**
3 Credits
Offered Fall
Provides career information in the automotive industry. Shop safety, hand tools, fasteners, fittings, and an introduction to the major automotive systems.
**Lecture + Lab + Other:** 2 + 2 + 0

**AUTO F103 Auto Tune-Up**
1 Credit
Offered As Demand Warrants
**Lecture + Lab + Other:** 1 + 0 + 0

**AUTO F106 Auto/Diesel Engine Cooling and Climate Control Systems**
4 Credits
Offered As Demand Warrants
Theory, diagnostics and repair of motor vehicle A/C, heating, engine cooling and automatic temperature control systems. Covers R-12 and R134-A refrigerant recovery, and related EPA regulations.
**Recommended:** AUTO F110.
**Lecture + Lab + Other:** 3 + 3 + 0

**AUTO F110 Basic Electrical Systems**
3 Credits
Offered Spring
The history and origins of electrical theory, the generation of electricity and diagnosis, minor repair and general servicing of alternators, starters and batteries.
**Lecture + Lab + Other:** 2 + 2 + 0

**AUTO F112 Basic Auto Maintenance**
1 Credit
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**AUTO F113 Gasoline Fuel Delivery Systems**
4 Credits
Offered As Demand Warrants
Basics of carburation and electronic fuel injection. Emphasis on theory, diagnostic/repair skills, inputs and outputs of the PCM, engine performance, use of on-board diagnostic data (OBD II) and special test equipment.
**Recommended:** AUTO F110.
**Lecture + Lab + Other:** 2 + 2 + 0

**AUTO F122 Engine Theory and Diagnosis**
3 Credits
Offered Fall
Introduction to fundamental aspects of engine design, general diagnosis and engine related service, to include combustion process, engine noise, basics of exhaust emissions, vacuum/pressure, compression, intake and exhaust systems, valve and ignition timing.
**Prerequisites:** AUTO F102.
**Recommended:** AUTO F110.
**Lecture + Lab + Other:** 2 + 2 + 0

**AUTO F131 Automotive Electrical II**
3 Credits
Offered Spring
Theory, diagnosis and repair of automotive electrical/electronic systems to include testing tools, schematics and on-board computers.
**Prerequisites:** AUTO F110.
**Recommended:** AUTO F102.
**Lecture + Lab + Other:** 2 + 2 + 0

**AUTO F150 Brake Systems**
4 Credits
Offered Fall
Theory, diagnosis and servicing of light- and heavy-duty vehicle hydraulic brake and traction control systems. Includes discussion and tasks on disc brakes, drum brakes, power assist systems and anti-lock/traction controls.
**Prerequisite:** AUTO F110.
**Lecture + Lab + Other:** 3 + 3 + 0

**AUTO F162 Suspension Alignment**
4 Credits
Offered Fall
Theory, diagnosis and repair of suspension, steering and wheel alignment of automobiles and trucks.
**Lecture + Lab + Other:** 3 + 3 + 0

**AUTO F170 Snowmachine Maintenance and Repair**
1 Credit
Offered As Demand Warrants
Fundamental skills for operation and repair. Engine tune-up, lubrication, belt and track repair, alignment and basic problems encountered during operation.
**Lecture + Lab + Other:** 1 + 0 + 0

**AUTO F172 All-Terrain Vehicle Maintenance and Repair**
1 Credit
Offered As Demand Warrants
Teaches fundamental skills for maintenance and repair of an All-Terrain Vehicle (ATV). Engine tune-up, lubrication, clutch and belt (if applicable), transmission troubleshooting, tire and wheel repair, alignment and other basic problems encountered during operation along with safe shop procedures.
**Lecture + Lab + Other:** 1 + 0 + 0

**AUTO F190 Automotive Practicum I**
1-6 Credits
Offered Fall and Spring
Provides supervised workplace experience in selected industry settings. Integrates knowledge and practice to achieve competencies in basic skills. A maximum of 6 credits may be earned.
**Prerequisites:** Advisor approval required.
**Lecture + Lab + Other:** 0 + 0 + 1-6

**AUTO F202 Auto Fuel and Emissions Systems**
4 Credits
Offered Spring
Builds on the skills and knowledge gained in AUTO F122. Combustion chemistry, volumetric efficiency, design and function of emission control devices, laws and regulations concerning vehicle emissions are covered, with an emphasis on interfacing with on-board computers, automotive computer networking, and four and five gas analysis.
**Prerequisites:** AUTO F102; AUTO F122.
**Lecture + Lab + Other:** 3 + 2 + 0

**AUTO F209 Automatic Transmissions and Transaxles**
5 Credits
Offered As Demand Warrants
Automatic transmissions and transaxles. Includes the operation, diagnosis and repair of planetary gears, clutches, pumps, hydraulic controls and electronic shifting controls. Study and hands-on tasks.
**Recommended:** AUTO F110 strongly recommended.
**Lecture + Lab + Other:** 4 + 3 + 0

**AUTO F215 Engine Analyzer, Scopes and Scan Tools**
4 Credits
Offered As Demand Warrants
Use and interpretation of diagnostic analyzers for spark ignition engines, digital data, fault code and input/output information retrieval, scan tool usage and other diagnostic tools used in the vehicle repair industry.
**Recommended:** AUTO F110.
**Lecture + Lab + Other:** 3 + 3 + 0

**AUTO F219 The Auto/Diesel Repair Business**
2 Credits
Offered As Demand Warrants
Overview of practices common in the vehicle repair industry. Includes flat rate, repair order write-up, customer relations, repair industry related OSHA and EPA regulations, and financing and acquiring a repair business.
**Lecture + Lab + Other:** 2 + 0 + 0

**AUTO F222 Automotive Engine Performance**
3 Credits
Offered Spring
Builds on skills and knowledge gained in AUTO F122 and AUTO F202. Applies strategies for diagnosing fuel and ignition systems, automotive computers and multiplexing. Includes communication strategies, on-board diagnostics, testing and diagnosis of engine performance-related components.
**Prerequisites:** AUTO F122; AUTO F202.
**Lecture + Lab + Other:** 2 + 2 + 0

**AUTO F227 Automotive Electrical III**
3 Credits
Offered Spring
The theory, diagnosis and repair of automotive electrical and electronic systems to include accessories.
**Prerequisites:** AUTO F131.
**Lecture + Lab + Other:** 2 + 2 + 0

# Aviation Technology (AVTY)

**Community & Technical College**
Aviation Technology (https://www.ctc.uaf.edu/programs/automotive-technology/)
907-455-2800

**AVTY F100 Private Pilot Ground School**
4 Credits
Offered Fall
Study of aircraft and engine operation and limitations, aircraft flight instruments, navigation, navigation computers, national weather information and dissemination services. Federal aviation regulations, flight information publications, radio communications and navigation. Preparation for FAA private pilot-airplane written exam.
**Lecture + Lab + Other:** 4 + 0 + 0

**AVTY F101 Private Pilot Flight Training**
2 Credits
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of private pilot certificate.
**Prerequisites:** Department approval required.
**Lecture + Lab + Other:** 2 + 0 + 0

**AVTY F102 Commercial Ground Instruction**
3 Credits
Offered Spring
Advanced study of aircraft performance, airplane systems (including complex single engine, multi-engine and turboprop aircraft), navigation, regulations and meteorology. Employment considerations for commercial pilots surveyed. Preparation for the FAA commercial pilot-airplane written exam.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F103 Commercial Flight Training**
2 Credits
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of commercial pilot certificate.
**Prerequisites:** Private Pilot certificate, AVTY F102 or concurrent enrollment, or passing score on FAA Commercial Pilot written exam, department approval required.
**Lecture + Lab + Other:** 2 + 0 + 0

**AVTY F105 Seaplane Flight Training**
1 Credit
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of single-engine sea rating.
**Prerequisites:** Private pilot certificate or higher, department approval required.
**Lecture + Lab + Other:** 1 + 0 + 0

**AVTY F107 Multi-Engine Flight Training**
1 Credit
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of multi-engine rating.
**Prerequisites:** Private pilot certificate or higher, department approval required.
**Lecture + Lab + Other:** 1 + 0 + 0

**AVTY F108 Introduction to Skis**
1 Credit
Offered As Demand Warrants
Pilot instruction with a certified flight instructor or flight school in techniques of ski-plane operation and cold weather maintenance. The student is responsible for making arrangements for an appropriate aircraft, instructor and financing.
**Prerequisites:** Private pilot certificate.
**Lecture + Lab + Other:** 1 + 0 + 0

**AVTY F109 Glider Flight Training**
1 Credit
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations. Course completion requires awarding of glider and private or commercial pilot certificate with a glider category rating.
**Prerequisites:** Department approval.
**Lecture + Lab + Other:** 1 + 0 + 0

**AVTY F111 Fundamentals of Aviation**
3 Credits
Offered As Demand Warrants
Basic concepts associated with the aircraft and its environment. Aircraft and its components, including basic systems, Federal Aviation Administration regulations, airports and airspace utilization, aeronautical charts, navigation, weather theory, medical and emergency factors.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F116 Aviation History**
3 Credits
Offered As Demand Warrants
Aviation from its early days to the present. People, places and machines contributing to the development of Alaskan aviation.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F121 Introduction to Aviation Safety**
2 Credits
Offered As Demand Warrants
An introduction to aviation safety designed to develop a positive attitude toward safety, refresh aeronautical knowledge and improve aeronautical skills. Proof required first day of class.
**Prerequisites:** Pilot's Certificate or enrollment in Aviation program.
**Lecture + Lab + Other:** 2 + 0 + 0

**AVTY F155 Preventive Maintenance**
1-3 Credits
Offered Spring
Mechanics of the airplane, its powerplant and systems to enable the student to evaluate malfunctions and make maintenance decisions. Designed for the pilot-owner. Proof required first day of class.
**Prerequisites:** Pilot's Certificate or enrollment in Aviation program.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**AVTY F200 Instrument Ground School**
4 Credits
Offered Fall
Instrument flight operations in detail, altitude instrument flying, air traffic control and navigation facilities, pilot responsibilities. IFR enroute charts, instrument approach procedures. Federal Aviation Regulations, flight planning, human factors and meteorology. Includes optional visits to FAA, RAPCO and ARTCC facilities. Proof required first day of class.
**Prerequisites:** Pilot's Certificate or enrollment in Aviation program.
**Lecture + Lab + Other:** 3 + 3 + 0

**AVTY F201 Instrument Pilot Training**
2 Credits
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Cost of flight instruction varies with location of instruction. Training will be in accordance with current Federal Aviation Regulations. Course completion requires awarding of instrument rating.
**Prerequisites:** Private or Commercial Pilot Certificate or AVTY F200 (may be taken concurrently) or passing score on FAA Private or Commercial Pilot written exam; department approval.
**Lecture + Lab + Other:** 2 + 0 + 0

**AVTY F202 Flight Instructor Ground School**
3 Credits
Offered As Demand Warrants
Preparation for the FAA certified flight instructor or advanced ground instructor written exam.
**Prerequisites:** Commercial pilot certificate.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F203 Flight Instructor Flight Training**
2 Credits
Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training meets federal aviation regulations. Course completion requires awarding of certified flight instructor certificate.
**Prerequisites:** Commercial pilot certificate with instrument rating; AVTY F202; or concurrent enrollment; or passing score on FAA flight instructor written exams; department approval.
**Lecture + Lab + Other:** 2 + 0 + 0

**AVTY F205 Instrument Instructor Flying**
3 Credits
Offered As Demand Warrants
Preparation for certification as an instrument flight instructor.
**Prerequisites:** Commercial flight instructor certificate and department approval.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F206 ATP Ground Instruction**
4 Credits
Offered As Demand Warrants
Preparation for the FAA airline transport pilot written exam.
**Prerequisites:** Compliance with FAR 61.151 and 61.155 or department permission.
**Lecture + Lab + Other:** 4 + 0 + 0

**AVTY F207 ATP Flying**
2 Credits
Offered As Demand Warrants
Qualification for single- or multi-engine FAA airline transport pilot certificate.
**Prerequisites:** Commercial pilot certificate, 1500 hours of flight time as pilot or equivalent as described in FAR 61.155; AVTY F206 or passing score on FAA airline transport pilot written exam; current FAA first class medical certificate.
**Lecture + Lab + Other:** 2 + 0 + 0

**AVTY F211 Instrument Flying**
3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F220 Basic Flight Physiology**
3 Credits
Offered As Demand Warrants
Understanding the physiology of flight and using this knowledge to explain why certain phenomena occur to the mind and body during flight. Proof required first day of class.
**Prerequisites:** Pilot's Certificate or enrollment in Aviation program.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F226 Flight Engineer Ground School**
4 Credits
Offered As Demand Warrants
A comprehensive examination of the major systems of one of the following aircraft: turbojet (B-727, DC-8, B-707); turboprop (L-382, L-188); or reciprocating (DC-6). Preparation for the FAA flight engineer written exam.
**Prerequisites:** FAA commercial pilot license and instrument rating or equivalent; department approval.
**Lecture + Lab + Other:** 4 + 0 + 0

**AVTY F231 Arctic Survival**
3 Credits
Offered Spring
Use of principles, procedures, techniques and equipment to survive extreme Arctic conditions and assist in safe recovery. Lab required.
**Cross-listed with** EMS F257.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F232 Aviation Astronomy and Navigation**
3 Credits
Offered As Demand Warrants
Air navigation and astronomy, including charts, equipment, star and constellation identification, and calculations.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F235 Elements of Weather**
3 Credits
Offered Fall
Weather as it affects aircraft operators with an emphasis on interior Alaska.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F239 Aircraft Dispatcher**
4 Credits
Offered As Demand Warrants
Coordinating functions involving the aircraft and other departments of an airline business. Those wanting to be eligible for aircraft dispatcher certificate must be 23 years of age.
**Lecture + Lab + Other:** 4 + 0 + 0

**AVTY F402 Aircraft Management**
3 Credits
Offered As Demand Warrants
Securing, dispatching and monitoring aircraft operations. Safety, security, community relations, cost-effective scheduling and personnel management for mission scheduling.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F405 Advanced Aircraft Operations**
3 Credits
Offered As Demand Warrants
Techniques and requirements associated with the operation of turbine-powered aircraft, remotely piloted aircraft, helicopters and STOL aircraft for pilots and air workers; safety; systems; aerodynamics; operating characteristics.
**Prerequisites:** AVTY F100, AVTY F111.
**Lecture + Lab + Other:** 3 + 0 + 0

**AVTY F410 Techniques of Bush Flying**
2 Credits
Offered As Demand Warrants
Flight training emphasizing emergency procedures in remote locations, off-airport operations, critical flight attitudes, low-level flight, terrain flying, special maneuvers and unique soft and short field takeoffs and landings.
**Prerequisites:** AVTY F231; AVTY F235; commercial rating; 20 hours taildragger time.
**Lecture + Lab + Other:** 1 + 2 + 0

# Biology (BIOL)

**College of Natural Science and Mathematics**
Department of Biology and Wildlife
907-474-7671

**BIOL F100X Human Biology** (n)
4 Credits
Offered Fall and Spring
Survey of biological principles as applied to human anatomy, physiology, genetics and health.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Special Notes:** Intended for non-science majors.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F101L Introductory Biology Lab**
1 Credit
Offered Fall and Spring
Provides laboratory experience emphasizing contemporary biological topics for transfer students who are not science majors and who have completed a natural science course with no laboratory section at another institution. Content aligns with the laboratory section of BIOL F103X. Students having completed BIOL F103X may not register for BIOL F101L.
**Prerequisites:** A university-level natural science course.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 3 + 0

**BIOL F103X Biology and Society** (n)
4 Credits
Offered Fall and Spring
Fundamental principles of biology; emphasis on their application to humans in the modern world. Lectures, laboratory demonstrations, experiments and discussions of contemporary biological topics. For non-science majors; cannot be used as a biology elective by biological science majors. Students who have completed BIOL F101L may not register for BIOL F103X.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F104L BIOL F104X Laboratory** (n)
0 Credit
**Co-requisites:** BIOL F104X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F104X Natural History of Alaska** (n)
4 Credits
Offered Fall
Survey of the physical and biological environment of Alaska, including terrestrial and aquatic systems. Topics include the past, present, and future climate of Alaska, life histories of common plants and animals, adaptations of organisms to the northern environment, human influences on ecosystems, and the management of wildlife and ecosystems.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** BIOL F104L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F111L BIOL F111X Laboratory**
0 Credit
**Corequisite:** BIOL F111X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F111X Human Anatomy and Physiology I** (n)
4 Credits
Offered Fall
Integrated view of human structure and function. Provides a foundation in relevant chemistry, cell biology, histology and unifying concepts. Covers integumentary, skeletal, muscular and nervous systems.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** BIOL F111L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F112L BIOL F112X Laboratory**
0 Credit
**Co-requisites:** BIOL F112X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F112X Human Anatomy and Physiology II** (n)
4 Credits
Offered Spring
Integrated view of human structure and function. Continuation of Human A&P I. Covers endocrine, cardiovascular, lymphatic, immune, respiratory, digestive, urinary and reproductive systems.
**Prerequisites:** BIOL F111X.
**Co-requisites:** BIOL F112L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F115L BIOL F115X Laboratory**
0 Credit
**Co-requisites:** BIOL F115X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F115X Fundamentals of Biology I** (n)
4 Credits
Offered Fall and Spring
The first of a two-part course series for science majors, Fundamentals of Biology I covers the chemistry of life, cell structure and function, cellular energetics, cell division, genetics, and evolution.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F151X; Recommended: High school biology, high school chemistry.
**Co-requisites:** BIOL F115L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F116L BIOL F116X Laboratory**
0 Credit
**Co-requisites:** BIOL F116X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F116X Fundamentals of Biology II** (n)
4 Credits
Offered Fall and Spring
The second of a two-course series for science majors, Fundamentals of Biology II covers speciation, organismal diversity, form and function of plants and animals, and ecology.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F151X; BIOL F115X.
**Co-requisites:** BIOL F116L.
**Recommended:** high school biology, high school chemistry.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F120L BIOL F120X Laboratory**
0 Credit
**Co-requisites:** BIOL F120X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F120X Introduction to Human Nutrition**
4 Credits
Offered Spring
This course provides students with an understanding of basic nutritional science and how the principles of nutrition can be used to achieve and maintain optimum health and well-being. Students will consider their own food choices in light of the scientific concepts covered in class. May not be used as a biology elective credit for a major in biological sciences.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** BIOL F120L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F140 Introduction to Behavioral Neuroscience Research**
1 Credit
Offered Spring
Online asynchronous introductory biomedical research on compulsive-like mice, including data collection, data analysis, and interpretation of results. Learn about obsessive-compulsive disorder in humans and how animal research has the potential to contribute to improving the human condition.
**Prerequisites:** High school diploma, junior or senior standing in high school with a cumulative and science GPA of at least 3.0 with biology and chemistry course grades of at least 3.0.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**BIOL F190 Introduction to Alaska Flora**
2 Credits
Offered Summer
This class is an introduction to several aspects of Alaska's unique flora. Class modules and hands-on exercises are designed to familiarize you with the identification, description and morphology of our local flora.
**Lecture + Lab + Other:** 1.5 + 1.5 + 0

**BIOL F239 Introduction to Plant Biology** (n)
4 Credits
Offered Fall
Plant biology including plant form and function (morphology, physiology and development), ecology (including interactions with herbivores, pollinators and microbes), conservation, evolution and economic botany. Emphasis on vascular plants (particularly angiosperms) but includes comparisons with nonvascular plants.
**Prerequisites:** BIOL F115X; BIOL F116X.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F240X Beginnings in Microbiology**
4 Credits
Offered Fall and Spring
Survey of the microbial world emphasizing the role microorganisms play in human health and life. Major topics include the role of microbes in human diseases and an introduction to the immune system and the human microbiome.
**Prerequisites:** One course in high school or college-level biology recommended.
**Special Notes:** Recommended one course in chemistry, taught asynchronous online, may not be used as biology elective credit for a major or minor in biological sciences.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F260 Principles of Genetics**
4 Credits
Offered Fall and Spring
Principles of inheritance; physiochemical properties of genetic systems.
**Prerequisites:** BIOL F115X; BIOL F116X; CHEM F105X; placement in MATH F151X; LS F101X (may be taken concurrently) or successful completion of library skills competency test.
**Co-requisites:** BIOL F260L.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F260L BIOL F260 Laboratory**
0 Credit
**Co-requisites:** BIOL F260.
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F310 Animal Physiology** (n)
4 Credits
Offered Spring
Animal function, including respiration, digestion, circulation, nerve and muscle function, hormones and reproduction.
**Prerequisites:** BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X.
**Co-requisites:** BIOL F310L.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F310L BIOL F310 Laboratory**
0 Credit
**Co-requisites:** BIOL F310.
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F312 Medical Physiology**
3 Credits
Offered Spring
This course focuses on pathology to teach advanced concepts in human anatomy and physiology. Case studies and diagnostic problem solving will be used to promote the application of knowledge.
**Prerequisites:** BIOL F115X and BIOL F116X; or BIOL F111X and BIOL F112X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F320 Winter Botany**
3 Credits
Offered Spring Odd-numbered Years
Identification of trees and shrubs by buds, twigs and bark in the winter.
**Prerequisites:** BIOL F115X, BIOL F116X, BIOL F239.
**Special Notes:** Asynchronous online.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F331 Systematic Botany** (n)
3 Credits
Offered Spring Even-numbered Years
Classification of flowering plants with emphasis on Alaskan flora; familiarity with taxonomy (identification, nomenclature, classification), evolution (speciation, reproductive biology, adaptation, convergence, biogeography) and phylogenetics (morphology and molecules). Lab emphasizes learning representative families and genera of Alaskan flora using keys and manuals.
**Prerequisites:** BIOL F239.
**Special Notes:** Recommended BIOL F260.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F335 Principles of Epidemiology**
3 Credits
Offered Spring
Introduction to the basic concepts of epidemiology, with examples from human to veterinary medicine, including chronic and infectious disease epidemiology, social epidemiology, outbreak investigation, properties of tests, and an introduction to study design and surveillance.
**Prerequisites:** STAT F200X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F342 Microbiology** (n)
4 Credits
Offered Spring
Morphology and physiology of microorganisms. The role of these organisms in the environment and their relationship to humans. Concepts of immunology. Laboratory stresses aseptic techniques for handling microorganisms.
**Prerequisites:** BIOL F115X; BIOL F116X; CHEM F105X.
**Co-requisites:** BIOL F342L.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F342L BIOL F342 Laboratory**
0 Credit
**Co-requisites:** BIOL F342.
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F360 Cell and Molecular Biology** (n)
3 Credits
Offered Fall and Spring
An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation.
**Prerequisites:** BIOL F260; CHEM F105X; CHEM F106X (may be taken concurrently).
**Cross-listed with** CHEM F360.
**Special Notes:** Taught asynchronously online in fall, face to face in spring.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F371 Principles of Ecology**
4 Credits
Offered Fall
Basic principles in physiological, ecosystem, population and community ecology. Environmental factors and their influence on plants and animals. Structure, growth and regulation of populations. The ecosystem concept, biogeochemical cycles, and the structure and function of major terrestrial biomes.
**Prerequisites:** BIOL F115X; BIOL F116X.
**Co-requisites:** BIOL F371L.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F371L BIOL F371 Laboratory**
0 Credit
**Co-requisites:** BIOL F371.
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F385 Global Change Biology** (n)
3 Credits
Offered Spring
Causes of climate change, the climate record, and the effects of past and forecast climate change on biophysical systems. Consideration of impacts on plants, animals, ice, and people with an emphasis on Alaska and the Arctic.
**Prerequisites:** BIOL F115X; BIOL F116X; Junior or Senior standing.
**Cross-listed with** WLF F385.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F392 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-6

**BIOL F392P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-6

**BIOL F400 Research Capstone in Biological Sciences**
0 Credit
Offered Fall and Spring
Enrollment in BIOL F400 signals that a student has initiated a capstone research project, a required element of the Biological Sciences B.S. program. The research project may be completed within a designated course or by working individually with a faculty mentor.
**Prerequisites:** Junior or senior standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F402 Biomedical and Research Ethics** (h)
3 Credits
Offered Spring Odd-numbered Years
Issues in biomedical ethics. Topics will vary but include discussion of moral principles and problems of research ethics and medical ethics, such as: animal and human experimentation; data management; informed consent; therapeutic and non-therapeutic research; physician/patient relationship; autonomy; assisted reproductive technologies; euthanasia; organ transplantation; and allocation of scarce medical resources.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior or senior standing; a course in philosophy, science, or nursing.
**Cross-listed with** PHIL F402.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F406 Entomology** (n)
4 Credits
Offered Fall Odd-numbered Years
Biology of insects and related arthropods, with emphasis on evolution, ecology, behavior, biodiversity, morphology and systematics. Lab emphasizes identification and collection.
**Prerequisites:** BIOL F115X; BIOL F116X; BIOL F371.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F410 Integrative Capstone in Biological Sciences**
3 Credits
Offered Spring
In this course, students learn concepts of interdisciplinary integration across the sciences, arts, humanities and social sciences. They then develop a capstone project integrating the biological sciences with another discipline, most commonly chosen as their minor. This course meets the capstone requirement for the B.A. in Biological Sciences.
**Prerequisites:** Students should hold junior or senior standing and be enrolled in the Biological Sciences BA program.
**Lecture + Lab + Other:** 1.5 + 0 + 4.5

**BIOL F412 Exercise Physiology**
3 Credits
Offered Fall
Physiology responses and adaptation to exercise in humans, emphasizing energy metabolism, adipose and lean tissue, central and peripheral components of oxidative metabolism and the environmental influences on these parameters.
**Prerequisites:** BIOL F111X and BIOL F112X; or BIOL F310.
**Stacked with** BIOL F612.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F415 Systematic and Comparative Biology**
4 Credits
Offered Fall Even-numbered Years
Concepts of systematic biology basic to a rigorous and complete understanding of modern evolutionary theory. Systematics provides the historical framework critical to a variety of comparative analyses in biology. Recent innovations in phylogenetic analyses will be explored in lecture and lab
**Prerequisites:** BIOL F481.
**Stacked with** BIOL F615.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F417 Neurobiology** (n)
3 Credits
Offered Fall
Organization and function of the vertebrate nervous system from the subcellular to the organismal levels. Neural bases of sensations, homeostasis, specific behaviors, and psychopathology with the incorporation of current peer-reviewed mammalian behavioral neuroscience research.
**Prerequisites:** BIOL F111X; BIOL F112X, BIOL F310.
**Special Notes:** Taught asynchronously online.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F418 Biogeography**
3 Credits
Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of sub-Arctic, polar and alpine regions.
**Prerequisites:** NRM F277 or BIOL F371; junior/senior standing.
**Stacked with** BIOL F618.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F425 Mammalogy** (n)
3 Credits
Offered Fall
Variety of mammals, their behavior, life histories, identification, phylogeny and systematics, morphology, distribution and zoogeography.
**Prerequisites:** BIOL F115X; BIOL F116X; junior standing or above.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F426 Ornithology** (n)
3 Credits
Offered Spring
Evolution, anatomy, physiology, distribution, migration, breeding biology of birds, their classification and identification.
**Prerequisites:** BIOL F115X; BIOL F116X; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F427 Ichthyology** (n)
4 Credits
Offered Fall and Spring
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology and importance to man.
**Prerequisites:** BIOL F116X.
**Cross-listed with** FISH F427.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F430 Plant Physiology and Development**
3 Credits
Offered Fall Odd-numbered Years
Physiology and development of vascular plants, stressing the interrelationships between development, growth, water relations, photosynthesis, transport and metabolism.
**Prerequisites:** BIOL F115X; BIOL F116X; MATH F151X or higher; STAT F200X.
**Stacked with** BIOL F630.
**Special Notes:** Available asynchronous online.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F431 Population Genetics**
3 Credits
Offered Fall Odd-numbered Years
Processes affecting the distribution of genetic variation in populations of organisms and how it changed through time. Covered topics include characterization of DNA sequence variations, genetic drift, neutral theory, coalescent theory, population substructure, natural selection, inbreeding depression, mating systems and multilocus evolution.
**Prerequisites:** BIOL F260; STAT F200X or STAT F300.
**Stacked with** BIOL F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F435 Introduction to Biology of Cancer**
3 Credits
Offered Fall Odd-numbered Years
Course covers current concepts and knowledge of cancer, including cancer research and cancer treatment.
**Prerequisites:** BIOL F360.
**Stacked with** BIOL F635.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F440 Behavioral Neuroscience Research Capstone**
3 Credits
Offered Spring
Online asynchronous comprehensive biomedical research on compulsive-like mice, including data collection, data analysis, and interpretation of results. Learn about obsessive-compulsive disorder in humans and how animal research has the potential to contribute to improving the human condition. Complete the Biology Capstone requirements including writing a full length scientific manuscript.
**Prerequisites:** Junior or senior undergraduate standing.
**Lecture + Lab + Other:** 1 + 6 + 0

**BIOL F441 Animal Behavior**
4 Credits
Offered Fall
Evolutionary and ecological principles of individual and social behavior, genetic and physiological basis of behavior, techniques of behavioral observation, experimental manipulation and analysis. Design and implementation of independent research project on live animals. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree.
**Prerequisites:** BIOL F481 (may be taken concurrently); BIOL F310; STAT F200X; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 3

**BIOL F446 Freshwater Habitat Dynamics**
3 Credits
Offered Fall Even-numbered Years
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.
**Prerequisites:** FISH F110, BIOL F371.
**Cross-listed with** FISH F446.
**Stacked with** FISH F646, BIOL F646.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F455 Environmental Toxicology**
3 Credits
Offered Fall
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; one semester each of organic chemistry and cell or molecular biology.
**Cross-listed with** CHEM F455.
**Stacked with** BIOL F656; CHEM F655.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F457 Environmental Microbiology**
3 Credits
Offered Spring Even-numbered Years
This course focuses on the role of microorganisms in environmentally-relevant processes including bioremediation of pollutants, biogeochemical cycling, corrosion and wastewater treatment, including current methods for studying microbial diversity and function.
**Prerequisites:** BIOL F115X; BIOL F116X; BIOL F342; CHEM F105X; CHEM F106X.
**Recommended:** CHEM F449.
**Stacked with** BIOL F657.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F460 Principles of Virology**
3 Credits
Offered Spring
This course will explore current concepts in the field of virology, with emphasis on the structure, genetic material, and replication strategies of various human and animal viruses. In addition, mechanisms of viral pathogenesis, viral diagnostics, prevention and treatment of viral infection will be presented.
**Prerequisites:** BIOL F342 (may be taken concurrently) or BIOL F360 (may be taken concurrently).
**Stacked with** BIOL F660.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F462 Infectious Diseases**
3 Credits
Offered As Demand Warrants
Covers infectious disease biology using examples of different pathogens and exploring the concepts of their biology and the implication of these principles on pathology, epidemiology and sociology of infectious diseases.
**Prerequisites:** BIOL F360 or BIOL F342.
**Stacked with** BIOL F662.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F463 Immunology**
3 Credits
Offered Fall
Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease.
**Prerequisites:** BIOL F115X, BIOL F116X; BIOL F310, BIOL F111X; BIOL F112X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F466 Advanced Cell and Molecular Laboratory**
3 Credits
Offered Spring
Modern molecular biological techniques including protein and nucleic acid gel electrophoresis, western blotting, cell fractionation, cellular respiration, enzymology and fluorescence microscopy. Lectures will be supplemented with reading from the primary literature. Student projects in this course may satisfy the capstone project requirements of the biological science degree.
**Prerequisites:** BIOL F360 or CHEM F360 may be taken concurrently.
**Cross-listed with** CHEM F466.
**Lecture + Lab + Other:** 2 + 4 + 0

**BIOL F469 Landscape Ecology and Wildlife Habitat**
3 Credits
Offered Spring Even-numbered Years
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with problems and questions.
**Prerequisites:** BIOL F371; COJO F121X or COJO F131X or COJO F141X.
**Cross-listed with** WLF F469.
**Stacked with** BIOL F669; WLF F669.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F470 Aquatic Food Web Ecology**
3 Credits
Offered Fall Even-numbered Years
Examines theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
**Prerequisites:** Upper-level undergraduate standing.
**Cross-listed with** with FISH F476; MSL F476.
**Stacked with** BIOL F670; FISH F676; MSL F676.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F471 Population Ecology** (n)
3 Credits
Offered Spring
Biology of populations of plants and animals, including population structure, natality, mortality, population growth, regulation of population size, population interactions in competition, herbivory, predation and parasitism.
**Prerequisites:** A calculus course; BIOL F371.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F472 Community Ecology**
4 Credits
Offered Fall Even-numbered Years
Structure of plant and animal communities and their organization. Structuring forces of competition, predation, herbivory, and mutualisms; roles of foodwebs, indirect effects, and spatial and temporal dynamics. Application of community ecology concepts to conservation and restoration. Student projects may satisfy the capstone project requirement of the biological sciences degree.
**Prerequisites:** BIOL F371; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 3

**BIOL F473 Limnology**
4 Credits
Offered Fall Odd-numbered Years
The ecology of inland waters emphasizing lakes and rivers. Lecture provides graphically oriented view of concepts. Laboratory involves team-based original research from proposal to manuscript. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree.
**Prerequisites:** BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 3

**BIOL F476 Ecosystem Ecology**
4 Credits
Offered Spring
Ecosystem ecology is the scientific study of the interactions among organisms and the non-living environment. The course introduces the ecosystem concept and surveys environmental factors governing ecosystem processes, including major biogeochemical cycles. Includes application of these topics to ecosystem services, sustainability, and responses of ecosystems to global change.
**Prerequisites:** BIOL F371; STAT F200X.
**Stacked with** BIOL F673.
**Lecture + Lab + Other:** 3 + 0 + 3

**BIOL F481 Principles of Evolution**
4 Credits
Offered Fall and Spring
Patterns and processes of evolutionary change. Covered topics include microevolutionary processes, population genetics, quantitative genetics, fitness and adaptation, phylogenetics, speciation and macroevolutionary pattern. The conceptual framework of evolutionary biology is used to understand basic and applied issues in the life sciences, biomedicine, and agriculture.
**Prerequisites:** BIOL F260; STAT F200X (may be taken concurrently) or STAT F300 (may be taken concurrently).
**Co-requisites:** BIOL F481L.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F481L BIOL F481 Laboratory**
0 Credit
**Co-requisites:** BIOL F481.
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F483 Stream Ecology**
3 Credits
Offered As Demand Warrants
The ecology of streams and rivers focusing on physical, chemical and biological processes.
**Prerequisites:** BIOL F115X; BIOL F116X; BIOL F371.
**Recommended:** CHEM F105X; CHEM F106X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F486 Vertebrate Paleontology** (n)
3 Credits
Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.
**Prerequisites:** BIOL F310 or GEOS F315.
**Cross-listed with** GEOS F486.
**Stacked with** GEOS F686; BIOL F686.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F487 Conceptual Issues in Evolutionary Biology**
3 Credits
Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change followed by consideration of the practical implications these models have on the study of biological phenomena in general.
**Cross-listed with** PHIL F487.
**Stacked with** BIOL F687; PHIL F687.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F488 Arctic Vegetation Ecology: Geobotany**
3 Credits
Offered Fall Odd-numbered Years
Arctic plants in relationship to Earth, including Arctic plant identification, climate, geology and geography controls on Arctic plant communities, snow ecology, applications to wildlife studies and current Arctic issues. Consists of lecture, labs and field trips.
**Prerequisites:** BIOL F115X and BIOL F116X; BIOL F239 or BIOL F371.
**Stacked with** BIOL F688.
**Lecture + Lab + Other:** 2.5 + 0.5 + 0

**BIOL F489 Vegetation Description and Analysis**
3 Credits
Offered Fall Even-numbered Years
Methods of vegetation science including sampling, classification, gradient analysis, ordination, field description and mapping. Field trips to the plant communities of interior Alaska.
**Prerequisites:** BIOL F239, BIOL F371 or BIOL F331.
**Stacked with** BIOL F689.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F490 Research Experience in Biology**
3 Credits
Offered Spring
Directed undergraduate research in the advanced life sciences. Students are required to publicly present their work and submit a final written report. Research areas range across ecology, evolution, physiology, cell biology and molecular biology.
**Prerequisites:** CHEM F105X; CHEM F106X; BIOL F115X; BIOL F116X.
**Lecture + Lab + Other:** 1 + 0 + 6

**BIOL F491 The Human Microbiome**
4 Credits
Offered Fall
Biology of host-associated microbiomes with an emphasis on the human microbiome. Investigate microbial impacts on the behavior, physiology and fitness of their host. Explore model and non-model systems. Student projects in this course may satisfy the capstone project requirements of the biological science degree.
**Prerequisites:** BIOL F260 and STAT F200X.
**Stacked with** BIOL F691.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F492P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F498 Research**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**BIOL F602 Research Design**
3 Credits
Offered Fall
An introduction to the philosophy, performance and evaluation of hypothetical/deductive research in the biological sciences, with emphasis on hypothesis formulation and testing. Each student will develop a research proposal.
**Prerequisite:** Graduate standing.
**Cross-listed with** WLF F602.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F604 Scientific Writing, Editing and Revising in the Biological Sciences**
3 Credits
Offered Spring
For students who are ready to produce a manuscript or thesis chapter. Topics include the publication process, selecting a journal, authorship, the components of the scientific paper, revising and editing manuscripts, and responding to reviews. Students will produce a complete manuscript.
**Prerequisites:** Graduate standing in Biology, Wildlife, or related discipline; permission of instructor.
**Cross-listed with** WLF F604.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F605 Animal Stable Isotope Ecology**
3 Credits
Offered Every Third Spring
Recent primary literature in stable isotope ecology, which uses naturally occurring variation in stable isotopes of carbon, nitrogen, oxygen, hydrogen and sulphur as markers of organismal and ecological processes. The focus will be on animal studies, including diet reconstruction, mixing models, food web, metabolism, nutrient allocation and migration.
**Prerequisite:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F612 Exercise Physiology**
3 Credits
Offered Fall
Physiology responses and adaptation to exercise in humans, emphasizing energy metabolism, adipose and lean tissue, central and peripheral components of oxidative metabolism and the environmental influences on these parameters.
**Prerequisites:** Graduate standing.
**Stacked with** BIOL F412.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F613 Resilience Internship**
2 Credits
Offered As Demand Warrants
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.
**Prerequisites:** ANTH F667, BIOL F667, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or NRM F668.
**Cross-listed with** ANTH F617; ECON F613; NRM F613.
**Lecture + Lab + Other:** 2 + 0 + 0

**BIOL F615 Systematic and Comparative Biology**
4 Credits
Offered Fall Even-numbered Years
Concepts of systematic biology basic to a rigorous and complete understanding of modern evolutionary theory. Systematics provides the historical framework critical to a variety of comparative analyses in biology. Recent innovations in phylogenetic analyses will be explored in lecture and lab
**Prerequisites:** Graduate standing.
**Stacked with** BIOL F415.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F616 Ecological Background for Resilience and Adaptation**
1 Credit
Offered Fall
Provides the ecological background that is necessary for understanding the role of ecology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology.
**Prerequisites:** Graduate standing.
**Cross-listed with** NRM F616.
**Lecture + Lab + Other:** 1 + 0 + 0

**BIOL F617 Neurobiology**
3 Credits
Offered Spring Even-numbered Years
Organization and function of the vertebrate nervous system from the subcellular to the organismal levels. Neural bases of sensations, specific behaviors and homeostasis. Applications of basic neurobiological research to pathological conditions. Examples taken mostly from the recent vertebrate literature.
**Prerequisites:** BIOL F310; graduate standing.
**Stacked with** BIOL F417.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F618 Biogeography**
3 Credits
Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of sub-Arctic, polar and alpine regions.
**Prerequisites:** Graduate standing.
**Stacked with** BIOL F418.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F630 Plant Physiology and Development**
3 Credits
Offered Fall Odd-numbered Years
Physiology and development of vascular plants, stressing the interrelationships between development, growth, water relations, photosynthesis, transport and metabolism.
**Stacked with** BIOL F430.
**Special Notes:** Available asynchronous online.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F631 Population Genetics**
3 Credits
Offered Fall Odd-numbered Years
Processes affecting the distribution of genetic variation in populations of organisms and how it changed through time. Covered topics include characterization of DNA sequence variations, genetic drift, neutral theory, coalescent theory, population substructure, natural selection, inbreeding depression, mating systems and multilocus evolution.
**Prerequisites:** BIOL F260; STAT F200X or STAT F300.
**Stacked with** BIOL F431.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F632 Veterinary Bacteriology and Mycology**
2 Credits
Offered Spring
This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** DVM F637; MSL F637.
**Lecture + Lab + Other:** 2 + 0 + 0

**BIOL F635 Introduction to Biology of Cancer**
3 Credits
Offered Fall Odd-numbered Years
Course covers current concepts and knowledge of cancer, including cancer research and cancer treatment.
**Prerequisites:** BIOL F360.
**Stacked with** BIOL F435.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F639 Veterinary Virology**
2 Credits
Offered Spring
This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** DVM F639; MSL F639.
**Lecture + Lab + Other:** 2 + 0 + 0

**BIOL F640 Veterinary Pathology/Biology of Disease I**
5 Credits
Offered Spring
This course will discuss basic principles of disease with special emphasis on processes likely to be encountered veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell-mediated processes to more specific disease mechanisms.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** MSL F642; DVM F640.
**Lecture + Lab + Other:** 4 + 3 + 0

**BIOL F641 Animal Welfare**
2 Credits
Offered Fall
This course will provide knowledge, skill development and tools necessary for professionals to assess and promote animal welfare and to analyze its associated challenges. It will stress the need for perpetual reassessment of animal welfare knowledge and reinforce the professional's role in staying up-to-date and proactive.
**Prerequisites:** Completion of first year of veterinary school, or graduate student with approval of instructor.
**Cross-listed with** DVM F735.
**Lecture + Lab + Other:** 2 + 0 + 0

**BIOL F644 Advanced Topics in Evolution**
3 Credits
Offered Spring Odd-numbered Years
Modern theory and subdisciplinary directions in the expanding field of evolutionary biology. Topics include adaptation, speciation, reinforcement, comparative method, group selection, phylogeography, advanced systematics, geographic variation and the role of evolutionary biology in society. May be repeated for credit when content varies.
**Prerequisites:** Undergraduate course in evolution.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F646 Freshwater Habitat Dynamics**
3 Credits
Offered Fall Even-numbered Years
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.
**Prerequisites:** Graduate standing.
**Cross-listed with** FISH F646.
**Stacked with** FISH F446, BIOL F446.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F647 Sustainability in the Changing North**
3 Credits
Offered Spring
Explores the basic principles of sustainability environment. The course introduces the ecosystem of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F647; ECON F647; NRM F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F649 Integrated Assessment and Adaptive Management**
3 Credits
Offered As Demand Warrants
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management.
**Prerequisites:** Graduate student standing in a natural science, social science or interdisciplinary program at UAF or another university.
**Recommended:** ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.
**Cross-listed with** ANTH F649; ECON F649; NRM F649.
**Special Notes:** In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F656 Environmental Toxicology**
3 Credits
Offered Fall
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.
**Prerequisites:** CHEM F449; or one semester each of organic chemistry and cell or molecular biology.
**Cross-listed with** CHEM F655.
**Stacked with** BIOL F455; CHEM F455.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F657 Environmental Microbiology**
3 Credits
Offered Spring Even-numbered Years
This course focuses on the role of microorganisms in environmentally-relevant processes including bioremediation of pollutants, biogeochemical cycling, corrosion and wastewater treatment, including current methods for studying microbial diversity and function.
**Prerequisites:** BIOL F115X; BIOL F116X; BIOL F342; CHEM F105X; CHEM F106X.
**Recommended:** CHEM F449.
**Stacked with** BIOL F457.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F660 Principles of Virology**
3 Credits
Offered Spring
This course will explore current concepts in the field of virology, with emphasis on the structure, genetic material, and replication strategies of various human and animal viruses. In addition, mechanisms of viral pathogenesis, viral diagnostics, prevention and treatment of viral infection will be presented.
**Prerequisites:** Graduate standing.
**Stacked with** BIOL F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F662 Infectious Diseases**
3 Credits
Offered As Demand Warrants
Covers infectious disease biology using examples of different pathogens and exploring the concepts of their biology and the implication of these principles on pathology, epidemiology and sociology of infectious diseases.
**Prerequisites:** Graduate standing; BIOL F360 or BIOL F342.
**Stacked with** BIOL F462.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F667 Resilience Seminar I**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor.
**Prerequisites:** Enrolled in Resilience and Adaptation Graduate Program.
**Recommended:** ANTH F647, BIOL F647, ECON F647 or NRM F647 (taken concurrently).
**Cross-listed with** ANTH F667; ECON F667; NRM F667.
**Lecture + Lab + Other:** 2 + 0 + 0

**BIOL F668 Interdisciplinary Research Methods-Resilience Seminar II**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.
**Prerequisites:** ANTH F647, BIOL F647, ECON F647 or NRM F647; ANTH F667, BIOL F667, ECON F667 or NRM F667.
**Cross-listed with** ANTH F668; ECON F668; NRM F668.
**Lecture + Lab + Other:** 2 + 0 + 0

**BIOL F669 Landscape Ecology and Wildlife Habitat**
3 Credits
Offered Spring Even-numbered Years
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with problems and questions.
**Prerequisites:** Graduate standing.
**Cross-listed with** WLF F669.
**Stacked with** BIOL F469; WLF F469.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F670 Aquatic Food Web Ecology**
3 Credits
Offered Fall Even-numbered Years
Examines theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
**Cross-listed with** FISH F676; MSL F676.
**Stacked with** BIOL F470; FISH F476; MSL F476.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F673 Ecosystem Ecology**
4 Credits
Offered Spring
Ecosystem ecology is the scientific study of the interactions among organisms and the non-living environment. The course introduces the ecosystem concept and surveys environmental factors governing ecosystem processes, including major biogeochemical cycles. Includes application of these topics to ecosystem services, sustainability, and responses of ecosystems to global change.
**Prerequisites:** graduate standing.
**Stacked with** BIOL F476.
**Lecture + Lab + Other:** 3 + 0 + 3

**BIOL F679 Cellular and Molecular Neuroscience**
3 Credits
Offered Fall Even-numbered Years
The cellular and molecular underpinnings of signaling in the nervous system. Topics include properties of excitable membranes, synaptic transmission, neurological integration, the cellular and molecular basis of learning and memory, and pharmacological treatment of neuronal pathologies.
**Prerequisites:** Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F230X.
**Cross-listed with** CHEM F670.
**Stacked with** CHEM F470.
**Special Notes:** Recommended MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F680 Data Analysis in Biology**
3 Credits
Offered Spring
Course covers major statistical concepts and techniques using the statistical software R, with emphasis on applications in biology. Reviews probability theory, hypothesis testing, ANOVA, regression, least squares fitting, parametric and nonparametric approaches, and then focuses on random and mixed-effects models, likelihood based fitting, GAMs, GLMs, ordination, and model selection.
**Prerequisites:** STAT F200X, STAT F401; graduate standing in a biologically oriented field.
**Cross-listed with** WLF F680.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F686 Vertebrate Paleontology**
3 Credits
Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.
**Prerequisites:** Graduate standing.
**Cross-listed with** BIOL F486; GEOS F486.
**Stacked with** GEOS F686.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F687 Conceptual Issues in Evolutionary Biology**
3 Credits
Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change followed by consideration of the practical implications these models have on the study of biological phenomena in general.
**Cross-listed with** PHIL F687.
**Stacked with** BIOL F487; PHIL F487.
**Lecture + Lab + Other:** 3 + 0 + 0

**BIOL F688 Arctic Vegetation Ecology: Geobotany**
3 Credits
Offered Fall Odd-numbered Years
Arctic plants in relationship to Earth, including Arctic plant identification, climate, geology and geography controls on Arctic plant communities, snow ecology, applications to wildlife studies and current Arctic issues. Consists of lecture, labs and field trips.
**Prerequisites:** BIOL F115X and BIOL F116X; BIOL F239 or BIOL F371.
**Stacked with** BIOL F488.
**Lecture + Lab + Other:** 2.5 + 0.5 + 0

**BIOL F689 Vegetation Description and Analysis**
3 Credits
Offered Fall Even-numbered Years
Methods of vegetation science including sampling, classification, gradient analysis, ordination, field description and mapping. Field trips to the plant communities of interior Alaska.
**Prerequisites:** BIOL F239, BIOL F371 or BIOL F331.
**Stacked with** BIOL F489.
**Lecture + Lab + Other:** 2 + 3 + 0

**BIOL F691 The Human Microbiome**
4 Credits
Offered Fall
Biology of host-associated microbiomes with an emphasis on the human microbiome. Investigate microbial impacts on the behavior, physiology and fitness of their host. Explore model and non-model systems. Student projects in this course may satisfy the capstone project requirements of the biological science degree.
**Prerequisites:** BIOL F260 or STAT F200X.
**Stacked with** BIOL F491.
**Lecture + Lab + Other:** 3 + 3 + 0

**BIOL F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F698 Non-thesis Research/Project**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**BIOL F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Biomedical Science (BMSC)

**College of Natural Science and Mathematics**
Biomedical Science Program (https://www.uaf.edu/bw/research/biomedical-science.php)
907-474-7608

**BMSC F214 Introduction to Biomedical Research** (s)
2 Credits
Offered Fall
This seminar aims to introduce students to research methods by providing students who are new to research and research methods opportunities to learn about, discuss and conduct ethical activities in a low stress, small group seminar setting. Organized in a small group, seminar format, the ultimate objective is for seminar participants to develop self-efficacy and interest in pursuing research methods courses and research opportunities early on and throughout their undergraduate studies.
**Lecture + Lab + Other:** 2 + 0 + 0

**BMSC F224 Entering Research: Undergraduate Research Experience**
2 Credits
Offered Spring
Required course for BLaST scholars and open to all UAF students. This course will facilitate mentored research experience for undergraduate students. Students will participate in advanced research topics from outside the usual undergraduate laboratory offerings. Course will conclude with a semester research report and presentation on research activities.
**Prerequisites:** BMSC F214.
**Special Notes:** Students will be required to actively participate in research activities and report on progress and growth throughout the course.
**Lecture + Lab + Other:** 1 + 3 + 0

**BMSC F314 Research Project Foundations**
1 Credit
Offered Fall
Supports undergraduate research projects with strategies and methodologies when establishing a scientific research project. Also foster the personal, academic and career growth of the student. Topics include personal wellness, academic and career planning, mentoring relationships, project management, scientific writing, and communication strategies.
**Prerequisites:** BMSC F224.
**Lecture + Lab + Other:** 1 + 0 + 0

**BMSC F324 Biomedical Research Skills**
1 Credit
Offered Spring
Biomedical Research Skills supports student research projects by highlighting foundational skills, methodologies and techniques commonly used in biomedical research. Guest speakers from UAF and BLaST research community present and share their experience with students through discussions, primary literature and visits to UAF laboratories. Open to any UAF undergraduate student.
**Prerequisites:** BMSC F314.
**Lecture + Lab + Other:** 1 + 0 + 0

# Business Administration (BA)

**College of Business and Security Management**
Department of Business Administration (https://www.uaf.edu/som/degrees/undergraduate/ba/)
907-474-7461

**BA F151X Introduction to Business** (s)
3 Credits
Offered Fall, Spring and Summer
Main components: business organization, business theory and the nature of major business functions such as management, finance, accounting, marketing and personnel administration. Also, focus on methods and data required to research and analyze good business practices and decisions while developing these major business functions. Review professional business career opportunities/requirements.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F241 Advertising, Sales and Promotion**
3 Credits
Offered As Demand Warrants
Advertising, publicity, sales management, sales promotion, direct marketing and the interrelationships necessary for effective promotions in domestic or international, small or large, goods or services, and for-profit or nonprofit organizations.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F253 Internship in Business**
1-3 Credits
Offered As Demand Warrants
Supervised work experience in an approved position related to the student's career interests or objectives. Number of credits depends on type of position and time worked. No student can count more than eight internship credits towards a degree.
**Prerequisites:** Approval of program or department head.
**Lecture + Lab + Other:** 1-3 + 1-3 + 0

**BA F254X Personal Finance (s)** (s)
3 Credits
Offered Fall, Spring and Summer
This course will give you the ability to use your knowledge and skills to manage your financial resources effectively for a lifetime of financial well-being. You will learn personal finance concepts and information as well as practical application that will empower you to save, budget, avoid debt and spend wisely. You will take what you learn and start practicing sound financial habits throughout the semester that will serve you well for the rest of your life.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F280 Sport Leadership**
3 Credits
Offered Fall
Provides leadership theory and develop leadership skills for application internal and external to their sport. Focus on the identification and development of leadership skills/abilities and application within the classroom, a sport and for an on-campus project.
**Cross-listed with** LEAD F280; SPRT F280.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F281X Introduction to Sport Management**
3 Credits
Offered Fall, Spring and Summer
Provides a basic understanding of the methods employed to manage amateur and professional sports organizations and the legal issues involved. Topics such as stadium financing, risk management contracts and human resource management, data collection, public versus private sector labor laws, collective bargaining and drug testing will be examined. Basic management techniques, theory and problems associated with the field sport management are discussed along with history and current trends in sport management.
**Cross-listed with** SPRT F281X.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F307 Introductory Human Resources Management**
3 Credits
Offered Fall, Spring and Summer
Introduction to management principles and personnel practice in industry, analysis of labor-management problems, methods and administration of recruiting, selecting, training and compensating employees, and labor laws and their applications.
**Prerequisite:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F308 Professional Development: How to Prepare for a Job and Other Survival Skills**
1 Credit
Offered Fall, Spring and Summer
Learn how to compose and analyze essential business and personal communications with an emphasis on those related to the job search, including resumes, letters and emails. Learn and apply job seeking and career advancement skills related to interviews, business etiquette, and personal brand.
**Prerequisites:** WRTG F111X; COJO F131X, COJO F141X or COJO F121X; BA F151X (may be taken concurrently), ACCT F261X (may be taken concurrently) or AIS F101 (may be taken concurrently).
**Crosslisted with** BAM F308.
**Lecture + Lab + Other:** 1 + 0 + 0

**BA F309 Professional Development: Finding a Career**
1 Credit
Offered As Demand Warrants
Further your understanding of business and personal communications, with an emphasis on communications used in the typical workplace, including letters, reports and memoranda. Learn and apply career advancement skills related social media presence, advanced interviewing techniques and site visits.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.
**Cross-listed with** BAM F309.
**Lecture + Lab + Other:** 1 + 0 + 0

**BA F310 Professional Development: Being Successful in Your Career**
1 Credit
Offered As Demand Warrants
Master business and personal communications needed for career advancement and success in a typical work environment. Learn and negotiations, networking, meeting and presentation facilitation, on-the-job conflict management, ethics, using social media, and interpersonal communications on the job.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA F308.
**Cross-listed with** BAM F310.
**Lecture + Lab + Other:** 1 + 0 + 0

**BA F317 Employment Law**
3 Credits
Offered As Demand Warrants
Basic personnel and human resource management law, including labor law and current management practices in administering collective bargaining agreements. Emphasis on the major federal and Alaska state laws affecting personnel management.
**Prerequisites:** BA F307 or concurrent enrollment; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F323X Business Ethics** (h)
3 Credits
Offered Fall, Spring and Summer
A grounding in ethical theories and basic issues of moral thought, with examples which highlight the pitfalls in practical ethics which future managers are likely to face, and the need to design organizations so as to promote ethical behavior.
**Prerequisites:** Junior standing.
**Attributes:** UAF GER Ethics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F325 Financial Management**
3 Credits
Offered Fall, Spring and Summer
Time value of money, bond and stock valuation, capital budgeting, risk-return trade-offs and option pricing.
**Prerequisites:** ACCT F261X; ECON F101X; ECON F102X; ECON F227; MATH F122X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F330 The Legal Environment of Business**
4 Credits
Offered Fall, Spring and Summer
The judicial system, legal processes, administrative procedures, law of torts, contract and agency government regulation of business, business ethics, corporate social responsibility and the uniform commercial code.
**Lecture + Lab + Other:** 4 + 0 + 0

**BA F343 Principles of Marketing**
3 Credits
Offered Fall, Spring and Summer
Management of a firm's marketing effort focusing on products, distribution, pricing and promotion to targeted consumers. Practices appropriate to domestic or international, small or large, goods or services, and for-profit or nonprofit organizations included.
**Prerequisites:** WRTG F111X; COJO F131X or COJO F141X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F360 Operations Management**
3 Credits
Offered Fall, Spring and Summer
Operations management with an emphasis on systematic planning, design and operation of the processes that produce goods and deliver services that customers recognize to be of superior quality. Topics include operations strategy, process design, quality control, statistical process control, project scheduling, material requirements planning and just-in-time systems.
**Prerequisites:** AIS F101; ECON F227.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F367 Huntology: The Science, Business and Philosophy of Hunting**
3 Credits
Offered Spring
The course is interdisciplinary, with perspectives from the disciplines of business, science and philosophy as related to the study and practice of hunting.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Cross-listed with** SPRT F367.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F375 Introduction to Esports Management**
3 Credits
Offered Fall
This course is designed to introduce students to business concepts related to the esports industry. Students will be exposed to topics including: the definition of esports, content marketing, event management, management, governance and legal aspects of esports.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** SPRT F375.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F390 Organizational Theory and Behavior**
3 Credits
Offered Fall, Spring and Summer
Understanding how and why organizations behave as they do, assessing whether the behavior is functional or dysfunctional, and learning to understand and change motivation, leadership, communications, group dynamics, conflict management, layout, technology, structure and policies to create high-functioning organizations.
**Prerequisite:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F391 Alaska Native Corporations: A Historical and Contemporaneous Perspective** (an)
3 Credits
Offered As Demand Warrants
Explore management within Alaska Native Corporations to understand the cultural origins and behavioral adaptions unique to these organizations. Alaska Native Claims Settlement Act, Alaska National Interest Lands Conservation Act, indigenous leadership, cultural anthropology, contrasting cultural values and managing and maintaining organizational culture will be covered.
**Prerequisites:** WRTG F111X and junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F421 Business Analytics**
3 Credits
Offered As Demand Warrants
This class provides an introduction and application of data analytics in accounting and business contexts. Students will develop an understanding of analytic concepts and how they apply to the investigation of business data relationships and trends.
**Prerequisites:** ECON F227 or STAT F200X; ACCT F261X; MATH F122X.
**Stacked with** MBA F623.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F423 Investment Analysis**
3 Credits
Offered As Demand Warrants
Introduction to investment analysis. Presents an understanding of the investment environment and analytical tools in investing. Intended for undergraduate students.
**Prerequisites:** BA F325; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F424 Real Estate and Alternative Investments**
3 Credits
Offered As Demand Warrants
Develop skills required to value and finance residential and commercial real estate. Financing instruments, markets and taxation issues specific to real estate are covered in the first half; alternative investments such as REITs will be presented in the second half of the course.
**Prerequisites:** BA F325.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F435 Entrepreneurship**
3 Credits
Offered As Demand Warrants
This course will provide students with the steps toward starting and growing their own business and entrepreneurial ventures for other businesses. They will learn methods, mindset and approaches necessary to form a business. Upon completion, students will have the resources, behaviors and confidence to develop a new venture.
**Prerequisites:** BA F151X; ACCT F261X or BAM F352.
**Crosslisted with** BAM F435.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F436 Consumer Behavior** (s)
3 Credits
Offered Spring
Effects of nationality, culture, social class, family, personality, symbolism and persuasion on consumptive behavior. Qualitative methodologies such as focus groups covered.
**Prerequisites:** BA F343 or PSY F330.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F443 Social Media Marketing**
3 Credits
Offered As Demand Warrants
Learn the concepts, methods and practices of social media marketing (SMM) as applied by large firms, small businesses and non-profits. Prepare, implement and measure a social media marketing campaign. Covers consumer response, SMM campaign planning and measurement.
**Prerequisites:** BA F343; AIS F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F445 Marketing Research**
3 Credits
Offered As Demand Warrants
Basic processes and tools of marketing research emphasizing utilization of research findings as an integral part of the managerial decision-making process. Techniques of qualitative and quantitative data-gathering and analysis to solve marketing problems. Practices appropriate to domestic or international, small or large, goods or services, and for-profit or nonprofit organizations.
**Prerequisites:** BA F343; ECON F227; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper division Bachelor of Business Administration standing or permission of the SOM advisor.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F453 Internship in Business Administration**
3 Credits
Offered As Demand Warrants
A supervised practical work experience that engages students in structured exploration of the business environment and an opportunity to demonstrate and apply previous coursework and prior learning to their current internship. Focus on applying previous learning, developing business acumen, and preparing for future employment. Admission requires approved job arrangements.
**Prerequisites:** Junior standing; cumulative 3.0 GPA in ACCT and BA courses.
**Stacked with** MBA F653.
**Lecture + Lab + Other:** 0 + 3 + 20

**BA F454 Student Investment Fund**
3 Credits
Offered Fall and Spring
Hands-on experience in portfolio management. Students will be making investment and diversification decisions affecting the $1.6 million Student Investment Fund.
**Prerequisites:** COJO F131X or COJO F141X; BA F325 (may be taken concurrently); upper division BBA standing; permission of the SOM advisor or instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F455 Portfolio Management**
3 Credits
Offered Fall and Spring
The second course involved with the hands-on management of the $1.2 million Student Investment Fund. Students will carry out the duties of officers of the fund and will be responsible for portfolio diversification and management decisions affecting the fund.
**Prerequisites:** BA F454; upper division BBA standing; permission of the SOM advisor or instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F457 Training and Management Development**
3 Credits
Offered Fall, Spring and Summer
Theory and practice of employee training programs, needs assessments, learning theories, instructional design, training techniques and evaluation, management development and career development techniques and practices.
**Prerequisites:** BA F307.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F458 Real Estate Investment Fund**
3 Credits
Offered Fall and Spring
In this course, students will manage UAF's Real Estate Investment Trust Fund. The fund (currently valued at approximately $300,000) aims to outperform the MSCI REIT Index on a risk-adjusted basis. Students will manage all investment decisions, per the REIT Fund by-laws, with the support of their faculty advisor.
**Prerequisites:** BA F454 and BA F455.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F460 International Business**
3 Credits
Offered Fall and Spring
Relationships among nations with particular emphasis on the business, economic, and sociocultural institutions that influence the performance of managers. Formulation of objectives, strategies and organizational structures within the context of international diversity.
**Prerequisites:** COJO F131X or COJO F141X.
**Recommended:** Senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F461 International Finance**
3 Credits
Offered Fall
Development of analytical skills, logical thought processes and information literacy necessary to make and implement investment decisions in a global setting.
**Prerequisites:** BA F325.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F462 Corporate Strategy**
3 Credits
Offered Fall and Spring
An integrative approach to strategy formation and implementation to achieve organization goals. Students will be introduced to theoretical perspectives and associated methodologies directed toward resolving the unstructured problems and opportunities which confront general managers at the highest levels of an organization. B.A. standing; or permission of the SOM advisor.
**Prerequisites:** COJO F131X or COJO F141X; ACCT F262; BA F325; BA F343; BA F360; BA F390; ECON F101X; ECON F102X; upper division B.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F464 Project Management**
3 Credits
Offered As Demand Warrants
This course is designed to cover key components of project management with emphasis on the practical approach to managing and delivering projects. We will focus on concepts, techniques, and best practices that allow the project manager to deliver simple or complex projects and lead project teams successfully.
**Prerequisites:** BAM F320 or BA F390; BAM F352 or ACCT F261X; WRTG F111X; BA F343; upper division standing.
**Cross-listed with** BAM F462.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F467 Current Topics in Management**
3 Credits
Offered As Demand Warrants
Examines current management trends with regard to major theories and practices in the field. Topics of interest could include organizational development, performance appraisal, personnel selection and international human resources management.
**Prerequisites:** BA F307; BA F390.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F470 Leadership Theory and Development**
3 Credits
Offered As Demand Warrants
A guide for interpreting leadership theory and research as well as practical advice on how to be a better leader. Reviews functional leadership theories, how the theories relate to one another, and how students can apply the leadership theories to their own personal development.
**Prerequisite:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F472 Leading Change**
3 Credits
Offered As Demand Warrants
Explore how organizations to develop their capability and to achieve change, including the way change agents deal with conflicting demands. Learn the capabilities necessary to become a change agent within an organization and extend your understanding of key leadership theories.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F480 Current Topics in Sport & Recreation Management**
3 Credits
Offered As Demand Warrants
This course examines current trends in critical areas of sport & recreation business from a management perspective. Topics of interest include corporate social responsibility, climate change, diversity, media relations, and technology.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; SPRT F281X.
**Cross-listed with** SPRT F480.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F481 Event Management**
3 Credits
Offered Fall, Spring and Summer
This course is designed to provide the student with knowledge pertaining to the various aspects of managing a public sport and/or entertainment event and their production. Topics discussed include economic impact, sponsorship, risk management, staff and volunteers, customer service, concessions, crowd management and technology.
**Prerequisites:** BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with** SPRT F481.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F482 Sport Marketing**
3 Credits
Offered Spring
This course provides a decision-orientated overview of sport marketing management in sport organizations. This course is designed to acquaint students with comprehensive fundamental theories and issues in sport marketing, grounded within traditional marketing principles, and emphasizing unique application to the sport industry.
**Prerequisites:** BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with** SPRT F482.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F483 Sport and Recreation Sales**
3 Credits
Offered Fall
This course is designed to provide the student with knowledge pertaining to the various aspects of sales and pricing techniques used within sport and recreation organizations. Some of the topics discussed include ticket distribution, customer service, software and real-life sales campaigns.
**Prerequisites:** BA F343, BA F281X/SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with** SPRT F483.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F484 Legal Aspects of Sport and Recreation Management**
3 Credits
Offered As Demand Warrants
This course will focus on the three major areas of law that have a direct impact on the management of sport and recreation: tort liability and risk management; contract law; and constitutional law.
**Prerequisites:** SPRT F281X.
**Cross-listed with** SPRT F484.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F485 Sport and Recreation Facilities**
3 Credits
Offered Fall
This course provides a foundation for the planning process, operations, and specific design features for various park, recreation, and sport facilities. This course is designed to provide students the opportunity to learn multiple aspects of sports facilities and the management of events held at these facilities.
**Prerequisites:** SPRT F281X, BA F281X, SPRT F280 or BA F280.
**Cross-listed with** SPRT F485.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F486 Entrepreneurship in Outdoor Recreation Industries**
3 Credits
Offered Spring
This course is an introduction in the development and management of outdoor recreation businesses. Topics covered include business plan development, financial structures, and risk management specific to remote recreation businesses commonly found in Alaska, such as big-game commercial services, sport fishing operations, remote expediting, and aviation-related services.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA/SPRT F281X.
**Cross-listed with** SPRT F486.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F488 Sport Analytics**
3 Credits
Offered Fall, Spring and Summer
This course is an introduction to the application of analytical tools and techniques used within the sports industry. It will discuss theory, development, and application of analytics in the sports industry.
**Prerequisites:** SPRT F280 or SPRT F281X.
**Crosslisted with** SPRT F488.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F489 Public Sector Labor Relations**
3 Credits
Offered As Demand Warrants
Builds the knowledge and skills to manage effectively in a highly-unionized public sector context. Uses recent cases to explore the bargaining process, dispute resolution, contract administration, and contemporary political and legal context.
**Prerequisites:** COJO F121X, COJO F131X, COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Special Notes:** Completion of BA F307 is recommended but not required.
**Lecture + Lab + Other:** 7 + 0 + 0

**BA F490 Services Marketing**
3 Credits
Offered As Demand Warrants
Marketing principles in the service sector with special emphasis on such service industries as banking, healthcare, recreation, retailing and tourism. Includes practices appropriate to domestic or international, small or large, and for-profit organizations.
**Prerequisites:** BA F343.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F491 Current Topics in Marketing**
3 Credits
Offered As Demand Warrants
Examines current marketing trends with regard to production, distribution, promotion, pricing and target markets. Focus on trends in Alaska, the U.S. and worldwide. Course may be repeated for credit when content varies.
**Prerequisites:** BA F343.
**Lecture + Lab + Other:** 3 + 0 + 0

**BA F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**BA F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**BA F698 Research**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**BA F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Chemistry (CHEM)

**College of Natural Science and Mathematics**
Department of Chemistry and Biochemistry (https://www.uaf.edu/chem/)
907-474-5510

**CHEM F100X Chemistry in Complex Systems** (n)
4 Credits
Offered Fall, Spring and Summer
Fundamentals of chemistry with an emphasis on the role of chemistry in environmental and life systems. The role of feedback systems on chemical behavior is illustrated in atmospheric, aquatic, nuclear and nutritional systems.For non-science majors.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F103L CHEM F103X Laboratory**
0 Credit
**Co-requisites:** CHEM F103X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**CHEM F103X Introduction to General Chemistry** (n)
4 Credits
Offered Fall
Introductory chemistry survey course for health science majors and preparatory course for science majors. Topics include: measurement, energy and matter, periodic trends, chemical composition, chemical reactions, solutions, bond theory, phases, oxidation-reduction, nuclear chemistry, problem-solving (applied mathematics), and special topics.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** CHEM F103L.
**Special Notes:** This course fulfills the laboratory part of the natural science requirement and provides preparation for subsequent training in chemistry in CHEM F104X and CHEM F105X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F104L CHEM F104X Laboratory**
0 Credit
**Co-requisites:** CHEM F104X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**CHEM F104X Introduction to Organic Chemistry and Biochemistry** (n)
4 Credits
Offered Spring
This is the second semester course in the sequence for health-science majors and comprises a survey of the fundamentals of chemistry as applied to biological systems. Topics include nomenclature of organic compounds, organic functional groups and reactions, biochemical processes and pathways, biological macromolecules, and metabolites.
**Prerequisites:** CHEM F103X; placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** CHEM F104L.
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F105L Chemistry F105X Lab**
0 Credit
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**CHEM F105X General Chemistry I** (n)
4 Credits
Offered Fall, Spring and Summer
This course is an introduction to general chemistry and explores topics to a much greater depth than preparatory courses. Topics include: measurement, energy and matter, periodic trends, chemical composition, chemical reactions, solutions, bond theory, gases, thermodynamics, problem-solving (applied mathematics), and special topics. Students must be enrolled in both CHEM F105X and CHEM F105L to receive full credit.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F151X; or a B- or better in CHEM F103X; or permission of instructor and department.
**Corequisite:** CHEM F105L.
**Special Notes:** CHEM F105X-CHEM F106X, together with their laboratory components, constitute the standard one year engineering and science major general chemistry course.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F106L Chemistry F106X Lab**
0 Credit
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**CHEM F106X General Chemistry II** (n)
4 Credits
Offered Fall, Spring and Summer
The second semester in the general chemistry sequence. Topics include: kinetics, equilibrium chemistry (including acids and bases, solubility, and complex ion formation), nuclear chemistry, electrochemistry, thermodynamics, and special topics. Students must be enrolled in both CHEM F106X and CHEM F106L to receive full credit.
**Prerequisites:** Grade of C- or better in CHEM F105X; placement in WRTG F111X; placement in MATH F151X; or permission of instructor and department chair.
**Corequisites:** CHEM F106L.
**Special Notes:** CHEM F105X-CHEM F106X, together with their laboratory components, constitute the standard one year engineering and science major general chemistry course.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F111X Introduction to Environmental Chemistry of the Arctic**
4 Credits
Offered As Demand Warrants
This course introduces students to environmental chemistry through investigating the air, water and soil quality of the Arctic environment as affected by natural and anthropogenic cycling of nutrients and contaminants. The lab component will focus on characterization of natural waters collected around the state. Presented both on-campus and by distance.
**Prerequisites:** MATH F105.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F190 Alaska Statewide High School Science Symposium**
2 Credits
Offered Spring
Students employ the scientific method to approach a problem of personal interest. Student work is molded into a research paper delivered orally in a formal scientific presentation for judges with wide-ranging experiences.
**Prerequisites:** High School student grades 9-12.
**Recommended:** Research completion, abstract and paper writing/ submission, ASHSSS presentation.
**Lecture + Lab + Other:** 0 + 10 + 0

**CHEM F202 Basic Inorganic Chemistry** (n)
3 Credits
Offered Spring
Introduction to coordination theory, crystal field theory, kinetics and mechanisms of substitutions and redox reactions, unit cells and ionic bonding, periodic law, and descriptive chemistry of selected main group elements.
**Prerequisites:** CHEM F106X.
**Lecture + Lab + Other:** 2 + 3 + 0

**CHEM F212 Chemical Equilibrium and Analysis** (n)
4 Credits
Offered Fall
Aqueous chemical equilibrium as applied to chemical analysis, separations, spectrophotometry, potentiometry and factors considered in the analytical approach. Lab portion will include introductory experiments in analytical and instrumental techniques.
**Prerequisites:** Grade of C or better in CHEM F106X; MATH F151X.
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F288 Introduction to Chemical Research**
2 Credits
Offered As Demand Warrants
Scientific research is creative and engaging when properly planned and executed. This course introduces students to the process of planning and executing a research project. We will begin with an idea, review primary literature, brainstorm project ideas, pose a testable hypothesis, plan experiments and execute a small research project.
**Prerequisites:** CHEM F212, CHEM F321.
**Lecture + Lab + Other:** 1 + 3 + 0

**CHEM F314 Analytical Instrumental Laboratory** (n)
3 Credits
Offered Spring
A laboratory course focusing on the acquisition and interpretation of spectroscopic and chromatographic data for qualitative characterization and quantitative chemical measurements. Students will learn to design and execute experiments with a variety of instruments, critically evaluate experimental data, and communicate their findings through scientific writing.
**Prerequisites:** CHEM F212; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; must be a chemistry major.
**Lecture + Lab + Other:** 1 + 6 + 0

**CHEM F321 Organic Chemistry I** (n)
4 Credits
Offered Fall
A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis, and physical and spectroscopic properties. Lab portion will include an introduction to synthetic techniques and spectroscopy.
**Prerequisites:** CHEM F106X.
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F325 Organic Chemistry II** (n)
4 Credits
Offered Spring
A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis and physical and spectroscopic properties. Lab portion will include synthesis and characterization by spectroscopy.
**Prerequisites:** CHEM F321.
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F331 Physical Chemistry I** (n)
4 Credits
Offered Fall
Principles of thermodynamics and kinetics with applications to phase equilibria, solutions, chemical equilibrium and electrochemistry. Course teaches these concepts using both lecture and laboratory instruction.
**Prerequisites:** CHEM F106X; MATH F252X; PHYS F124X or PHYS F212X.
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F332 Physical Chemistry II** (n)
4 Credits
Offered Spring
Atomic and molecular structure, and spectroscopy, and statistical mechanics. Course teaches these concepts using both lecture and laboratory instruction.
**Prerequisites:** CHEM F331; MATH F253X.
**Lecture + Lab + Other:** 3 + 3 + 0

**CHEM F360 Cell and Molecular Biology** (n)
3 Credits
Offered Fall and Spring
An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation.
**Prerequisites:** BIOL F260; CHEM F105X; CHEM F106X (may be taken concurrently).
**Cross-listed with** BIOL F360.
**Special Notes:** Taught asynchronously online in fall, face to face in spring.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F402 Inorganic Chemistry** (n)
3 Credits
Offered Fall
Symmetry and group theory, molecular orbital theory, solid state chemistry, acids and bases, redox reactions, non-aqueous solvents, descriptive chemistry of some main group elements.
**Prerequisites:** CHEM F202; CHEM F325.
**Lecture + Lab + Other:** 1 + 6 + 0

**CHEM F403 Biological Inorganic Chemistry**
3 Credits
Offered Fall
Survey of structure, functions, and chemical properties of natural metalloproteins and metalloenzymes, roles of metalloproteins in nucleic acid formation and replication, metal-based medicines.
**Prerequisites:** CHEM F202; CHEM F449.
**Stacked with** CHEM F603.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F406 Atmospheric Chemistry**
3 Credits
Offered Spring Odd-numbered Years
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion.
**Prerequisites:** CHEM F332.
**Stacked with** CHEM F606; ATM F606.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F419 Practical Nuclear Magnetic Resonance**
2 Credits
Offered Spring
Students will be trained in the basic operation of NMR instruments. Students will spend much of the class time getting hands-on experience on the NMR with student-driven NMR-based research projects. At the end of the course, students will present their projects to the rest of the class.
**Prerequisites:** CHEM F321.
**Lecture + Lab + Other:** 1 + 3 + 0

**CHEM F420 Applications of NMR Spectroscopy**
3 Credits
Offered Fall Even-numbered Years
Applications of nuclear magnetic resonance (NMR) spectroscopy in the chemical and biochemical sciences. The course will focus on the implementation and interpretation of NMR experiments for solving research problems. Topics include the basic theory of NMR and one- and two-dimensional techniques.
**Prerequisites:** CHEM F321.
**Stacked with** CHEM F620.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F434 Chemistry Capstone Laboratory** (n)
3 Credits
Offered Fall
A capstone laboratory course with three major components: 1) experiments related to concepts learned in physical, analytical and inorganic chemistry courses emphasizing kinetics, spectroscopy and thermodynamics; 2) computer use in problem solving, data analysis and word processing; and 3) technical writing with emphasis on preparation of papers for publication.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; CHEM F212; CHEM F202.
**Corequisites:** CHEM F332.
**Lecture + Lab + Other:** 1 + 6 + 0

**CHEM F449 General Biochemistry: Metabolism**
3 Credits
Offered Spring
This course is an introduction to metabolism at the molecular level and covers the molecular structures and classification of the three major macromolecules: carbohydrates, lipids and proteins. Individual metabolic pathways and regulation will be studied, as well as the big picture and how all the pathways are tied together.
**Prerequisites:** CHEM F321.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F450 Information Storage and Transfer: Molecules and Pathways**
3 Credits
Offered Fall
Focuses on the biochemistry of the two principal macromolecules: nucleic acids and proteins. Topics include: nucleotides metabolism, DNA structure and topology, DNA replication, DNA repair and recombination, cell cycle regulation, RNA transcription and processing. Gene expression, translation and protein metabolism. Biomedical relevance and contemporary techniques will be addressed if appropriate.
**Prerequisites:** CHEM F321.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F455 Environmental Toxicology**
3 Credits
Offered Fall
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.
**Prerequisites:** CHEM F449; or one semester each of organic chemistry and cell or molecular biology; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F121X or COJO F131X or COJO F141X.
**Cross-listed with** BIOL F455.
**Stacked with** BIOL F656; CHEM F655.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F466 Advanced Cell and Molecular Laboratory**
3 Credits
Offered Spring
Modern molecular biological techniques including protein and nucleic acid gel electrophoresis, western blotting, cell fractionation, cellular respiration, enzymology and fluorescence microscopy. Lectures will be supplemented with reading from the primary literature. Student projects in this course may satisfy the capstone project requirements of the biological science degree.
**Prerequisites:** BIOL F360 or CHEM F360 may be taken concurrently.
**Cross-listed with** BIOL F466.
**Lecture + Lab + Other:** 2 + 4 + 0

**CHEM F470 Cellular and Molecular Neuroscience**
3 Credits
Offered Fall Even-numbered Years
The cellular and molecular underpinnings of signaling in the nervous system. Topics include properties of excitable membranes, synaptic transmission, neurological integration, the cellular and molecular basis of learning and memory, and pharmacological treatment of neuronal pathologies.
**Prerequisites:** Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F230X.
**Stacked with** CHEM F670 and BIOL F679.
**Special Notes:** Recommended MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F474 Neurochemistry**
3 Credits
Offered Fall Odd-numbered Years
Covers basic and applied aspects of interneuronal signaling of specific neurotransmitter systems. Lectures will be based on chapters from assigned text as well as recent and historical literature relevant to these topics. Basic concepts introduced in lectures will be applied through guided discussion of original research papers.
**Prerequisites:** BIOL F115X; CHEM F325; BIOL F417 or CHEM F470 or PSY F335.
**Stacked with** CHEM F676.
**Special Notes:** Students will learn to prepare "peer reviews" of selected papers and critically discuss original research.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F481 Seminar**
1 Credit
Offered Fall and Spring
Introduction to the techniques and style of technical oral presentation generally accepted by professional chemists. Class will meet two hours per week, the first hour in closed session, the second, open to the public. Seminar attendance and participation in observing and critiquing presentations by graduate students, chemistry faculty, and their peers is required.
**Prerequisites:** COJO F131X or COJO F141X.
**Special Notes:** Oral communication intensive credit is earned upon successful completion of CHEM F482.
**Lecture + Lab + Other:** 2 + 0 + 0

**CHEM F482 Seminar**
2 Credits
Offered Fall and Spring
Introduction to the techniques and style of technical oral presentation generally accepted by professional chemists. Class will meet two hours per week, the first hour in closed session, the second, open to the public. Preparation of a 40 minute presentation to be delivered twice, first, to others in the course.
**Prerequisites:** CHEM F481; COJO F131X or COJO F141X.
**Lecture + Lab + Other:** 2 + 0 + 0

**CHEM F488 Undergraduate Chemistry and Biochemistry Research**
2-3 Credits
Offered Fall and Spring
Advanced research topics from outside the usual undergraduate laboratory offerings. The student will be required to make presentations and turn in a final report. Research areas range from atmospheric chemistry to molecular biology. A substantial level of chemistry or biochemistry background is assumed.
**Prerequisites:** CHEM F434 or CHEM F314.
**Lecture + Lab + Other:** 0 + 6-9 + 0

**CHEM F498 Research**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**CHEM F601 Introduction to Atmospheric Sciences**
3 Credits
Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering.
**Prerequisites:** Graduate standing.
**Cross-listed with** ATM F601.
**Stacked with** ATM F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F603 Biological Inorganic Chemistry**
3 Credits
Offered Fall
Survey of structure, functions, and chemical properties of natural metalloproteins and metalloenzymes, roles of metalloproteins in nucleic acid formation and replication, metal-based medicines.
**Stacked with** CHEM F403.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F605 Aquatic Chemistry**
3 Credits
Offered As Demand Warrants
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in aqueous systems. Emphasis is on the study of acid-base chemistry, complexation, precipitation-dissolution and reduction-oxidation reactions.
**Prerequisites:** Graduate standing.
**Cross-listed with** ENVE F641.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F606 Atmospheric Chemistry**
3 Credits
Offered Spring Odd-numbered Years
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion.
**Prerequisites:** ATM F601.
**Cross-listed with** ATM F606.
**Stacked with** CHEM F406.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F609 Aqueous and Environmental Geochemistry**
3 Credits
Offered Spring Odd-numbered Years
Chemistry of aquatic and terrestrial environments, including thermodynamic, kinetic and structural principles applied to aqueous geochemical systems. Emphasis on aqueous speciation and heterogeneous interactions (e.g., dissolution/precipitation and sorption) involved in the partitioning, transformation and transport of chemical species in the environment.
**Prerequisites:** CHEM F331 or Graduate standing.
**Cross-listed with** GEOS F633.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F620 Applications of NMR Spectroscopy**
3 Credits
Offered Fall Even-numbered Years
Applications of nuclear magnetic resonance (NMR) spectroscopy in the chemical and biochemical sciences. The course will focus on the implementation and interpretation of NMR experiments for solving research problems. Topics include the basic theory of NMR and one- and two-dimensional techniques.
**Prerequisites:** Graduate standing.
**Stacked with** CHEM F420.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F631 Environmental Fate and Transport**
3 Credits
Offered Spring Even-numbered Years
Examination of the physical properties that govern the behavior, fate and transport of contaminants released into the environment. Topics include air-water partitioning and exchange, organic solvent-water partitioning, diffusion, sorption, chemical and biological transformation reactions, and modeling concepts.
**Cross-listed with** ATM F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F632 Molecular Spectroscopy**
3 Credits
Offered Fall Odd-numbered Years
Application of quantum mechanics to molecular bonding and spectroscopy. Topics include: applications of lasers to probe chemical reactivity, photochemistry and the detection of trace compounds in mixtures. Variable content. May be repeated for credit.
**Prerequisites:** CHEM F332.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F654 Protein Structure and Function**
3 Credits
Offered Spring Even-numbered Years
Contemporary topics in peptide and protein biochemistry. Topics include peptide synthesis, protein modification, comparative aspects of structure, protein engineering, enzyme and receptor function as well as molecular modeling.
**Prerequisite:** CHEM F449.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F655 Environmental Toxicology**
3 Credits
Offered Fall
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards Arctic and sub-Arctic regions.
**Prerequisites:** CHEM F449; or one semester each of organic chemistry and cell or molecular biology.
**Cross-listed with** BIOL F656.
**Stacked with** BIOL F455; CHEM F455.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F657 Molecular Foundations of Gene Expression**
3 Credits
Offered Spring Even-numbered Years
The molecular regulation of gene expression in prokaryotes and eukaryotes in the context of development and disease. Major topics include: protein/DNA interactions, structure-function relations of transcription factors, signal transduction, control of transcription and translation, chromatin structure and DNA replication.
**Prerequisites:** CHEM F449; CHEM F450.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F660 Chemical Oceanography**
3 Credits
Offered Spring
An integrated study of the chemical, biological, geological and physical processes that control the chemical composition of seawater. Boundary interactions with the atmosphere and lithosphere, biogeochemical cycles and tracers of these complex cycles are examined. The marine chemistry of inorganic carbon is considered in detail.
**Prerequisites:** Graduate standing.
**Cross-listed with** MSL F660.
**Stacked with** MSL F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F666 Scientific Teaching**
2 Credits
Offered Spring Even-numbered Years
This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment, and course management that have been shown by research to improve student learning. This course is intended for graduate students who have an interest in science teaching.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**CHEM F670 Cellular and Molecular Neuroscience**
3 Credits
Offered Fall Even-numbered Years
The cellular and molecular underpinnings of signaling in the nervous system. Topics include properties of excitable membranes, synaptic transmission, neurological integration, the cellular and molecular basis of learning and memory, and pharmacological treatment of neuronal pathologies.
**Prerequisites:** Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F230X.
**Cross-listed with** BIOL F679.
**Stacked with** CHEM F470.
**Special Notes:** Recommended MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F671 Receptor Pharmacology**
3 Credits
Offered Fall Even-numbered Years
Covers basic drug/receptor theory to train students to assess affinity and efficacy of receptor ligands, interpret functional assays and binding results, and critically evaluate original research regarding receptor pharmacology with an emphasis on ligand-gated ion channels and G-protein coupled receptors. Special Notes:
**Prerequisites:** Upper-division or graduate biochemistry or neurochemistry course.
**Recommended:** BIOL F417.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F674 Membrane Biochemistry and Biophysics**
3 Credits
Offered Fall Even-numbered Years
Basic biophysical and molecular processes associated with membrane-mediated events in the context of cellular physiology. Major topics includes biochemical and biophysical characteristics of membrane lipids; structure-function relation of membrane proteins; protein trafficking/targeting; vesicle transport and membrane fusion/exocytosis; the nature of membrane excitability; and the role of membrane in bioenergetics.
**Prerequisites:** CHEM F449; CHEM F450.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F675 Cellular Signaling**
3 Credits
Offered Spring Odd-numbered Years
Cellular signaling is vitally important in complex biomolecular systems, development, physiology, and pathology and thus constitutes a major topic in modern medical and pharmacological research. This course concentrates on cellular signal transduction and regulation in higher mammals. Major topics include G-proteins, protein kinases, signaling molecules, lipid mediators, and adaptor proteins.
**Prerequisites:** Upper division or graduate biochemistry or neurochemistry course.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F676 Neurochemistry**
3 Credits
Offered Fall Odd-numbered Years
Covers basic and applied aspects of interneuronal signaling of specific neurotransmitter systems. Lectures will be based on chapters from assigned text as well as recent and historical literature relevant to these topics. Basic concepts introduced in lectures will be applied through guided discussion of original research papers.
**Prerequisites:** BIOL F115X; CHEM F325; BIOL F417 or CHEM F470 or PSY F335.
**Stacked with** CHEM F474.
**Special Notes:** Students will learn to prepare "peer reviews" of selected papers and critically discuss original research.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHEM F686 Chemical Research Mentoring**
2 Credits
Offered As Demand Warrants
This course provides graduate students the opportunity to mentor undergraduates in chemical research within a structured environment, from developing a research idea to executing a small research project. the focus of this course is to refine mentoring skills that contribute to the professional development of maturing chemical professionals.
**Prerequisites:** Graduate standing in a scientific discipline.
**Lecture + Lab + Other:** 1 + 3 + 0

**CHEM F688 Biochemical and Molecular Biology Seminar**
1 Credit
Offered Fall and Spring
A seminar on various topics related to biochemistry and molecular biology including discussions of recent literature and research results.
**Lecture + Lab + Other:** 1 + 0 + 0

**CHEM F691 Research Presentation Techniques**
1 Credit
Offered Fall
Review of recent research in chemistry to expose students to recent findings, methodologies and concepts in a broad range of chemistry and related disciplines. How to present and defend research proposals. Course may be repeated for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**CHEM F692 Seminar**
1-6 Credits
Graded Pass/Fail.
**Lecture + Lab + Other:** 1-6 + 0 + 0

**CHEM F698 Non-thesis Research/Project**
1-9 Credits
Graded Pass/Fail.
**Lecture + Lab + Other:** 0 + 1-9 + 0

**CHEM F699 Thesis**
1-12 Credits
Offered Fall, Spring and Summer
**Lecture + Lab + Other:** 0 + 0 + 0

# Chinese (CHNS)

**College of Liberal Arts**
Foreign Language & Literature (https://www.uaf.edu/language/languages/chinese.php)
907-474-0928

**CHNS F100A Chinese Culture and Conversation IA**
3 Credits
Offered As Demand Warrants
An introductory course in Chinese language and culture with an emphasis on the spoken pronunciation, and contemporary use of the language. This class does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHNS F100B Chinese Culture and Conversation IB**
3 Credits
Offered As Demand Warrants
A continuation of introduction to the Chinese language and culture with an emphasis on the spoken and written language. Course will focus on language skills to include grammar, vocabulary, pronunciation, and contemporary use of the language. This class does not meet Foreign Language major or minor requirements.
**Prerequisites:** CHNS F100A.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHNS F100C Chinese Culture and Conversation IIA**
3 Credits
Offered As Demand Warrants
Continuation of CHNS F100B. Students continue to progress in basic skills of listening, speaking, reading, and writing sentence patterns. Grammar and sentence pattern analysis will be presented systematically to help students establish a solid foundation for the use of language.
**Prerequisites:** CHNS F100B.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHNS F100D Chinese Culture and Conversation IIB**
3 Credits
Offered As Demand Warrants
Continuation of CHNS F100C. Students continue to progress in basic skills of listening, speaking, reading, and writing by learning more characters/vocabulary and broadened sentence patterns. Grammar and sentence pattern analysis will be presented systematically to help students establish a solid foundation for the use of language.
**Prerequisites:** CHNS F100C.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHNS F101X Elementary Chinese I** (h)
5 Credits
Offered Fall
First year spoken and written Chinese. Emphasis on the basic elements of the language to acquire skills in listening, speaking, reading and writing. About 300 characters will be taught. Cultural aspects will be presented.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**CHNS F102X Elementary Chinese II** (h)
5 Credits
Offered Spring
First year spoken and written Chinese. Emphasis on the basic elements of the language to acquire skills in listening, speaking, reading and writing. Approximately 300 characters will be taught. Cultural aspects are presented.
**Prerequisites:** CHNS F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**CHNS F201 Intermediate Chinese I** (h)
4 Credits
Offered Fall Even-numbered Years
Continuation of CHNS F102. Continue to gain language skills by learning more characters/vocabulary and broadened sentence patterns. About 200 characters and 700 vocabulary words will be taught.
**Prerequisites:** CHNS F102X.
**Lecture + Lab + Other:** 4 + 0 + 0

**CHNS F202 Intermediate Chinese II** (h)
4 Credits
Offered Spring Odd-numbered Years
Continuation of CHNS F102. Continue to gain language skills by learning more characters/vocabulary and broadened sentence patterns. About 200 characters and 700 vocabulary words will be taught.
**Prerequisites:** CHNS F201.
**Lecture + Lab + Other:** 4 + 0 + 0

# Civil Engineering (CE)

**College of Engineering and Mines**
Department of Civil, Geological and Environmental Engineering (https://www.uaf.edu/cem/programs/civil-engineering/)
907-474-7241

**CE F112 Elementary Surveying**
3 Credits
Offered Fall
Basic plane surveying; use of transit, level, theodolite and total station. Traverses, public land system, circular curves, cross-sectioning and earthwork.
**Prerequisites:** MATH F152X.
**Lecture + Lab + Other:** 2 + 3 + 0

**CE F302 Fundamentals of Transportation Engineering**
3 Credits
Offered Spring
Introduction to multimodal transportation systems and the factors that influence the planning, design and operation of transportation systems. Highway systems are emphasized, with keen focus on issues related to Northern climates.
**Prerequisites:** CE F112 or MIN F202; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F326 Introduction to Geotechnical Engineering and Foundations**
4 Credits
Offered Fall
Identification and classification of soils; physical and mechanical properties of soil; subsurface exploration; movement of water through soil; soil deformation. Bearing capacity of shallow foundations and piles, and stability of retaining walls. Laboratory testing techniques, and introduction to soil issues related to cold regions.
**Prerequisites:** ES F331 (may be taken concurrently); GE F261.
**Crosslisted with** GE F326.
**Lecture + Lab + Other:** 3 + 3 + 0

**CE F331 Structural Analysis**
3 Credits
Offered Spring
Introduces techniques for the analysis of statically determinate and indeterminate structures to include beams, trusses and frames. Reviews internal force resultants, shear and moment diagrams, deflections, internal stresses. Discusses indeterminate analysis of structures, including methods of consistent deflections and slope-deflection. Provides and introduction to matrix methods.
**Prerequisites:** ES F208; ES F331.
**Lecture + Lab + Other:** 2 + 0 + 3

**CE F334 Properties of Materials**
3 Credits
Offered Spring
Properties of engineering materials. Bonding, crystal and amorphous structures. Relationships between microstructure and engineering properties. Modification of properties and environmental serviceability. Concrete and asphalt mixes.
**Prerequisites:** ES F331; may be taken concurrently.
**Lecture + Lab + Other:** 2 + 3 + 0

**CE F341 Introduction to Environmental Engineering**
4 Credits
Offered Fall
Introduces fundamentals of environmental engineering theory and application including topics in water chemistry, mass balance, heat transfer, water/wastewater quality and treatment, air quality engineering, and design of natural/engineered processes for contaminant removal. Laboratory activities supplement lecture material and provide an introduction to statistical analyses, data interpretation and preparation of reports.
**Prerequisites:** CHEM F106X; or graduate standing.
**Lecture + Lab + Other:** 3 + 3 + 0

**CE F344 Water Resources Engineering**
3 Credits
Offered Fall
Fundamentals of engineering hydrology and hydraulic engineering. Water cycle and water balance, precipitation, evaporation, runoff, statistical methods, flood control, open channels and groundwater.
**Prerequisites:** ES F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F401 Arctic Engineering**
3 Credits
Offered Fall
Introduces students to a broad spectrum of engineering challenges unique to cold regions. Discusses physical principles and practical data collection methods, analyses, designs and construction methods. Students gain a working knowledge of cold regions engineering problems and modern solutions as a basis for more detailed study.
**Prerequisites:** Senior standing in engineering or a BS in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F405 Design of Highways and Streets**
3 Credits
Offered Fall Even-numbered Years
Design and analysis of streets and highways with an emphasis on safety and efficiency. Design topics include: surveys, vertical and horizontal alignments, cross sections, and gravel roads. Analysis topics include: flow and gap acceptance theory, impact and safety analysis, signal timing and coordination.
**Prerequisite:** CE F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F408 Transportation Safety Analysis**
3 Credits
Offered Fall Odd-numbered Years
Analysis of streets and highways with an emphasis on safety. Analysis of alternatives and control strategies with respect to crash probabilities. Statistical models for safety analysis; crash data collection, database management and data analysis; safety improvement programs; statistical modeling; and before-and-after studies.
**Prerequisites:** CE F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F420 Groundwater Engineering**
3 Credits
Offered Fall
Fundamentals of groundwater occurrence, hydrology, resource development, water quality, monitoring and remediation. Field methods and modeling.
**Prerequisites:** CE F326, GE F326; ES F341.
**Crosslisted with** GE F420.
**Lecture + Lab + Other:** 2 + 3 + 0

**CE F422 Foundation Engineering**
3 Credits
Offered Fall
Reviews slope stability analysis. Introduces bearing capacity of soils and effects of settlements on structure; discusses design of footings and rafts, pile and pier foundations, retaining walls and anchored bulkheads, foundations on frozen soils, and construction problems in foundation engineering.
**Prerequisites:** CE F326; ES F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F424 Permafrost Engineering**
3 Credits
Offered Spring
Permafrost and frozen ground engineering, types of permafrost and ways of its formations, factors important for permafrost existence, hazards related to permafrost, index, thermal, and mechanical properties of frozen and thawing soils, thermal analysis methods of soil freezing and thawing, foundations design alternatives, pipelines, roads and airfields in permafrost regions.
**Prerequisites:** CE F326.
**Recommended:** CE F422.
**Stacked with** CE F624.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F432 Steel Design**
3 Credits
Offered Fall
Introduces structural design philosophies and current practices related to steel design. Utilizes the AISC Specification to discuss the design of basic structural elements in steel including tension members, fasteners, welds, column buckling, beam behavior, beam-columns, and composite floor systems.
**Prerequisites:** CE F331; ES F331.
**Lecture + Lab + Other:** 2 + 3 + 0

**CE F433 Reinforced Concrete Design**
3 Credits
Offered Spring
Introduces structural design philosophies and current practices related to reinforced concrete design. Utilizes the ACI 318 Specification to discuss the behavior of reinforced concrete members and their design including flexural members, such as rectangular, T-beams, one-way slabs, and axial members. Crack control, anchorage, development lengths and deflections are covered.
**Prerequisites:** CE F331; ES F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F434 Timber Design**
3 Credits
Offered Fall
Design loads. Building systems and loading path. Physical and mechanical properties of wood. Design values and adjustment factors. Design of axial members, beams and columns. Connection details. Design of wood frame structures. Current National Design Specifications (NDS) for Wood Construction used.
**Prerequisites:** CE F331; ES F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F438 Design of Engineered Systems**
3 Credits
Offered Spring
Capstone design experience where students demonstrate understanding of system design principles using service learning projects with civil and environmental engineering focus. Practical applications of fundamental engineering concepts such as codes and standards, ethics and safety, and liability and legal principles. Emphasis on teamwork, leadership and oral communication with diverse audiences.
**Prerequisites:** Civil engineering major with senior standing; COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; A minimum of two upper-division CE design courses, such as CE F405, CE F408, CE F422, CE F432, CE F433, CE F434, CE F442 or CE F445.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F442 Water and Wastewater Treatment Design**
3 Credits
Offered Spring
Presents design methods for pollution control and remediation in water systems. Applies theories and engineering principles for the design of physical, chemical, and biological processes for the treatment of water and wastewater.
**Prerequisites:** CE F341, CHEM F106X or graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F443 Air Pollution Management**
3 Credits
Offered Fall
Major principles and problems associated with air quality, stationary and moving sources, air pollution effects; major air pollution legislation and compliance calculations; meteorology and modeling of pollutant concentrations near a source; greenhouse gas emissions and climate change; control equipment and design of control strategies for specific air pollution problems.
**Prerequisites:** CHEM F106X; graduate standing.
**Stacked with** ENVE F643.
**Special Notes:** Recommended MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F445 Hydrologic Analysis and Design**
3 Credits
Offered Spring
Design and analysis; extended coverage of hydrologic concepts from CE F344. Precipitation, snow cover and evaporation analysis; groundwater hydraulics; runoff analysis and prediction; statistical hydrology; application of simulation models. Design of structures such as culverts, reservoirs, wells, pumps and pipe networks.
**Prerequisites:** CE F344.
**Lecture + Lab + Other:** 2 + 3 + 0

**CE F451 Construction Cost Estimating and Bid Preparation**
3 Credits
Offered Fall
Compilation and analysis of the many items that influence and contribute to the cost of projects to be constructed. Preparation of cost proposals and study of bidding procedures.
**Recommended:** College math.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F601 Engineering Research Communication**
3 Credits
Offered As Demand Warrants
Oral and written communication techniques to describe results on current issues in environmental science and engineering.
**Prerequisites:** Graduate Standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F605 Pavement Design**
3 Credits
Offered As Demand Warrants
Provides instruction on the current practices of analysis and design of highway and airport pavements. The instruction includes theoretical and practical approaches for the design of flexible and rigid pavements. Materials characterization, load considerations, empirical and mechanistic design methods as well as rehabilitation are covered.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F607 GIS Applications in Civil Engineering**
3 Credits
Offered As Demand Warrants
Theories and advanced methods of Geographic Information Systems for civil engineering practice. Students will apply and execute concepts related to data integration, analysis and management in the ArcGIS suite during labs.
**Prerequisites:** Graduate standing in CE.
**Lecture + Lab + Other:** 2 + 3 + 0

**CE F620 Construction Project Management**
3 Credits
Offered As Demand Warrants
Construction equipment, methods, planning and scheduling, construction contracts, management and accounting, construction estimates, costs, and project control.
**Recommended:** ESM F450 or equivalent.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F622 Foundations and Retaining Structures**
3 Credits
Offered As Demand Warrants
Advanced study of shallow and deep foundations; analyses and design of retaining walls, free-standing sheet-pile walls, braced excavations, slurry walls, tied-back retention systems, reinforced earth, frozen soil walls, anchored bulkheads, and cellular cofferdams.
**Prerequisites:** CE F422.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F624 Permafrost Engineering**
3 Credits
Offered Spring
Permafrost and frozen ground engineering, types of permafrost and ways of its formations, factors important for permafrost existence, hazards related to permafrost, index, thermal, and mechanical properties of frozen and thawing soils, thermal analysis methods of soil freezing and thawing, foundations design alternatives, pipelines, roads and airfields in permafrost regions.
**Prerequisites:** Training or experience in soil mechanics.
**Stacked with** CE F424.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F625 Soil Stabilization and Embankment Design**
3 Credits
Offered As Demand Warrants
Soil and site improvement using deep and shallow compaction, additives, pre-loading, vertical and horizontal drains, electro-osmosis and soil reinforcement, dewatering and stabilization; embankment design, earth pressure theories and pressure in embankment, embankment stability, embankment construction, control and instrumentation.
**Prerequisites:** CE F422.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F626 Thermal Geotechnics**
3 Credits
Offered As Demand Warrants
Fundamentals of thermal regimes of soils and rocks. Thermal impact of structures on soils. Thawing of permafrost beneath roads, buildings and around pipelines. Natural and artificial freezing of soils. Engineering means to maintain thermal regime of soils. Thermal design considerations.
**Prerequisites:** CE F326; CE F422.
**Cross-listed with** GE F626.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F627 Geotechnical Earthquake Engineering**
3 Credits
Offered As Demand Warrants
Introduction to soil dynamics and geotechnical aspects of earthquakes; influences of soils on ground motion, determination of soil response under strong seismic motion, causes of soil failures, soil liquefaction, lateral spreading, the seismic response of earth structures, and seismic-deformation procedures for slopes.
**Prerequisites:** CE F326.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F628 Unsaturated Soils Mechanics**
3 Credits
Offered As Demand Warrants
Fundamentals of soil behavior under load; pore pressure during monotonic loading; Ladd's "Simple Clay" model; densification and drained cyclic loading of sand; undrained cycle loading of soil.
**Prerequisites:** CE F326.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F630 Advanced Structural Mechanics**
3 Credits
Offered As Demand Warrants
Shear and torsion, nonsymmetrical bending, shear center, curved beams, introduction to composite material mechanics, application in bridge engineering.
**Prerequisites:** MATH F302; ES F331.
**Recommended:** Graduate standing in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F631 Advanced Structural Analysis**
3 Credits
Offered As Demand Warrants
Derivation of the basic equations governing linear structural systems. Application of stiffness and flexibility methods to trusses and frames. Solution techniques utilizing digital computers. Planar structures and space structures (trusses and frames) will be covered. Both exact and approximate solution techniques will be reviewed.
**Prerequisites:** CE F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F633 Theory of Elastic Stability**
3 Credits
Offered As Demand Warrants
The theories of elastic and inelastic buckling are studied with practical implementation to slender structural members. Both lateral and local buckling concepts will be examined. Lateral torsional buckling of beams; buckling of beam-columns and frame members; and buckling of members with various cross-section shapes are extensively discussed.
**Prerequisites:** CE F331; CE F432; MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F634 Structural Dynamics**
3 Credits
Offered As Demand Warrants
The theories of structural dynamics are studied with an emphasis on analysis and design of civil engineering structures under various dynamic loading. Topics include single and multiple degree-of-freedom systems subjected to free vibration, harmonic excitations and earthquakes. The basic concepts related to seismic design of structures will be discussed.
**Prerequisites:** ES F208, ES F210; CE F331; MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F635 Numerical Methods for Geomechanics and Soil-Structure Interaction**
3 Credits
Offered As Demand Warrants
Applications of numerical methods for problems involving seepage, consolidation, foundation on expansive soils and pile installation. Finite difference and element methods, non-linear analysis techniques, elasto-plastic formulation with a tangent stiffness approach, seepage analysis, flow-deformation, coupled analysis, models for soil-structure interaction, solution accuracy and reliability.
**Prerequisites:** CE F326; graduate standing.
**Recommended:** MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F637 Earthquakes: Seismic Response of Structures**
3 Credits
Offered As Demand Warrants
Fundamentals of structural earthquake engineering are provided. Topics include earthquake engineering; current seismic design criteria and practice; structural analysis for seismic load; design of lateral force resisting systems such as moment frames, braced frames and shear walls; design of diaphragms; and design of non-structural components.
**Prerequisites:** ES F208, ES F210.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F640 Prestressed Concrete**
3 Credits
Offered As Demand Warrants
Theory and practice of prestressed concrete design. Pre-tensioning and post-tensioning. Anchorage of steel. Materials, design specifications. Application in bridges, tanks and slabs.
**Prerequisites:** CE F331; CE F433.
**Recommended:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F646 Structural Composites**
3 Credits
Offered As Demand Warrants
The basics of structural composite theory. Basic design procedures related to structural composite members and the structural analysis of members made of various materials to create laminates or sandwich panels will be covered.
**Prerequisites:** ES F331; CE F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F650 Bridge Engineering**
3 Credits
Offered As Demand Warrants
Covers structural systems, loading and analysis by influence lines. Slab and girder bridges considering composite design, prestressed and concrete bridges and how these bridges are designed and rated using AASHTO specifications.
**Prerequisites:** CE F432; CE F433.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F661 Advanced Water Resources Engineering**
3 Credits
Offered Spring Odd-numbered Years
Engineering hydraulics and hydrology including use of standard computer models to solve water resource engineering problems.
**Recommended:** Permission of instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F662 Open Channel and River Engineering**
3 Credits
Offered Spring Even-numbered Years
Principles of open channel flow, specific energy, hydraulic jump, transitions and controls, uniform and non-uniform flows, steady and unsteady flows, numerical solution for unsteady flows. River engineering, stream channel mechanics, and mechanics of sedimentation.
**Recommended:** Permission of instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F663 Groundwater Hydrology**
3 Credits
Offered Fall Even-numbered Years
Fundamentals of groundwater aquifer formations, groundwater flow, resource development, management and protection.
**Cross-listed with** GE F663.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F664 Sediment Transport**
3 Credits
Offered Spring Even-numbered Years
Fundamentals of sediment transport processes in rivers, oceans and reservoirs. Bed-load and suspended-load transports. Mechanics of turbidity currents. Reservoir sedimentation. Numerical modeling.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F665 Watershed Hydrology**
3 Credits
Offered As Demand Warrants
A broad view of the water cycle at the watershed scale and introduction to the quantitative relations between components of the water cycle. Emphasis is placed on precipitation, evapotranspiration, water in soils and stream response to water-input events.
**Prerequisites:** MATH F253X; PHYS F211X.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F682 Ice Engineering**
3 Credits
Offered As Demand Warrants
The factors governing design of marine structures, which must contend with the presence of ice. Topics include ice growth, ice structure, mechanical properties and their dependence on temperature and structure, creep and fracture, mechanics of ice sheets, forces on structures, and experimental methods.
**Prerequisites:** ES F331, MATH F253X, training or experience in soil mechanics.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F683 Arctic Hydrology and Hydraulic Engineering**
3 Credits
Offered As Demand Warrants
Aspects of hydrology and hydraulics unique to engineering problems of the north. Although the emphasis will be on Alaskan conditions, information from Canada and other circumpolar countries will be included in the course.
**Prerequisites:** CE F344.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F684 Arctic Utility Distribution**
3 Credits
Offered As Demand Warrants
Practices and considerations of utility distribution in Arctic regions. Emphasis on proper design to include freeze protection, materials, energy conservation and system selection.
**Prerequisites:** ES F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F685 Topics in Frozen Ground Engineering**
3 Credits
Offered As Demand Warrants
Selected frozen ground foundation engineering problems will be explored in depth including refrigerated foundations and pile foundations.
**Prerequisites:** CE F424 or CE F624.
**Lecture + Lab + Other:** 3 + 0 + 0

**CE F692 Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**CE F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**CE F699 Thesis**
1-15 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Communication and Journalism (COJO)

**College of Liberal Arts**
Department of Communication and Journalism (https://www.uaf.edu/cojo/)
907-474-6591

**COJO F101X Media and Culture** (h)
3 Credits
Offered Fall and Spring
History and principles of mass communications and the role of information media in American society. Introduction to professional aspects of mass communications, including print and broadcast.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F102X Introduction to Broadcasting** (h)
3 Credits
Offered As Demand Warrants
Principles of broadcasting as they relate to the people of the United States, including history, government involvement and social effects.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F105X History of the Cinema** (h)
3 Credits
Offered Fall, Spring and Summer
History and development of the medium of film in the U.S. and abroad during the last 100 years. Content will vary each semester.
**Cross-listed with** FLPA F105X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F121X Introduction to Interpersonal Communication**
3 Credits
Offered Fall, Spring and Summer
This course features the fundamental principles of effective oral communication, emphasizing interpersonal communication as well as public speaking. Through role playing, speeches and evaluations of other speakers, students explore the complexities of communication in today's society.
**Attributes:** UAF GER Oral Communication
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F131X Fundamentals of Oral Communication: Group Context**
3 Credits
Offered Fall, Spring and Summer
Presentational speaking skills: individual and group. Includes verbal and nonverbal skills, critical thinking in selecting and organizing materials, audience analysis and speaking presentation. Group skills include task and relational interaction, required interdependence, working across cultural differences, group decision-making and shared logistics of presentation. Student evaluations are based on nationally normed speaking competencies.
**Attributes:** UAF GER Oral Communication
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F141X Fundamentals of Oral Communication: Public Context**
3 Credits
Offered Fall, Spring and Summer
Speaking skills for individual presentation. Includes verbal and nonverbal skills, critical thinking in selecting and organizing materials, audience analysis, informative and persuasive speaking, and actual presentations. Student evaluations are based on nationally normed speaking competencies.
**Attributes:** UAF GER Oral Communication
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F165 Communication and Tourism**
3 Credits
Offered Spring
This course is designed to give students both theoretical and practical applications in the communication process and the industry of tourism. The course draws from theories of human communication. Students will be exposed to many aspects of interpersonal and professional communication techniques.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F201 Dispute Resolution and Restorative Practices** (s)
3 Credits
Offered Fall and Spring
This course surveys the basic practical and theoretical foundations of conflict, conflict resolution and restorative practices. It introduces students to the basic theories and practices of conflict resolution and peace-making, providing students with grounding in theories, applications and dynamics of conflict and key conflict resolution processes.
**Prerequisites:** WRTG F111X; COJO F131X, COJO F141X; PS F100X, ECON F120X, JUST F110X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F202 News Writing for the Media** (h)
3 Credits
Offered Fall and Spring
Identifying and focusing news stories, writing the lead, developing story structure, writing on deadline, editing copy, writing headlines and captions, writing styles for print, broadcast and online news presentations.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F203 Basic Darkroom Photography** (h)
3 Credits
Offered Fall and Spring
Photography fundamentals, including use of an adjustable camera, film and exposure techniques, filters and flash techniques. Darkroom procedures including black and white film processing and printing, photograph design and composition. Students must have use of an adjustable camera.
**Cross-listed with** ART F283.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F204 Basic Digital Photography** (h)
3 Credits
Offered Fall, Spring and Summer
Introduction of technical and aesthetic aspects of basic digital photography using digital SLR cameras and editing photos through Adobe Photoshop suites. Students are expected to have intermediate computer knowledge. Topics include controlling digital SLRs on manual settings, photographing creatively, basic and advanced editing techniques, negative scanning and digital printing.
**Cross-listed with** ART F284.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F210 Argumentation and Critical Thinking**
3 Credits
Offered As Demand Warrants
Introduction to argumentation, emphasizing the process of constructing and evaluating sound arguments based on reasoning, evidence, and strategy.
**Prerequisite:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F215 Radio Production**
3 Credits
Offered As Demand Warrants
Sound production techniques for radio and television. Emphasis on writing, recording, control room techniques and editing.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F217X Introduction to the Study of Film** (h)
3 Credits
Offered Fall and Spring
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects.
**Prerequisites:** WRTG F111X.
**Cross-listed with** ENGL F217X; FLPA F217X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 2 + 2 + 0

**COJO F220 Professional Interviewing**
3 Credits
Offered As Demand Warrants
The theory and practice of methods in selected interview settings: emphasis on interpersonal communication between two persons, questioning techniques, and the logical and psychological bases of interpersonal persuasion.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F240 Foreign Corresponding** (h)
3 Credits
Offered Spring
The U.S. tradition of "objective" journalism holds sway in very few countries. How did these varying approaches develop, and what do they mean for how Americans report overseas and how foreign journalists report about us?
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F250 Website Design**
3 Credits
Offered Fall
Create website projects. Includes the Internet, design, multimedia and the incorporation of text, sound, images, animation and video.
**Prerequisites:** Familiarity with the World Wide Web, Internet browsers, the Macintosh operating systems, and image editing software.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F251 Introduction to Video Production**
4 Credits
Offered Fall
An introduction to video production with an emphasis on television studio production.
**Cross-listed with** FLPA F251.
**Lecture + Lab + Other:** 2 + 5 + 0

**COJO F280 Video Storytelling: Content Creation** (h)
3 Credits
Offered Fall
Students will learn the basics of professional video production using resources commonly found in the home, such as a smartphone, some affordable audio equipment, and everyday objects. The course will address concepts related to composition, audio, lighting and editing. Students will conclude the course by producing their own short videos.
**Cross-listed with** FLPA F280.
**Special Notes:** This course is presented as part of the IAC Content Creation Occupational Endorsement.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F290 Digital Video Editing: Adobe Suite**
3 Credits
Offered Fall
Introduction to the technical and aesthetic aspects of non-linear digital video editing. Students will go from little or no experience in non-linear editing to being comfortable with some of the advanced editing techniques. Address motion picture editing theories that are not bound to time or specific editing technology.
**Cross-listed with** FLPA F260.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F300X Communicating Ethics** (h)
3 Credits
Offered Fall, Spring and Summer
An examination of ethical choices which are communicated in everyday encounters. Examines human moral development from a variety of perspectives, including feminist interpretations. Creation and communication of human values explored through the discussion of a series of contemporary dilemmas.
**Prerequisites:** Junior standing; placement in WRTG F111X.
**Attributes:** UAF GER Ethics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F302 Dispute Systems Design** (s)
3 Credits
Offered As Demand Warrants
This course examines the hidden sources of conflicts that are often embedded in social, legal, political, and organizational structures and systems. This course will be focused on all aspects of structural, systemic conflict, and introduces ways to harness conflict for positive organizational outcomes.
**Prerequisites:** JUST F201; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F303 Internship**
1-3 Credits
Offered Fall, Spring and Summer
Practical experience working with campus media, individual media-related projects for business or media, or in a professional media environment.
**Prerequisites:** COJO F202.
**Lecture + Lab + Other:** 1 + 6 + 0

**COJO F305 Snedden Chair Lectures**
3 Credits
Offered Spring
Rotating series of lectures and seminars with America's leading journalists on topics ranging from war reporting to covering sports. Please contact Department of Communication and Journalism for current topic and instructor. Course may be repeated for credit.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F308 Film Criticism** (h)
3 Credits
Offered As Demand Warrants
Theoretical approaches to viewing, analyzing and evaluating film and television program content.
**Cross-listed with** FLPA F308.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F310 Reporting**
3 Credits
Offered Fall
News reporting basics: covering beats, including police, sports, local government, science and the military. Cultivating sources, interviewing and reporting through public records. Working with numbers, segments on print, video and online reporting methods and style conventions.
**Prerequisites:** COJO F101X; COJO F202; COJO F251; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F311 Magazine Article Writing** (h)
3 Credits
Offered As Demand Warrants
Learn to identify great article ideas, turn them into finished products and pitch them to magazine editors. Workshops and extensive instructor feedback. Students repeating the course limited to six credits.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; COJO F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F320 Communication and Language** (s)
3 Credits
Offered As Demand Warrants
Examination of the nature of language and its place in human communication, with special attention to the creation of meaning in conversation.
**Prerequisites:** Any lower-division communication course.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F321 Nonverbal Communication** (s)
3 Credits
Offered Spring Even-numbered Years
Non-lexical behavior in human communication, including consideration of space, physical environment, physical appearance and dress, kinesics, facial expression and non-lexical vocal behavior.
**Prerequisites:** Any lower-division communication course; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F322 Communication in Interpersonal Relationships** (s)
3 Credits
Offered Fall
An examination of communication in the most basic human context, the relational dyad. Emphasis on the ongoing co-construction of the relationship as communicative action. Discussion of interpersonal relationships generally, and extensive discussion of communication in the patterns of coming together, relationship maintenance, relational and personal growth in relationships, relational conflict.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F323 Editing for Journalists**
3 Credits
Offered As Demand Warrants
Tricks of the trade, including copyediting; writing headlines and captions; basic page design using computers; and thinking like the editor-in-chief.
**Prerequisites:** COJO F202; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F330 Intercultural Communication** (s)
3 Credits
Offered Spring
The nature and sources of problems in communication that may arise when persons with different cultural backgrounds interact. Emphasis on problems in intercultural communication in Alaska.
**Prerequisites:** Any lower-division communication course.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F331 Advanced Group Communication** (s)
3 Credits
Offered As Demand Warrants
Current research and theory in intergroup and intragroup relations. Topics include the study of leadership, power, group structure, participation and conflict.
**Prerequisites:** COJO F131X, COJO F141X; any lower-division communication course.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F332 Introduction to Public Relations**
3 Credits
Offered Fall
Introduction to the theories, practices, principles and history of public relations.
**Prerequisites:** COJO F131X, COJO F141X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F335 Organizational Communication** (s)
3 Credits
Offered Fall
Examines current theoretical and methodological approaches undergirding the construction of organizations via the communication process. Includes functional (message flow, load and network analysis) as well as interpretive (metaphors, narratives and organizational culture) approaches to the study of organizational communication.
**Prerequisites:** COJO F131X, COJO F141X; any lower-division communication course.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F352 Family Communication** (s)
3 Credits
Offered Fall
Exploration of the functions of communication in marriage and the family, sequences and patterns of family communication, family communication as a continual process of coping with dialectical tensions, and the complexity of changing family life in Western societies.
**Prerequisites:** Any lower-division communication course.
**Recommended:** COJO F322.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F353 Conflict, Mediation and Communication** (s)
3 Credits
Offered Fall
Examines conflict as a complex communication event, together with the role of the mediator in building constructive outcomes in conflicts. Emphasis on developing skills to engage in mediation.
**Prerequisites:** Any F100-level communication course.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F368 Topics in American Film History** (s)
3 Credits
Offered As Demand Warrants
American film and how it shapes and warps popular perceptions of America's past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, or the Great Depression.
**Prerequisites:** HIST F131, HIST F132X; COJO F217X, COJO F308.
**Cross-listed with** HIST F368; FLPA F368.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F371 Digital Imaging** (h)
3 Credits
Offered As Demand Warrants
This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills and knowledge useful for digital photography, digital video compositing and digital painting will be covered.
**Prerequisites:** ART F161, ART F271, ART F284, COJO F204, FLPA F260, COJO F290.
**Cross-listed with** ART F371; FLPA F371.
**Lecture + Lab + Other:** 1 + 4 + 0

**COJO F380 Women, Minorities and the Media** (h)
3 Credits
Offered As Demand Warrants
Basic socialization differences that exist in the communication practices of women and men in every culture are addressed in the interpersonal organizational and cultural contexts. Examination of how women and minorities are portrayed in the mass media, the employment of women and minorities in the media, as well as how.
**Prerequisites:** COJO F131X, COJO F141X; junior standing.
**Cross-listed with** WGS F380.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F390 Social Media Toolkit** (h)
3 Credits
Offered As Demand Warrants
Focus on content production and distribution through social media, including emerging news apps and platforms. Students will explore blogging, podcasting, digital photography, mobile video and package production. The changing journalism landscape will also be discussed.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; COJO F202.
**Lecture + Lab + Other:** 2.5 + 0.5 + 0

**COJO F400 Professional Internship**
1-3 Credits
Offered As Demand Warrants
Practical training in a supervised, professional media environment. Participation at an approved publication, TV or radio station, or other media- or communication-related office agency, organization or business is required.
**Prerequisites:** Senior standing.
**Lecture + Lab + Other:** 1 + 6 + 0

**COJO F401 Communication Research Methods** (s)
3 Credits
Offered Fall
Quantitative research methodologies employed in the conduct of research on communication phenomena.
**Prerequisites:** Any F300-level communication course; senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F402 Advanced Photography** (h)
3 Credits
Offered Spring
Continuation of COJO F203/ART F283. Emphasis on continuing development of photographic skills by application of basic technical skills to a variety of areas of photography.
**Prerequisites:** COJO F203, ART F283.
**Cross-listed with** ART F483.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F403 Beat Reporting**
3 Credits
Offered As Demand Warrants
Intensive training in developing and covering a news beat (chosen by the student) and the basics of common news beats: police, courts and government. Includes cultivating sources, explaining complicated stories, reporting trends, improving interviewing techniques, and employing advanced writing skills. Writing for publication encouraged.
**Prerequisites:** COJO F202.
**Lecture + Lab + Other:** 2 + 2 + 0

**COJO F404 Photojournalism** (h)
3 Credits
Offered As Demand Warrants
Fundamentals of visual communication through photography; issues and techniques of modern photojournalism; news, features, sports, and photo essay assignments as encountered at a daily newspaper; preparation of photographs for publication. Students must have basic 35mm camera equipment.
**Prerequisites:** COJO F204, ART F284.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F405 Advanced Photography Seminar**
3 Credits
Offered Spring
Advanced discussion of photojournalism and photographic topics with field, studio and darkroom sessions. Topics will range from the photographic essay to the history of photography and working in series. Weekly classroom meetings will be supplemented by field, studio and darkroom sessions.
**Prerequisites:** COJO F203, ART F283, COJO F204, ART F284.
**Cross-listed with** ART F465.
**Stacked with** ART F665; COJO F605.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F407 Digital Darkroom**
3 Credits
Offered Fall
Students will develop advanced photo editing and digital darkroom skills and create quality prints through Photoshop, Lightroom, and other image techniques.
**Prerequisite:** COJO F204, ART F284.
**Cross-listed with** ART F487.
**Stacked with** COJO F607, ART F687.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F408 Media Management**
3 Credits
Offered As Demand Warrants
Overview of media management, including management theories, media competition, media research, regulatory issues of concern to managers, organizational planning and future trends in media. Case studies in practical problem-solving techniques.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F411 Writing for a Living**
3 Credits
Offered As Demand Warrants
Writing advanced prose for publication in books or magazines. May be repeated for credit with permission of instructor.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; COJO F311.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F412 Portrait Photography**
3 Credits
Offered As Demand Warrants
This course will teach the student who has basic or advanced exposure and printing skills to further their understanding of the principles and techniques of portrait photography. Students will work with SLR or DSLR cameras and editing through a digital photo suite such as Adobe Photoshop. Students will learn to perfect their exposures and portrait skills, work with models, and handle studio strobes and equipment using traditional and digital media. Assignments will focus on both technical and aesthetic concerns. In-class critiques will provide feedback on students' work and weekly slide shows will provide insight on historical and contemporary portrait photographers.
**Prerequisites:** COJO F203/ART F283, COJO F204/ART F284.
**Cross-listed with** ART F412.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F413 Mass Media Law and Regulation** (s)
3 Credits
Offered As Demand Warrants
Common law, statutory law and administrative law that affects the mass media, including libel, copyright, access to the media, constitutional problems, privacy, shield laws and broadcast regulations.
**Prerequisites:** COJO F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F421 Journalism in Perspective** (h)
3 Credits
Offered As Demand Warrants
Seminar-style exploration of the ethical, financial, corporate and international trends tugging at American journalism.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F425 Communication Theory** (s)
3 Credits
Offered Fall
Theories of human communication, as well as of the nature of inquiry into human communication phenomena. Issues include the nature of communication as a discipline, critical and scientific inquiry, and major paradigms or perspectives within which communication theories are created.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; any F300-level communication courses; senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F431 Public Relations Campaigns**
3 Credits
Offered As Demand Warrants
This course focuses on the application of public relations principles and practices, which is the research, planning and execution of the public relations campaign. It includes public relations writing for news releases and press kits, radio, television, and cable production, web and new technologies production, writing for newsletters and magazines.
**Prerequisites:** COJO F332, ABUS F263.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F432 Professional Public Speaking**
3 Credits
Offered As Demand Warrants
Professional clear effective speaking. Uses evaluation criteria and assignments to build speaking competencies. Professional preparation for students whose career path includes public speaking.
**Prerequisites:** COJO F131X, COJO F141X; senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F435 Political Media and Discourses of the American Right** (s)
3 Credits
Offered As Demand Warrants
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts.
**Prerequisites:** COJO F131X, COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Cross-listed with** ANTH F435; LING F435.
**Stacked with** ANTH F635; LING F635; COJO F640.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F441 Persuasion** (s)
3 Credits
Offered As Demand Warrants
Examination of communication situations which involve attempts to modify the beliefs, attitudes, values, intentions or behaviors of another individual or group of individuals. Explores the process, methods and ethics of attempts to affect change via persuasive communication.
**Prerequisites:** any F300-level communication course.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F444 Investigative Reporting** (h)
3 Credits
Offered Fall Even-numbered Years
Advanced reporting of news with emphasis on public service journalism. Develops sophisticated news judgment, writing and investigative reporting skills for print and electronic media.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; COJO F202.
**Lecture + Lab + Other:** 2 + 2 + 0

**COJO F451 Cross-cultural Conflict Analysis and Intervention**
3 Credits
Offered As Demand Warrants
Students will learn key concepts and skills that will help them respond to cross-cultural and human rights conflicts in a productive manner. Students will learn basic conflict analysis for cross-cultural and human rights disputes, including those occurring in rural Alaska.
**Prerequisites:** COJO F302; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F452 Radio and Television News Writing**
3 Credits
Offered As Demand Warrants
Overview of radio and television news writing. Emphasis on intensive news writing practice, including interviewing techniques, ethical issues and current controversies, and structure of television and radio news operations.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; COJO F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F453 Television News Reporting**
3 Credits
Offered As Demand Warrants
Electronic news gathering using videotape equipment, scriptwriting, location sound recording, interview techniques, editing, videography and other aspects of field news reporting.
**Prerequisites:** COJO F131X, COJO F141X; COJO F451; COJO F452.
**Lecture + Lab + Other:** 2 + 2 + 0

**COJO F454 Newscast**
3 Credits
Offered Spring Odd-numbered Years
In-depth experience with television news production including electronic newsgathering. Emphasis on producing a broadcast-quality weekly newscast and packages for distribution in various media.
**Prerequisites:** COJO F101X; COJO F202; COJO F251; COJO F310; COJO F131X, COJO F141X.
**Lecture + Lab + Other:** 1 + 0 + 6

**COJO F456 Science Writing for the General Public** (h)
3 Credits
Offered As Demand Warrants
Students write, read and analyze science articles, social media posts, blog posts and/or press releases. Course work includes writing and reading assignments, class workshops and conferences with the instructor. Emphasis on recognizing, finding and developing science stories; structuring articles; capturing reader interest; maintaining accuracy; and getting published. Scientists are welcome.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; COJO F202.
**Stacked with** COJO F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F457 Indigenous Dispute Resolution** (s)
3 Credits
Offered Fall
Indigenous Dispute Resolution (IDR) is a new movement within Alternative Dispute Resolution (ADR) that explores traditional dispute resolution practices within Indigenous communities and their applications in the modern context. The course examines IDR in the international, national, and regional (Alaskan) context.
**Prerequisites:** Junior level.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F458 SFX Up Your Video** (h)
3 Credits
Offered Spring Odd-numbered Years
An exploration into adding special effects to your video projects. Will include "green screen," titles, animation, color grading, DVD menu design and more.
**Prerequisites:** FLPA F260, COJO F290; FLPA F271, FLPA F280, COJO F280; video editing experience.
**Cross-listed with** FLPA F458.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F459 Indigenous Dispute Systems Design** (s)
3 Credits
Offered As Demand Warrants
This class examines the sources of conflict within Indigenous Communities, many of which are often embedded in larger social, legal, political, environmental, and organizational structures and systems. Students will explore and analyze Indigenous conflict resolution case studies and be introduced to the field of Indigenous Dispute Systems Design (IDSD).
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F460 History of German Film** (h)
3 Credits
Offered As Demand Warrants
In-depth study of a representative selection of films from the 1920s to the present, taught in English and German (films will be in German with English subtitles). Students of German will have a special discussion session in German and will do reading and writing in German.
**Prerequisites:** Junior standing.
**Cross-listed with** GER F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F461 Law and Science of Arbitration** (s)
3 Credits
Offered As Demand Warrants
Course covers the law, social science, policy and practices relating to arbitration as it is utilized in both the private and public sector. Students will learn the history of arbitration, its applications, its rules of evidence, administering institutions and their rules, arbitral remedies and awards, and grounds for judicial review.
**Prerequisites:** COJO F302; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F462 Communication in Health Contexts** (s)
3 Credits
Offered Spring
Health communication as an established context for communication study will be explored. Problems in health communication will be examined as well as how those problems are exacerbated by the various matters of diversity, language and setting. Communication between health care professionals, between health care providers and health care consumers.
**Prerequisites:** Any F300-level communication course; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F464 History of Photography** (h)
3 Credits
Offered As Demand Warrants
This course will provide an exploration of the history, impact and development of the photographic process, spanning from the earliest observations of optics, through the development of the first permanent image, and all the way to the most recent advances in digital technology.
**Prerequisites:** WRTG F111X.
**Cross-listed with** ART F464.
**Stacked with** ART F664, COJO F664.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F465 Clinic in Mediation, Conferencing and Circle Practices** (s)
3 Credits
Offered Spring
This course engages students in both theory and practice in mediation, conferencing and circle practices. The course emphasizes training and professional practice in a series of theory-to-practice applications. In this course, students gain practice skills and integral approaches to mediation, conferencing and circle.
**Prerequisites:** Recommended: COJO F302; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F470 Handmade Photographs**
3 Credits
Offered Spring Odd-numbered Years
This course will introduce students to a wide array of historical photographic techniques and alternative processes while also providing contextual historical and contemporary information about each process. Processes covered include: Pinhole Camera Construction, Lumen Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen and various transfer methods.
**Cross-listed with** ART F470.
**Stacked with** ART F670, COJO F670.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F471 Advanced Digital Design** (h)
3 Credits
Offered Spring
Project-oriented class in graphic design with applications from journalism to fine and commercial art. Students will be expected to have a background in programs likely to include web design, digital photography and graphic design. May be repeated for credit with permission of instructor.
**Prerequisites:** COJO F131X, COJO F141X; COJO F250; ART F371, COJO F371; one college level studio art course.
**Cross-listed with** ART F471.
**Lecture + Lab + Other:** 1 + 4 + 0

**COJO F472 3D Animation** (h)
3 Credits
Offered Fall
Concept and technique of 3D computer generated animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals.
**Prerequisites:** ART F231, FLPA F231, ART F271; COJO F131X, COJO F141X.
**Cross-listed with** ART F472; FLPA F472.
**Special Notes:** May be repeated for credit.
**Lecture + Lab + Other:** 1 + 4 + 0

**COJO F475 Applied Communication in Training and Development** (s)
3 Credits
Applies communication theory and research to organizational settings. Includes the identification and assessment of problems and opportunities that would benefit from the application of communication interventions including training, development and transformation technologies.
**Prerequisites:** Any F300-level communication course; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F476 Advanced Digital Photography Portfolio** (h)
3 Credits
Offered Fall, Spring and Summer
This class provides students with the concept of producing a professional digital portfolio of their Commercial and/or Art Photography and/or Photojournalism. Students submit new images each week for editing and critique. Over the semester three smaller bodies of work will become a 20-24 image professional portfolio.
**Prerequisites:** COJO F204, ART F284.
**Cross-listed with** ART F476.
**Stacked with** ART F676, COJO F676.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F480 Documentary Filmmaking** (h)
3 Credits
Offered Spring Odd-numbered Years
Basics of hands-on documentary filmmaking techniques, including preproduction, production and postproduction. Different documentary filmmaking directing styles and the process of distributing a documentary. Each student will produce a short documentary as the capstone of the course.
**Prerequisites:** Basic experience in shooting and editing video.
**Cross-listed with** FLPA F480.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F481 Organizational Communication: Performance Management**
3 Credits
Offered As Demand Warrants
A comprehensive introduction to the role of communication in organizational change and development using Performance Management (PM) principles and practices. Ethical responsibility of PM communicators will be considered.
**Prerequisite:** Any F300-level communication course.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F482 Capstone Seminar in Communication** (s)
3 Credits
Offered Spring
Original research to demonstrate ability to read and understand social research, synthesize information, formalize a research question and use research skills. This senior capstone course requires a research project presented in a public speaking forum.
**Prerequisites:** COJO F131X, COJO F141X; COJO F401; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F484 Multimedia Theory and Practice** (h)
3 Credits
Offered As Demand Warrants
Study of techniques needed to produce multimedia with a special project for a university or community agency as the required final. For the purpose of this course, multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash.
**Prerequisites:** Understanding of computer graphics programs like Illustrator, Freehand, etc; plus some mastery of a specialty in writing, art or television production.
**Cross-listed with** ART F484.
**Stacked with** ART F684; COJO F684.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F490 Online Publication: "Extreme Alaska"**
3 Credits
Offered Spring
Using the department's multimedia newsroom facilities, senior-level students work on a team, under the guidance of an instructor, to publish an online publication. Students are expected to show substantial initiative and creativity as they make use of the skills they have acquired in other journalism courses. Course may be repeated once for credit.
**Prerequisites:** COJO F202; senior standing.
**Lecture + Lab + Other:** 2 + 2 + 0

**COJO F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**COJO F498 Undergraduate Research**
3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**COJO F600 Introduction to Professional Communication**
3 Credits
Offered Fall
An introduction to professional practices important to communication careers. Professional writing and editing methods and techniques used in academic and/or professional careers. Development and presentation of professional reports which would include quantitatively- and qualitatively-based support. A.P.A. style guide will be covered.
**Prerequisites:** Enrollment in M.A. in Professional Communication.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F601 Communication Research Methodologies: Social Science**
3 Credits
Offered Fall
Introduction to the range of methodologies used to produce both practical and theoretic knowledge in the discipline. Presents the relationships between scientific questions, appropriate selection of methodology and types of knowledge products.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F602 Communication Research Methodologies: Human Science**
3 Credits
Offered Spring
An introduction to research using a constructionist epistemology and the methodologies of the human science contexture. Includes evaluation and preparation of research using a variety of methodologies and to employ the data collection techniques that are implied by those methodologies.
**Prerequisites:** COJO F601; COJO F625.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F605 Advanced Photography Seminar**
3 Credits
Offered Spring
Advanced discussion of photojournalism and photographic topics with field, studio and darkroom sessions. Topics will range from the photographic essay to the history of photography and working in series. Weekly classroom meetings will be supplemented by field, studio and darkroom sessions.
**Prerequisites:** COJO F203, ART F283, COJO F204, ART F284.
**Cross-listed with** ART F665.
**Stacked with** COJO F405; ART F465.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F607 Digital Darkroom**
3 Credits
Offered Fall
Students will develop advanced photo editing and digital darkroom skills and create quality prints through Photoshop, Lightroom, and other image techniques.
**Prerequisite:** COJO F204, ART F284.
**Cross-listed with** ART F687.
**Stacked with** ART F487, COJO F407.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F611 Advanced Writing for Publication**
3 Credits
Offered As Demand Warrants
An intensive writing course focused on producing books and in-depth magazine features. Emphasis will be on writing, editing and research. The business and legal aspects of becoming an author will also be covered.
**Prerequisites:** COJO F202 or comparable upper-division ENGL courses; graduate standing.
**Lecture + Lab + Other:** 3 + 3 + 0

**COJO F613 Advanced Mass Media Law and Regulation**
3 Credits
Offered As Demand Warrants
Seminar on current issues, legal opinions and legislative actions which directly affect the mass media. Special emphasis on technological evolution, corporate growth and deregulation of administrative media law.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F622 Interpersonal Interaction**
3 Credits
Offered As Demand Warrants
All understandings of communication study begin at the interpersonal level because this is the context in which the relation of self and the social is most clear. Examines the theory, research, and practice of IPC cross contexts (academic, organizational, personal) and relational settings (health, family, aging, conflict, relational, education).
**Prerequisites:** Enrollment in M.A. in Professional Communication degree.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F625 Communication Theory**
3 Credits
Offered Fall
Required course for the master's degree in Professional Communication. The course is designed to acquaint students with both the historical evolution of the discipline against the backdrop of the evolution of the social sciences and with the theoretical perspectives of knowledge-building that have marked that disciplinary evolution.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F631 Teambuilding**
3 Credits
Offered As Demand Warrants
Small group communication theory and methods linked to professional applications. Ways to create, maintain and reward productive work teams. Face-to-face and mediated group sessions will be discussed as well as the impact of professional work groups on organizational teambuilding.
**Prerequisites:** COJO F600.
**Recommended:** COJO F625.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F633 Public Relations Theory and Practice**
3 Credits
Offered As Demand Warrants
Theory, practice and research in public relations. Emphasis on public relations in business, industry, government institutions and nonprofit organizations, as well as the role of public relations in American mass media.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F635 Organizational Culture and Communication**
3 Credits
Offered As Demand Warrants
Required course for the master's degree in Professional Communication. The course is designed to acquaint students with both the historical evolution of the discipline against the backdrop of the evolution of the social sciences and with the theoretical perspectives of knowledge-building that have marked that disciplinary evolution.
**Prerequisites:** Enrollment in M.A. in Professional Communication degree.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F640 Political Media and Discourses of the American Right**
3 Credits
Offered As Demand Warrants
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F635; LING F635.
**Stacked with** ANTH F435; LING F435; COJO F435.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F642 Health Communication**
3 Credits
Offered As Demand Warrants
Examines the theory, research, and practice of communication at every level of interaction in the health care exchange: interpersonal, small group, intra-organizational, inter-organizational, and public campaigns. Apply theory by designing, launching, and evaluating the effectiveness of health campaigns.
**Prerequisites:** Enrollment in M.A. in Professional Communication degree.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F656 Science Writing for the General Public**
3 Credits
Offered As Demand Warrants
Students write, read and analyze science articles, social media posts, blog posts and/or press releases. Course work includes writing and reading assignments, class workshops and conferences with the instructor. Emphasis on recognizing, finding and developing science stories; structuring articles; capturing reader interest; maintaining accuracy; and getting published. Scientists are welcome.
**Prerequisites:** Graduate standing.
**Stacked with** COJO F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F661 Mentored Teaching in Communication**
1 Credit
Offered Fall and Spring
Mentored teaching provides consistent contact on course-related issues between teaching assistants and mentoring faculty. May be repeated up to four times for credit.
**Prerequisites:** Enrollment in M.A. in Professional Communication; award of teaching assistantship in communication.
**Special Notes:** Teaching assistants are required to be enrolled in a mentoring teaching section while teaching.
**Lecture + Lab + Other:** 1 + 0 + 2

**COJO F664 History of Photography** (h)
3 Credits
Offered As Demand Warrants
This course will provide an exploration of the history, impact and development of the photographic process, spanning from the earliest observations of optics, through the development of the first permanent image, and all the way to the most recent advances in digital technology.
**Prerequisites:** Graduate standing.
**Cross-listed with** ART F664.
**Stacked with** ART F464; COJO F464.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F670 Handmade Photographs**
3 Credits
Offered Spring Odd-numbered Years
This course will introduce students to a wide array of historical photographic techniques and alternative processes while also providing contextual historical and contemporary information about each process. Processes covered include: Pinhole Camera Construction, Lumen Printing, Chemigram, Photogram, Cyanotype, Van Dyke Brown, Albumen and various transfer methods.
**Cross-listed with** ART F670.
**Stacked with** ART F470, COJO F470.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F675 Training and Development Communication**
3 Credits
Offered Fall Even-numbered Years
Training and Development Communication offers students practical, current understandings of planned training, development and transformation processes as they are applied in the organizational setting. The information and class projects will help prepare training and development specialists, consultants and others whose interest is in this growing communication field.
**Prerequisites:** Enrollment in M.A. in Professional Communication degree.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F676 Advanced Digital Photography Portfolio** (h)
3 Credits
Offered Fall, Spring and Summer
This class provides students with the concept of producing a professional digital portfolio of their Commercial and/or Art Photography and/or Photojournalism. Students submit new images each week for editing and critique. Over the semester three smaller bodies of work will become a 20-24 image professional portfolio.
**Cross-listed with** ART F676.
**Stacked with** ART F476, COJO F476.
**Lecture + Lab + Other:** 2 + 3 + 0

**COJO F680 Communication and Diversity in the Professional World**
3 Credits
Offered Spring Odd-numbered Years
Case study methods applied to the ever-expanding problems of communication in a changing workplace. The diversity of gender, race, ethnicity, nationality, physical ability, sexual orientation and age are reshaping the professional world at every level and communication professionals are increasingly called upon to formulate ways of accommodating this change.
**Prerequisites:** Enrollment in M.A. in Professional Communication degree.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F682 Seminar in Communication**
3 Credits
Offered Fall and Spring
A variable content seminar intended to give students an opportunity to work closely with communication faculty in the study of topics, ideas or methodologies significant to the communication discipline (e.g., relational conflict, social construction, narrative research, etc.).
**Prerequisites:** Enrollment in M.A. in Professional Communication degree.
**Lecture + Lab + Other:** 3 + 0 + 0

**COJO F684 Multimedia Theory and Practice**
3 Credits
Offered As Demand Warrants
Study of techniques needed to produce multimedia for a special university or community agency project. For the purpose of this course multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. plus some mastery of a specialty in writing, art, or television production.
**Prerequisites:** Understanding of computer graphics programs like Illustrator, Freehand, etc.
**Cross-listed with** ART F684.
**Stacked with** ART F484; COJO F484.
**Lecture + Lab + Other:** 3 + 3 + 0

**COJO F692 MFA Seminar**
3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 1 + 4 + 0

**COJO F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**COJO F699 Thesis**
1-9 Credits
Every candidate for the communication concentration of the master's degree in professional communication will complete a thesis project. The requirement consists of an original piece of communication research directed by a member of the graduate faculty in the communication department. The completed and accepted thesis will be presented in an appropriate public forum.
**Lecture + Lab + Other:** 0 + 0 + 0

# Community Health (CHP)

**College of Rural and Community Development**
Department of Alaska Native Studies and Rural Development (https://www.uaf.edu/dansrd/)
907-474-6528 Toll-free 1-866-478-2721

**CHP F131 Community Health Aide I**
8 Credits
Offered As Demand Warrants
Introduction: providing village health care with remote supervision of physician. Topics: anatomy/function; disease concepts; CHA standard of care; use of CHA/P Manual; history-taking; physical exam; lab tests; reporting; charting; medication administration. Clinical experiences prepare student to evaluate health problems of children and adults. Plus 200-hour component at students' village clinic.
**Prerequisites:** Employed as CHA by a health corporation.
**Lecture + Lab + Other:** 8 + 0 + 0

**CHP F132 Community Health Aide II**
8 Credits
Offered As Demand Warrants
Reinforces problem-oriented patient encounter process. Includes patient education, introduction to prenatal and well child care, sexually transmitted diseases, HIV, substance abuse, mental illness and death and dying issues. Session I material and emergency care are reinforced and expanded upon. Includes 200-hour field component at the student's village clinic.
**Prerequisites:** CHP F131.
**Lecture + Lab + Other:** 8 + 0 + 0

**CHP F133 Community Health Aide III**
8 Credits
Offered As Demand Warrants
Session II content reinforced and expanded upon. Topics: pregnancy; prenatal care; fetal alcohol spectrum; emergency delivery; postpartum care; newborn; sick child; well child care to age 18; immunizations; family planning; nutrition; family violence/abuse; sexual abuse/rape. Clinical experiences: prenatal; sick and well child; STIs Plus 200-hour component at students' village clinic.
**Prerequisites:** CHP F132.
**Lecture + Lab + Other:** 8 + 0 + 0

**CHP F134 Community Health Aide IV**
8 Credits
Offered As Demand Warrants
Common patient problems within the body systems are reviewed with focus on assessment skills and management plans. Session III content is reviewed. Topics: Follow-up care for patients with chronic illness; diabetes; injury prevention; tuberculosis; cancer; older adult/elder care; environmental health, food/water/rabies; clinic management. Plus 200-hour component at students' village clinic.
**Prerequisites:** CHP F133.
**Lecture + Lab + Other:** 8 + 0 + 0

**CHP F135 Community Health Aide Preceptorship**
2 Credits
Offered As Demand Warrants
Supervised primary care clinical experience. Minimum of 30 contact hours of direct patient care required. Students provide patient care in a variety of clinical settings including outpatient (acute and emergency care), prenatal, well child and chronic care clinics. Additional experiences are scheduled with the referral center (hospital) departments.
**Prerequisites:** CHP F134.
**Lecture + Lab + Other:** 2 + 0 + 0

**CHP F203 Clinical Update for Community Health Practitioners**
1-3 Credits
Offered As Demand Warrants.
Review, update and reinforcement of knowledge and skills taught in CHP F131, CHP F132, CHP F133 and CHP F134. Emphasis is on patient evaluation skills, use of the manual, patient treatment plan, medicines, prenatal care, well-child care, chronic patient care and emergency care. Clinical training is provided. Also offered as pass/fail as CHP F203P.
**Prerequisites:** CHP F134.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CHP F203P Clinical Update for Community Health Practitioners**
1-3 Credits
Offered as Demand Warrants
Review, update and reinforcement of knowledge and skills taught in CHP F131, CHP F132, CHP F133 and CHP F134. Emphasis is on patient evaluation skills, use of the manual, patient treatment plan, medicines, prenatal care, well-child care, chronic patient care and emergency care. Clinical training is provided.
**Prerequisites:** CHP F134.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CHP F207 Maternal and Infant Health**
1-3 Credits
Offered As Demand Warrants
Review of the anatomy of the reproductive system, family planning, pregnancy, fetal development, prenatal care, prenatal education, emergency delivery, postpartum care for mother and baby, and well-child evaluations and immunizations.
**Prerequisites:** CHP F134.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CHP F208 Communicable Diseases**
1-3 Credits
Offered As Demand Warrants
Expands concepts in relation to diagnosis, management and prevention of sexually transmitted diseases. Skills taught include male and female genitalia exam, pelvic exam, pap smear, gonorrhea culture and chlamydia culture. Prevention and patient education are emphasized.
**Prerequisites:** CHP F134.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CHP F210 CHAM Use and Documentation**
1 Credit
Review/explore many types of patient encounters encompassed by scope of practice of the Alaska CHA/CHPs. Focus is on professional standard of care issues and provision of competent and documentation of patient encounters. Emphasis on proper use of CHA/P Manual (CHAM) to conduct and document patient encounter and its legal significance. Special restrictions: Employed as a Community Health Aide by a Native Tribal Health Organization.
**Prerequisites:** CHP F131; CHP F132.
**Lecture + Lab + Other:** 0 + 0 + 32

**CHP F211 Health Education**
1-3 Credits
Offered As Demand Warrants
Methods and philosophy of health education, use and sources of audiovisual materials, presentation planning and participation in school and community health programs are included. A variety of teaching methods including role playing for individual and group presentations permit CHPs to practice their health education knowledge and skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CHP F212 Diabetes: Primary Prevention and Village Medical Care**
1-3 Credits
Offered As Demand Warrants
Pathophysiology, primary prevention and follow-up treatment of diabetes. Topics: Type I and Type II diabetes; problem of Type II diabetes in rural Alaska; primary prevention of Type II diabetes; CHA/CHP role in the village health care system; village medical care and referral; patient education; emergency care; and, diabetes medications.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CHP F214 Cancer: Risks, Diagnosis and Treatment**
3 Credits
Offered Spring, As Demand Warrants
Causes and facts about cancer in the Alaska Native population. Includes cancer risk factors, healthy lifestyle behaviors and the importance of early screening. Presents cancer diagnosis and treatment. Explores pain management, loss and grief. Includes self-care, stress and burnout issues for family and caregivers.
**Recommended:** CHP F134.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHP F215 Death and Dying**
3 Credits
Offered As Demand Warrants
Focuses on primary care issues relating to dying and death. Topics: theories of grief and loss; improving individual coping skills in loss/grief; care of terminally ill patient; suicide; euthanasia; traumatic death; and, neonatal death. Cultural perspectives on dying, body preparation, burial rites, advanced directives, death certificates and legal issues reviewed.
**Lecture + Lab + Other:** 3 + 0 + 0

**CHP F220 Women's Health: Breast and Cervical Cancer Screening**
2 Credits
Offered As Demand Warrants
Review: anatomy, physiology and pathophysiology of female breasts and genitals, with identification of risk factors as they relate to development of breast and cervical cancer. Emphasis: prevention and early detection. Skills: breast and genital history taking, examination including Pap, chlamydia and gonorrhea specimen collection, development of appropriate assessments and plans.
**Prerequisites:** CHP F134.
**Lecture + Lab + Other:** 2 + 0 + 0

**CHP F250 Current Issues in Rural Health Care**
1-3 Credits
Offered As Demand Warrants
Selected current issues in medical education intended for, but not limited to, community health aides/practitioners with emphasis on expanding concepts relating to understanding, diagnosis and management of illnesses common to rural Alaskan communities. A.S. degree.
**Special Notes:** Community Health majors may apply up to a maximum of three credits towards the F200-level major specialty requirements for an A.
**Lecture + Lab + Other:** 1-3 + 0 + 0

# Computer and Information Technology Systems (CITS)

**Community & Technical College**
Computer and Information Technology Systems (https://www.ctc.uaf.edu/programs/information-technology/)
907-455-2800

**CITS F201 Operating Systems Support**
1-3 Credits
Offered As Demand Warrants
Comprehensive exploration of a current operating system: use, configuring, installing and administering. Topics include end-user and technical support.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F202 Microcomputer Hardware Support**
1-3 Credits
Offered As Demand Warrants
Fundamental hardware and software (associated with hardware) configuration and troubleshooting. Includes installing, removing and configuring computer hardware components; installing and configuring software applications and operating systems to support hardware; diagnosing hardware and software problems; and developing troubleshooting and configuration procedures.
**Recommended:** CITS F201 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F203 Information Technology Support Fundamentals**
4 Credits
Offered As Demand Warrants
Overview of skills and knowledge required by professional computer support technicians to support and troubleshoot computer operating systems and computer hardware, including the purpose and function of the internal components of a computer, how to assemble a computer system, install an operating system and the basic skills and knowledge required to connect to and share resources in a network environment. Course covers objectives defined for CompTIA A+ certification.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 4 + 0 + 0

**CITS F204 Introduction to Computer Networks**
3 Credits
Offered As Demand Warrants
This foundational course introduces several ways that computers interact and the tools used in analysis and troubleshooting. Examples include local and wide area networks, also known as LANs and WANs; the "internet of things"; and cloud computing. Networking careers may also be explored. CITS F203 may be taken concurrently.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F205 Introduction to Coding and Programming**
1-3 Credits
Offered As Demand Warrants
Computer programming focused on programming concepts with programming tools.
**Prerequisites:** Math placement at the 100-level.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F212 Server Operating Systems**
3 Credits
Offered As Demand Warrants
Fundamentals in installing, configuring and maintaining server operating systems. Learn how to configure and administer network accounts, resources, and common services deployed on server operating systems. Course covers foundation server operating system knowledge required for Microsoft Certified Solutions Associate (MCSA) certification exams related to server technologies.
**Prerequisite:** CITS F204 (may be taken concurrently) or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F219 Operating Systems: Topics**
1-4 Credits
Offered As Demand Warrants
In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit.
**Recommended:** CITS F203 or equivalent skills.
**Lecture + Lab + Other:** 1-4 + 0 + 0

**CITS F220 Implementing Internet Tools and Technologies**
3 Credits
Offered As Demand Warrants
Exploration of advanced Internet topics. Building a presence on the Internet -- evaluate web hosting services, domain names and registration services. How to implement and understand web communication tools and develop and understand the impact of participating in social networks and the changing nature of these networks.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F221 Graphics and Multimedia for the Web**
3 Credits
Offered As Demand Warrants
Creating graphics and multimedia content for the Web. Graphic topics include formats, size and resolution, optimization and design fundamentals. Multimedia topics include animation, interactivity and combining sound, speech, graphics, photographs and video.
**Recommended:** CIOS F150; or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F222 Website Design**
1-3 Credits
Offered As Demand Warrants
A comprehensive survey of professional website design and authoring tools used to create Internet websites. Topics include website design and planning, HTML and CSS.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F224 Web Scripting**
3 Credits
Offered As Demand Warrants
Introduction to client-side Web page scripting. Covers basic programming concepts, including data representation, functions, control structures and arrays. Topics include client-side scripting with JavaScript, object-oriented JavaScript, design issues, error handling, security, the Document Object Model and dynamic HTML and AJAX.
**Prerequisite:** CITS F205 or CS F103; CITS F222; or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F225 Web Databases and Programming**
3 Credits
Offered As Demand Warrants
Programming and database design as it relates to creating dynamic web sites and applications. Develop web applications to automate websites, create and access web databases, provide tools for users to modify parts of their own website, create and access files on the fly and reduce repetitive maintenance. Course topics include CSS, SSI, DHTML, SQL, PHP and other web technologies.
**Prerequisites:** CITS F205 or CS F103; CITS F222; or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F228 Advanced Website Design and Development**
3 Credits
Offered As Demand Warrants
Plan and implement professional and comprehensive websites that utilize and integrate multiple website design and development technologies such as XHTML, CSS, XML, Ajax, Web APIs, client-side and server-side programming, graphics and multimedia, and web communication tools.
**Prerequisites:** CITS F221; CITS F222; CITS F224; CITS F225; or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F240 System and Network Services Administration**
3 Credits
Offered As Demand Warrants
Implement and administer core network services operating within a network environment. Topics include: WSUS, WDS, DHCP, DNS, remote access, file and print, security and network management services. Course covers system and network services objectives required for Microsoft Certified Solutions Associate (MCSA) certification exams related to server technologies.
**Prerequisites:** CITS F212 (may be taken concurrently) or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F241 Networking and LAN Infrastructure Basics**
4 Credits
Offered As Demand Warrants
The first of three courses (with CITS F242 and CITS F243) providing coverage of networking topics designed to prepare students for the CCNA certification exam. Covers the OSI and Internet models, IPv4 and IPv6 addressing, and network security fundamentals, while providing hands-on practical experience and career skills.
**Lecture + Lab + Other:** 4 + 0 + 0

**CITS F242 Routing and Switching Essentials**
4 Credits
Offered As Demand Warrants
Second of three courses providing integrated coverage of networking topics designed to prepare students for the CCNA certification exam. Covers an in-depth study of the network switching concepts, VLANS, STP, DHCP, SLAC and DHCPv6 addressing, LAN security, and an introduction to routing concepts while providing learners for hands-on practical experience.
**Prerequisites:** CITS F241.
**Lecture + Lab + Other:** 4 + 0 + 0

**CITS F243 Intermediate Networking and LAN Infrastructure**
4 Credits
Offered As Demand Warrants
Third of three courses providing coverage of networking topics designed to prepare students for the CCNA certification exam. Covers network routing concepts, including OSPF, ACL concepts, WAN, VPN and IPSEC, QoS, and network design, troubleshooting, virtualization and automation, while providing opportunities for hands-on, practical experience and career skills development.
**Prerequisites:** CITS F241.
**Lecture + Lab + Other:** 4 + 0 + 0

**CITS F244 Advanced Network Infrastructure Services**
4 Credits
Offered As Demand Warrants
Covers the architecture, components and operations of cloud-based computer systems. Covers topics that prepare students for the AWS cloud foundations certification as well as other cloud formats.
**Prerequisites:** CITS F241.
**Lecture + Lab + Other:** 4 + 0 + 0

**CITS F245 Cloud Computing Foundations**
3 Credits
Offered As Demand Warrants
Cloud Computing Foundations is intended for students who seek an overall understanding of cloud computing concepts, independent of specific technical roles. It provides a detailed overview of cloud concepts, Amazon Web Services (AWS) core services, security, architecture, pricing and support. Students will study AWS and other cloud computing models.
**Prerequisites:** CITS F204; Recommended: CITS F203, CITS F212, CITS F241.
**Lecture + Lab + Other:** 3 + 1 + 0

**CITS F249 Networking and Communications: Topics**
1-4 Credits
Offered As Demand Warrants
In-depth technical and comprehensive coverage of networking and communications skills and concepts.
**Recommended:** CITS F204 or equivalent skills.
**Special Notes:** May be repeated for credit.
**Lecture + Lab + Other:** 1-4 + 0 + 0

**CITS F261 Computer and Network Security**
3 Credits
Offered As Demand Warrants
The fundamental concepts of computer and network security. Course topics include: understanding threats to a computing infrastructure, understanding encryption technologies, securing network communications and applications, security policies and responding to incidents. Course covers objectives defined for CompTIA Security+ certification.
**Prerequisites:** CITS F204 or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F262 Cybersecurity Defense and Countermeasures**
3 Credits
This course focuses on network and information systems security from a defensive point of view. Students will learn how to analyze internal and external security threats, develop security policies, and implement security measures to protect information within an enterprise. Topics include risk assessment, security policies and procedures, incident response, cryptographic services, network and host-based security.
**Prerequisites:** CITS F261 or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F263 Network Security Penetration Testing**
3 Credits
Offered As Demand Warrants
This course focuses on network and information systems security from an offensive point of view. Students will learn technical testing and examination techniques used to identify, validate and assess technical vulnerabilities within an enterprise. Topics include penetration testing methodology, footprinting and reconnaissance, scanning and enumeration, vulnerability validation, data collection and reporting.
**Prerequisites:** CITS F261 or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F265 Directory Services Administration**
3 Credits
Offered As Demand Warrants
Creation and configuration of directory service objects to manage access to network resources, implement and manage group policy objects, and to backup, restore, monitor and troubleshoot directory service related issues. Course covers advanced directory services administration objectives required for Microsoft Certified Solutions Associate (MCSA) certification exams related to server technologies.
**Prerequisite:** CITS F212 (may be taken concurrently) or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F281 Professional Practices in IT**
1-3 Credits
Offered As Demand Warrants
Prepares students for work as an IT professional. Topics include: providing computer technical support, user support management, soft skills in IT, resume writing and career exploration, diagnosing problems, researching and documenting solutions, meeting user needs, developing training materials and giving workshops and lessons.
**Prerequisites:** 24 credits in CITS courses.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F282 IT Troubleshooting Skills**
1-3 Credits
Offered As Demand Warrants
Practical IT troubleshooting skills, including hardware, software, networks and operating systems. The course will include practical and useful troubleshooting scenarios.
**Prerequisites:** CITS F203; CITS F204 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F284 Independent Project**
1-3 Credits
Offered As Demand Warrants
Student created project or internship that includes learning new skills, applying the skills to significant problems, and demonstrating the results to other computer users. Includes application of learned skills in a professional manner.
**Prerequisites:** 12 credits in CITS courses.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F285 Cooperative Work Experience**
3 Credits
Offered As Demand Warrants
On-the-job training related to occupational objectives. Weekly seminar with coordinator required.
**Prerequisites:** 12 credits in CITS courses.
**Lecture + Lab + Other:** 3 + 0 + 0

**CITS F288 Professional Certification Review**
1-3 Credits
Offered As Demand Warrants
Prepares students for national or industry specific certification examination.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CITS F289 Information Technology: Topics**
1-3 Credits
Offered As Demand Warrants
Comprehensive coverage of a specific information technology topic.
**Recommended:** CITS F203 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

# Computer Information and Office Systems (CIOS)

**Community & Technical College**
Computer Information and Office Systems (https://www.ctc.uaf.edu/programs/information-technology/)
907-455-2800

**CIOS F100 Introduction to Personal Computers**
1 Credit
Offered As Demand Warrants
Introduction to basic computer skills including using the mouse and menus, opening and exiting applications, creating basic word processing and spreadsheet files, basic file management, web browsing, email and virus protection.
**Lecture + Lab + Other:** 1 + 0 + 0

**CIOS F103 Computer Survey**
1-3 Credits
Offered As Demand Warrants
An introduction to the world of computers emphasizing microcomputers. Provides computer terminology and how to use computers as a tool to make work easier and to extend the reach of the mind.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F128 Microcomputer Operating Systems**
3 Credits
Offered As Demand Warrants
Introduces the use and configuration of a current microcomputer operating system. Topics include: basic use, configuration, troubleshooting and maintenance, connecting to the Internet and security basics and safe computing practices.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**CIOS F130 Word Processing**
1-3 Credits
Offered As Demand Warrants
Comprehensive exploration of topics related to using word processors. Includes creating, formatting and revising documents; using proofreading and editing tools; implementing styles; using templates; and customizing the application.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F133 Microcomputer Presentation Software**
1-3 Credits
Offered As Demand Warrants
Designing effective presentations. Includes organizing and designing an effective presentation of information using current microcomputer software.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F135 Microcomputer Spreadsheets**
1-3 Credits
Offered As Demand Warrants
Comprehensive exploration of topics related to using microcomputer spreadsheets. Includes creating, formatting and revising spreadsheets; creating formulas, graphics and charts; and using spreadsheets to organize, analyze and query information.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F146 Using Internet Tools and Technologies**
1-3 Credits
Offered As Demand Warrants
Presentation of the Internet. Includes using and configuring current World Wide Web and email, and other communication tools; developing searching strategies; current and future trends; and basic web authoring. Develop a basic understanding of technologies and protocols used on the Internet.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F146C Using the Internet**
1-3 Credits
Presentation of the Internet. Includes using and configuring current World Wide Web and e-mail tools; developing searching strategies; current and future trends; and basic web authoring.
**Recommended:** Basic computer literacy, including saving and retrieving files and using basic software.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F150 Computer Business Applications**
1-3 Credits
Offered As Demand Warrants
Designed to develop computer literacy in the use and understanding of computer systems, office productivity applications and the Internet. Topics include operating system fundamentals, file management, word processing and spreadsheet fundamentals and safe, secure and effective use of Internet technologies.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F189 Microcomputer Applications: Topics**
1-3 Credits
Offered As Demand Warrants
Extensive coverage of a specific microcomputer application. May be repeated for credit.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F230 Advanced Word Processing**
1-3 Credits
Offered As Demand Warrants
Advanced concepts of word processing using various software.
**Prerequisites:** CIOS F130.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F231 Introduction to Desktop Publishing**
1-2 Credits
Offered As Demand Warrants
Entry-level desktop publishing course introducing the chief features of a page layout program. Step-by-step instructions to create at least three simple publications.
**Prerequisites:** Previous computer experience.
**Lecture + Lab + Other:** 1-2 + 0 + 0

**CIOS F233 Desktop Publishing**
1-3 Credits
Offered As Demand Warrants
Publication design and layout using desktop publishing software. Includes integrating text and graphics, page layout design, scanning and basic image editing.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F240 Microcomputer Databases**
1-3 Credits
Offered As Demand Warrants
Comprehensive introduction to microcomputer databases. Includes basic database concepts; how to maintain and update databases; how to build and use queries and forms; and how to build reports. Introduction to database design.
**Recommended:** CIOS F135 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F255 Digital Graphics**
1-3 Credits
Offered As Demand Warrants
This course provides a foundation in the techniques, methods and principles of digital graphics creation. Through the use of professional software applications, students gain skills and knowledge useful for graphic design and visual communication in today's world.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F257 Digital Video**
1-3 Credits
Offered As Demand Warrants
Comprehensive survey of creating and editing digital video using microcomputer tools. Includes the use of professional-level digital video applications to create short videos for a variety of uses.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**CIOS F258 Digital Photography**
1-3 Credits
Offered As Demand Warrants
Comprehensive survey of tools and methods to create and edit digital images using microcomputer tools. Includes the use of professional-level digital photography applications.
**Recommended:** CIOS F150 or equivalent skills.
**Lecture + Lab + Other:** 1-3 + 0 + 0

# Computer Science (CS)

**College of Engineering and Mines**
Department of Computer Science (https://www.cs.uaf.edu/)
907-474-2777

**CS F101 Computers and Society** (m)
3 Credits
Offered Fall, Spring and Summer
Computer literacy for everyone. Overview of computing machines and automatic data processing. Interaction between social institutions and automated decision-making. Introduction to business applications software and electronic mail. Some programming for understanding, not for skill development.
**Prerequisites:** Two years of high school mathematics, including at least one year of algebra.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F103 Introduction to Computer Programming**
3 Credits
Offered Fall and Spring
Computer programming for students without the background for CS F201. Concepts of object-oriented programming and algorithm design using the Python programming language.
**Prerequisites:** Math placement at the 100-level.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F180 Introduction to Programming and Algorithmic Thinking**
1 Credit
Offered As Demand Warrants
Introduction to fundamental concepts across different programming languages including: variables, looping, conditional statements, flow, maintainable code, searching and sorting algorithms. This course is designed as an advance layer over the materials and activities associated with the T3 Alliance grant funded program (T3.alliance.org).
**Lecture + Lab + Other:** 1 + 0 + 0

**CS F201 Computer Science I**
3 Credits
Offered Fall and Spring
The discipline of computer science including problem solving, algorithm development, good programming style, control flow, I/O and elementary data structures. Concepts implemented with extensive programming experience in C++, and a group programming project.
**Prerequisites:** One year high school level programming or CS F103; mathematics placement at the F200-level.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F202 Computer Science II**
3 Credits
Offered Fall and Spring
The discipline of computer science including classes, object-oriented programming, operators, RAII, inheritance, exceptions and generic programming with templates. Concepts implemented with extensive programming experience in C++ and a group programming project.
**Prerequisites:** CS F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F241 Computer Hardware Concepts**
4 Credits
Offered Spring
A programmer-centric approach to electrical circuits and microcontroller interfacing, with applications to smart devices and robotics. Covers bit-level arithmetic and logic, microcontrollers, battery-powered systems, sensor and actuator interfacing, and interdevice communication. These technologies form the foundation for smart vehicles, devices and buildings.
**Prerequisites:** CS F201, ES F201.
**Corequisites:** CS F241L.
**Lecture + Lab + Other:** 3 + 3 + 0

**CS F241L Computer Hardware Concepts Lab**
0 Credit
Offered Spring
Laboratory section for CS F241 Computer Hardware Concepts. Activities may include simulated and physical electronic circuits, microcontroller programming, digital and analog circuits.
**Corequisites:** CS F241.
**Lecture + Lab + Other:** 0 + 0 + 0

**CS F254 Unmanned Aircraft Systems (UAS) Design**
3 Credits
Offered As Demand Warrants
A multidisciplinary team of students will design, build, test and deliver an unmanned aircraft system (UAS) in support of university research mission requirements. Students will learn basic concepts related to the systems engineering design process. Graded events include team briefings, written reports, multimedia products and a finished UAS product.
**Prerequisites:** AERO F254; ME F254.
**Cross-listed with** AERO F256, ME F256.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F258 Unmanned Aircraft Systems (UAS) Operations**
3 Credits
Offered As Demand Warrants
Covers the use of unmanned aircraft systems (UAS), sensors, and support infrastructure required to conduct a selected mission set. Emphasis is on mission analysis, planning, and conduct, including definition of requirements/constraints, identification of appropriate assets, flight planning considerations, and data analysis requirements. Teams coordinate resources for mission and report results.
**Cross-listed with** AERO F258; GEOS F258; and ME F258.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F301 Assembly Language Programming**
3 Credits
Offered Fall
The low level structure of a modern computer: hardware instruction set architecture, registers, the call stack, pointers, the heap, the page table, and threads. Applications include performance and security.
**Prerequisites:** CS F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F311 Data Structures and Algorithms**
3 Credits
Offered Fall
Data structures and the algorithms for their manipulation. Algorithmic efficiency and asymptotic notation. Algorithms for searching and sorting. Abstract data types and container data structures: arrays, linked lists, stacks, queues, trees, tables, heaps, balanced search trees, hash tables.
**Prerequisites:** CS F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F321 Operating Systems**
3 Credits
Offered Spring
The software stack in a modern computer: thread, process, container, kernel, hypervisor and network. Enforcing access control and securing communication between these layers, and designing services to use them effectively.
**Prerequisites:** CS F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F331 Programming Languages**
3 Credits
Offered Spring
Syntax and semantics of widely differing programming languages. Syntax specification, lexical analysis, parsing and interpretation. Comparison of diverse languages such as Python, Haskell, Forth and Prolog.
**Prerequisites:** CS F311.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F361 Systems Security and Administration**
3 Credits
Offered As Demand Warrants
Advanced systems programming including privileged instructions and system services, authentication technologies, host-based and network-based security issues. Applications to asynchronous I/O, process control and communication, device drivers and file management.
**Prerequisites:** CS F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F371 Computer Ethics and Technical Communication**
3 Credits
Offered Fall
This course explores the social, legal and ethical issues aggravated, transformed or created by computer technology. Additional focus is on technical communication skills needed in the computer industry.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F121X, COJO F131X or COJO F141X; CS F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F372 Software Construction**
3 Credits
Offered Spring
Methods for programming and construction of complete computer applications, including refractoring, performance measurement, process documentation, unit testing, version control, integrated development environments, debugging and debuggers, interpreting requirements, and design patterns.
**Prerequisites:** CS F311.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F392 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**CS F405 Introduction to Artificial Intelligence**
3 Credits
Offered Spring
Examine diverse branches of AI placing AI in the context of computer science. Knowledge representation formalism and search technology. Programming methodologies; procedural systems such as expert systems and blackboard systems and non-procedural systems such as neural networks.
**Prerequisites:** CS F311.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F411 Analysis of Algorithms**
3 Credits
Offered Fall
Analysis of classic algorithms, their implementation and efficiency. Topics from combinatorics (sets, graphs), algebra (integer arithmetic, primes, polynomial arithmetic, GCD, Diophantine equations, encryption), systems (parsing searching, sorting) and theory (recursion, Turing machines). The complexity classes P, NP and NP complete.
**Prerequisites:** MATH F307, CS F311.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F421 Distributed Operating Systems**
3 Credits
Offered As Demand Warrants
Detailed level study of distributed operating system algorithms, functions and associated implementation. Distributed operating system tuning methods and security. Role of distributed operating systems in net-centric computing. Programming, documentation and evaluation of distributed operating system segments as projects.
**Prerequisites:** CS F321; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F425 Database Systems**
3 Credits
Offered Fall
Data independence, modeling, relationships and organization. Hierarchical, network and relational data models; canonical schema. Data description languages, SQL, query facilities, functional dependencies, normalization, data integrity and reliability. Review of current database software packages.
**Prerequisites:** CS F311; CS F321.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F441 System Architecture**
3 Credits
Offered Spring
Computer design fundamentals, performance and cost, pipelining, instruction-level parallelism, memory hierarchy design, storage systems, and vector processing.
**Prerequisites:** CS F321; EE F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F442 Computer Communication and Networks**
3 Credits
Offered As Demand Warrants
Study of computer networks using the ISO/OSI layered model as a framework. Design issues and trade-offs, protocols and selected standards. Emphasis on ISO/OSI Layers 1-4/(Physical, Data Link, Network and Transport Layers), plus medium access sublayers (LAN's, etc.).
**Prerequisites:** CS F321.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F453 Robotics & 3D Printing**
3 Credits
Offered As Demand Warrants
Covers self-driving cars, 3D printers, and computer-controlled machine tools as modern applications of a common software core of path planning and motion control. Includes mathematical background in 3D computational geometry, hands-on applications such as designing and fabricating resilient robot parts, and online algorithms for robot driving.
**Prerequisites:** MATH F253X; CS F311 or equivalent experience programming complex applications in a modern language like C++ or Python.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F460 Introduction to Digital Forensics**
3 Credits
Offered As Demand Warrants
Takes a hands-on approach to the forensics examination of computer technology. Focuses on the forensic process, methods, and tools utilized to collect and preserve and examine digital evidence. Course topics include: collection, preservation and examination of evidence from computers including file systems, email and malicious code.
**Prerequisites:** CS F321.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F462 Intrusion Detection Systems**
3 Credits
Offered As Demand Warrants
Focus on IDS theory and practice and its importance; the origin and resolution of common security threats and vulnerabilities; host and network approaches to IDS implementation; and the legal, ethical, and privacy issues associated with IDS use and policies.
**Prerequisites:** CS F361.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F463 Cryptography and Data Security**
3 Credits
Offered As Demand Warrants
Specialized study of cryptography and its application in securing data systems, with an emphasis on applied cryptography. Topics include history of cryptography, encryption, digital signatures, authentication, electronic commerce, key distribution and management, private and public key cryptography, and protocols.
**Prerequisites:** MATH F307; CS F311.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F465 Computer and Network Security**
3 Credits
Offered As Demand Warrants
Analyzes computer software, hardware and network vulnerabilities. Mechanisms to detect and defend against attacks, including authentication, access control and cryptography. Includes code vulnerabilities like buffer overflow, web issues like command injection, network protocol design and storage security. Legal and ethical issues concerning privacy, intellectual property and computer crime.
**Prerequisites:** CS F202, CS F301 (may be taken concurrently).
**Stacked with** CS F665.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F471 Senior Capstone I**
3 Credits
Offered Fall
Introduction to software engineering and project management principles, techniques, methods and standards for software system development. Additional topics include technical communication, computer ethics and legal issues.
**Prerequisites:** CS major; senior standing; CS F311; CS F371.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F472 Senior Capstone II**
3 Credits
Offered Spring
Group projects in a real computer industry environment and produce appropriate documentation and reports. Nature, ethics and legal considerations of the computer science profession are discussed with an emphasis on ethics. Additional topics include project management, design methodologies, technical presentation, human-machine interface and programming team interactions.
**Prerequisites:** CS F372; CS F471.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F480 Topics in Computer Science**
3 Credits
Offered As Demand Warrants
Topics include, but are not limited to; computational linear algebra, cryptography, parallel algorithm development and analysis.
**Special Notes:** Course may be repeated when topics change.
**Lecture + Lab + Other:** 0 + 3 + 0

**CS F484 Computer Graphics Fundamentals**
3 Credits
Offered Fall
Creation of computer-generated images using 3D graphics hardware. Mathematics and data structures in 3D graphics. Sprites, Tiles, Typography, and Vector Graphics in 2D graphics. Color, lighting, textures, hidden surface removal. Loading and saving scene graphs; Using physically based and nonphotorealistic shading. Software design principles to create interactive applications.
**Prerequisites:** CS F202; MATH F253X.
**Stacked with** CS F684.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F485 Computer Graphics Rendering**
3 Credits
Offered As Demand Warrants
Designing graphics engines for realtime rendering of computer generated imagery; physically based approaches to shading and shadows; artistic approaches to shading and nonphotorealistic rendering; algorithms for rendering an image including ray tracing, deferred rendering, and global illumination; image space algorithms for simulation of camera effects.
**Prerequisites:** CS F202; MATH F253X.
**Stacked with** CS F685.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F486 Computer Graphics Animation and Simulation**
3 Credits
Offered As Demand Warrants
Creation of computer graphics animation and simulation of physically based phenomena; designing simulation systems for computer graphics applications; physically based phenomena using particle systems, fluid simulation, and rigid body dynamics; key frame animation, bones, and rigging; and other related topics.
**Prerequisites:** CS F202; MATH F253X; PHYS F212X.
**Stacked with** CS F686.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F600 Professional Software Development**
4 Credits
Offered Fall
Participate in a group project to explore the technical, social and ethical aspects of software development. Topics include: requirements engineering, enterprise-level data storage, software architecture, security, software testing, legal issues, computer ethics, risk management and project management.
**Prerequisites:** CS F472.
**Lecture + Lab + Other:** 4 + 0 + 0

**CS F601 Algorithms, Architecture and Languages**
4 Credits
Offered Spring
Current research on, and cross-cutting interrelationships between computer algorithms, machine architecture and languages. Covers asymptotic performance analysis including NP-completeness, modern parallel hardware including multicore, and grammars and parsing from regular expressions to BNF.
**Prerequisites:** CS F331; CS F411; CS F441 or EE F443.
**Lecture + Lab + Other:** 4 + 0 + 0

**CS F605 Artificial Intelligence**
3 Credits
Offered Spring
Study and writing of AI programs: expert systems, expert system shells, blackboard systems, neural networks. Representation of knowledge, pattern analysis, inference networks, neural network training. Study of software engineering aspects of AI software.
**Prerequisites:** Graduate standing or permission of CS graduate advisor.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F611 Complexity of Algorithms**
3 Credits
Offered As Demand Warrants
Theoretical analysis of various algorithms: topics include sorting, searching, selection, polynomial evaluation, NP completeness, decidability.
**Prerequisites:** CS F411.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F621 Advanced Systems Programming**
3 Credits
Offered As Demand Warrants
Multiprogramming and multiprocessing systems. File and program security. Scheduling optimization and system tuning, I/O processing, archiving and system recovery, and initialization. Study of current systems.
**Prerequisites:** CS F311 and CS F321.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F631 Programming Language Implementation**
3 Credits
Offered As Demand Warrants
Formal treatment of programming language translation and compiler design. Parsing context-free languages, translation specifications, machine independent code, NBF, scanners, symbol tables, parsers and recursive descent. Programming of compiler or interpreter segments as projects.
**Prerequisites:** CS F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F641 Advanced Systems Architecture**
3 Credits
Offered As Demand Warrants
A study of advanced single processor systems. Detailed study of multiprocessor architectures, such as vector architectures, massively parallel processors and shared-memory multi-processors.
**Prerequisites:** CS F441 or permission of Computer Science graduate advisor.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F642 Advanced Computer Networks**
3 Credits
Offered As Demand Warrants
A study of networks of interacting computers. The problems, rationales and possible solutions for both distributed processing and distributed databases will be examined. Major national and international protocols will be presented.
**Prerequisites:** Graduate standing or permission of Computer Science graduate advisor.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F658 Unmanned Aircraft Systems (UAS) Operations**
3 Credits
Offered Spring
Covers application of unmanned aircraft systems (UAS) to satisfy scientific research or public service missions. Students analyze mission requirements and recommend appropriate UAS vehicles, subsystems, sensors and data analysis tools to accomplish a specified mission. Students design mission profiles, conduct representative missions, produce required data products and present mission results.
**Prerequisites:** Graduate Standing.
**Cross-listed with** AERO F658.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F665 Computer and Network Security**
3 Credits
Offered As Demand Warrants
Analyzes computer software, hardware and network vulnerabilities. Mechanisms to detect and defend against attacks, including authentication, access control and cryptography. Includes code vulnerabilities like buffer overflow, web issues like command injection, network protocol design and storage security. Legal and ethical issues concerning privacy, intellectual property and computer crime.
**Stacked with** CS F465.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F671 Advanced Software Engineering**
3 Credits
Offered As Demand Warrants
Advanced software development as an engineering discipline. Includes investigation of current tools, standards, foundation and trends in software engineering from component-ware, software system composition, e-systems, software architecture and CASE tools.
**Prerequisites:** CS F471.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F680 Topics in Computer Science**
1-4 Credits
Offered As Demand Warrants
Example topics include, but are not limited to, software requirements engineering, cryptography, parallel algorithm development and analysis. May be repeated for credit with change of topic.
**Prerequisites:** Varies with each topic.
**Recommended:** Varies with each topic.
**Lecture + Lab + Other:** 1-4 + 0 + 0

**CS F681 Topics in Computer Graphics**
3 Credits
Offered Fall
Hardware, software and techniques used in computer graphics taken from topics such as refresh, storage, raster scan technology, volume rendering, particle systems, shading, image processing, computer aided design, video effects, animation and virtual environments.
**Prerequisites:** CS F202 and MATH F253X.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F684 Computer Graphics Fundamentals**
3 Credits
Offered Fall
Creation of computer-generated images using 3D graphics hardware. Mathematics and data structures in 3D graphics. Sprites, Tiles, Typography, and Vector Graphics in 2D graphics. Color, lighting, textures, hidden surface removal. Loading and saving scene graphs; Using physically based and nonphotorealistic shading. Software design principles to create interactive applications.
**Prerequisites:** CS F202; MATH F253X.
**Stacked with** CS F484.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F685 Computer Graphics Rendering**
3 Credits
Offered As Demand Warrants
Designing graphics engines for realtime rendering of computer generated imagery; physically based approaches to shading and shadows; artistic approaches to shading and nonphotorealistic rendering; algorithms for rendering an image including ray tracing, deferred rendering, and global illumination; image space algorithms for simulation of camera effects.
**Prerequisites:** CS F202; MATH F253X.
**Stacked with** CS F485.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F686 Computer Graphics Animation and Simulation**
3 Credits
Offered As Demand Warrants
Creation of computer graphics animation and simulation of physically based phenomena; designing simulation systems for computer graphics applications; physically based phenomena using particle systems, fluid simulation, and rigid body dynamics; key frame animation, bones, and rigging; and other related topics.
**Prerequisites:** CS F202 and PHYS F212X.
**Stacked with** CS F486.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F690 Graduate Seminar and Project**
3 Credits
Offered Fall
First semester of two-semester seminar in which students will work on and present the results of major programming or literature survey projects in computer science. Written and oral reports will be required.
**Prerequisites:** 12 credits in graduate computer science courses; or permission of Computer Science graduate advisor.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F691 Graduate Seminar and Project**
3 Credits
Offered Spring
Second semester of a two-semester seminar in which students will work on and present the results of major programming or literature survey projects in computer science. Written and oral reports will be required.
**Prerequisites:** CS F690; 12 credits in graduate computer science courses; or permission of Computer Science advisor.
**Lecture + Lab + Other:** 3 + 0 + 0

**CS F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**CS F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**CS F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Construction Management (CM)

**Community & Technical College**
Construction Management (https://www.ctc.uaf.edu/programs/construction-management/)
907-455-2846

**CM F102 Methods of Building Construction**
3 Credits
Offered As Demand Warrants
Introduces basic knowledge of building materials, technical specifications, techniques, and systems. Outlines structural systems, construction processes, and assemblies. Includes a field project student team research of current Alaskan building type.
**Lecture + Lab + Other:** 3 + 0 + 0

**CM F123 Codes and Standards**
3 Credits
Offered As Demand Warrants
Provides an introduction and overview of the fundamental provisions of the building codes used for plan review, life-safety evaluation of buildings, and community development.
**Prerequisites:** CM F102; DRT F170.
**Lecture + Lab + Other:** 3 + 0 + 0

**CM F142 Mechanical and Electrical Technology**
3 Credits
Offered As Demand Warrants
Introduces the basic mechanical and electrical systems required in all buildings for the safety, health, comfort, and convenience of the occupants. Emphasizes design criteria, code requirements and interpretation of construction drawings.
**Lecture + Lab + Other:** 3 + 0 + 0

**CM F163 Building Construction Cost Estimating**
3 Credits
Offered As Demand Warrants
Presents methods and techniques for preparing accurate cost estimates for building construction projects. Emphasizes quantity surveys, productivity, bidding and negotiation procedures, and cost control systems.
**Prerequisites:** CM F102; DRT F170; MATH F151X.
**Lecture + Lab + Other:** 2 + 2 + 0

**CM F201 Construction Project Management**
3 Credits
Offered As Demand Warrants
Examines construction project management methods and processes. Includes project delivery systems, contract agreements, contract general and supplementary conditions and contract administration procedures.
**Prerequisites:** CM F102; DRT F170.
**Lecture + Lab + Other:** 3 + 0 + 0

**CM F202 Project Planning and Scheduling**
3 Credits
Offered As Demand Warrants
Examines concepts and methods for planning and scheduling of construction projects. Includes identifying work elements, analyzing resources, determining activity durations, preparing CPM schedules using computer scheduling software, preparing schedule updates and analyzing planning versus actual progress for cost control.
**Prerequisites:** CM F201; MATH F152X.
**Lecture + Lab + Other:** 2 + 2 + 0

**CM F205 Construction Safety**
3 Credits
Offered As Demand Warrants
Examines safety and health practices for the construction industry. Includes developing and implementing construction project site-specific safety plans, analyzing the laws and regulations that govern safety, evaluating construction site hazards and environmental conditions and incident investigation and reporting.
**Prerequisites:** CM F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**CM F213 Civil Technology**
3 Credits
Offered As Demand Warrants
Outlines elements of civil design, including soils and soil mechanics, foundations, roads, and utilities using local, state and federal regulations. Students will also be introduced to elements of construction surveying.
**Prerequisites:** CM F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**CM F231 Structural Technology**
3 Credits
Offered As Demand Warrants
Examines structural theory and the physical principles that underlie structural behavior. Includes the use of materials in a manner to maintain structural stability against such natural forces as gravity, wind, snow and earthquakes. Covers connection detailing and code requirements for wood, steel and reinforced concrete.
**Prerequisites:** CM F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**CM F263 Civil Construction Cost Estimating**
3 Credits
Offered As Demand Warrants
Presents methods and techniques for preparing accurate cost estimates for earthwork, roads, highways, underground utilities and site work. Emphasizes quantity surveys, unit costs, production factors, bidding and construction equipment management.
**Prerequisites:** CM F213; MATH F152X.
**Lecture + Lab + Other:** 2 + 2 + 0

**CM F299 Construction Management Internship**
3 Credits
Offered As Demand Warrants
Places students in building construction offices related to student's educational program and occupational objectives. Direct supervision by contractor professional, program faculty and Career Services coordinator.
**Prerequisites:** Department approval.
**Lecture + Lab + Other:** 0 + 0 + 225

# Design Technology (DSGN)

**Community & Technical College**

Drafting/Design Technology (https://www.ctc.uaf.edu/programs/drafting/)
907-455-2800

**DSGN F130 Modeling, Assembly & 3D Animation: Autodesk Inventor**
3 Credits
Offered As Demand Warrants
Students will develop skills and knowledge needed to quickly and accurately create three dimensional parts, assemblies and printed models. Students will develop skills that can later be utilized professionally or in advanced coursework.
**Stacked with** DSGN F230.
**Lecture + Lab + Other:** 3 + 0 + 0

**DSGN F230 Modeling, Assembly & 3D Animation: Autodesk Inventor**
3 Credits
Offered As Demand Warrants
Students will develop skills and knowledge needed to quickly and accurately create three dimensional parts, assemblies and printed models. Students will develop skills that can later be utilized professionally or in advanced coursework.
**Stacked with** DSGN F130.
**Lecture + Lab + Other:** 3 + 0 + 0

# Construction Trades Technology (CTT)

**College of Rural and Community Development**
Alaska Native and Indigenous Programs (https://uaf.edu/indigenous/)
907-474-6528 Toll-free 1-866-478-2721

**CTT F100 Construction Technology Core**
3 Credits
Offered As Demand Warrants
Basic construction techniques using OSHA approved standards by stressing how to follow safe work practices and procedures, how to safely use hand and power tools, how to extract information from construction blueprints and drawings, good housekeeping habits, and material handling on the construction site.
**Lecture + Lab + Other:** 2.5 + 1.5 + 0

**CTT F101 Basic Construction Safety**
1 Credit
Offered As Demand Warrants
Introduction to basic construction safety using OSHA approved standards. Focus is on safe work practices and procedures, the proper inspection of safety equipment before use and the proper use of safety equipment. (Alternative to CTT F100 when taken with CTT F102; CTT F103; CTT F104.)
**Lecture + Lab + Other:** 1 + 0.5 + 0

**CTT F102 Introduction to Hand and Power Tools**
1 Credit
Offered As Demand Warrants
Introduction to basic hand and power tools used in construction and maintenance and the importance of their care and use. Valuable safety information for each type of tool is discussed. Understanding proper usage helps trainees to prevent accidents. Some specialty tools used by different crafts are also introduced. (Alternative to CTT F100 when taken with CTT F101; CTT F103; CTT F104.)
**Prerequisites:** CTT F101.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**CTT F103 Introduction to Blueprint Reading**
1 Credit
Offered As Demand Warrants
Introduction to basic blueprint terms, components and symbols. Different types of construction drawings commonly used on job sites and why each type of drawing is important will be presented. Standardized information contained on blueprints such as identification, revision status, symbols, project titles, dimension and scale will be covered. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F104.)
**Prerequisites:** CTT F102.
**Lecture + Lab + Other:** 1 + 1 + 0

**CTT F104 Basic Communication and Employability Skills**
2 Credits
Offered As Demand Warrants
Techniques for communicating effectively with co-workers and supervisors. Includes critical thinking and problem-solving skills and reviews effective relationship skills, effective presentation and key workforce issues such as sexual harassment, stress and substance abuse. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F103.)
**Prerequisites:** CTT F103.
**Lecture + Lab + Other:** 2 + 0 + 0

**CTT F106 Construction Measuring**
3 Credits
Offered As Demand Warrants
Introduction to basic mathematical procedures commonly used in the construction and maintenance crafts. Includes multiplication, subtraction, addition, division, working with fractions and measuring areas, volume and capacity of shapes.
**Lecture + Lab + Other:** 3 + 0 + 0

**CTT F110 Residential Carpentry I**
8.5 Credits
Offered As Demand Warrants
Introduction to basic materials and framing techniques used in the construction trades. Includes an orientation, introduction to materials and advanced tools used in the trades. Includes techniques used in framing a structure and to exterior doors and windows commonly installed on construction projects and their proper installation. This course is divided into seven modules. Each module must be successfully completed. (Alternative: CTT F111; CTT F112; CTT F113; CTT F114.)
**Prerequisites:** CTT F100.
**Lecture + Lab + Other:** 5 + 7 + 0

**CTT F111 Materials and Tools Used in the Trade**
2.5 Credits
Offered As Demand Warrants
Examines the sources and uses of various softwoods and hardwoods, the grading system for lumber and plywood, composition and uses of various engineered sheet materials and laminated lumber products and the many kinds of fasteners and adhesives used with wood and masonry construction. Expands on the hand and power tool information provided in the construction technology core and introduces the carpentry trainee to additional tools used in the carpentry trade. (Alternative to CTT F110 when taken with CTT F112; CTT F113; CTT F114.)
**Prerequisites:** CTT F100.
**Lecture + Lab + Other:** 2 + 1 + 0

**CTT F112 Floor Systems, Wall and Ceiling Framing**
2 Credits
Offered As Demand Warrants
Focuses on framing basics. Includes the procedures for laying out and constructing a wood floor using common lumber as well as engineered building materials, procedures for laying out and framing walls and ceilings, roughing in doors and window openings, construction corners and partition Ts, bracing walls and ceilings, and applying sheathing. (Alternative to CTT F110 when taken with CTT F111; CTT F113; CTT F114.)
**Prerequisites:** CTT F111.
**Lecture + Lab + Other:** 1 + 2 + 0

**CTT F113 Roof Framing, Windows and Exterior Doors**
2 Credits
Offered As Demand Warrants
Describes the various kinds of roofs and instructions for laying out rafters for gable roof, hip roof and valley intersections. Includes both stick built and truss built roofs, various types of windows, skylights, exterior doors, and instructions for installing weather stripping and lock sets. (Alternative to CTT F110 when taken with CTT F111; CTT F112; CTT F114.)
**Prerequisites:** CTT F112.
**Lecture + Lab + Other:** 1 + 2 + 0

**CTT F114 Introduction to Concrete Materials and Forms**
2 Credits
Offered As Demand Warrants
Introduction to various cements and other materials which when mixed form various types of concrete. Includes concrete volume estimates, concrete tests, concrete curing methods, reinforcement materials such as rebar, bar supports and welded-wire fabric and tasks in the construction of foundations and flat work. (Alternative to CTT F110 when taken with CTT F111; CTT F112; CTT F113.)
**Prerequisites:** CTT F113.
**Lecture + Lab + Other:** 1 + 2 + 0

**CTT F115 Residential Carpentry--Level II**
12 Credits
Offered As Demand Warrants
This course builds upon the skills learned in CTT F110. Includes methods and techniques used to locate structures and install exterior siding and related element protection. Various types of roofing and installation of those materials, types and methods of drywall and its installation and interior finish applications. This course is divided into eleven modules. Each module must be successfully completed. (Alternative: CTT F116; CTT F117; CTT F118; CTT F119.)
**Prerequisites:** CTT F110.
**Lecture + Lab + Other:** 6 + 12 + 0

**CTT F116 Reading Plans and Site Layout--Level I**
2 Credits
Offered As Demand Warrants
This course builds upon CTT F110. Introduces the principles, equipment and methods used to perform site layout tasks of distance measurements, differential leveling and the site layout responsibilities of individuals on the site. (Alternative to CTT F115 when taken with CTT F117; CTT F118; CTT F119.)
**Prerequisites:** CTT F110.
**Lecture + Lab + Other:** 1 + 2 + 0

**CTT F117 Exterior Finish and Moisture Protection**
2 Credits
Offered As Demand Warrants
Introduction to materials and installation techniques used in various types of siding. Includes the installation procedures and basic requirements for insulation, moisture control and ventilation. (Alternative to CTT F115 when taken with CTT F116; CTT F118; CTT F119.)
**Prerequisites:** CTT F116.
**Lecture + Lab + Other:** 1 + 2 + 0

**CTT F118 Roofing, Stairs and Metal Studs Applications**
3 Credits
Offered As Demand Warrants
Introduction to materials and installation techniques for a number of basic types of roofing. Includes installation techniques of stairs and metal studs. (Alternative to CTT F115 when taken with CTT F116; CTT F117; CTT F119.)
**Prerequisites:** CTT F117.
**Lecture + Lab + Other:** 2 + 2 + 0

**CTT F119 Drywall and Interior Finish Applications**
5 Credits
Offered As Demand Warrants
Introduction to materials, tools and procedures used to install and finish gypsum drywall on walls and ceilings and to correct drywall finishing problems. Includes installation of various types of doors and their related hardware in several types of walls, materials, tools and procedures used to lay out, install, and maintain suspended ceilings and the different types of trim. (Alternative to CTT F115 when taken with CTT F116; CTT F117; CTT F118.)
**Prerequisites:** CTT F118.
**Lecture + Lab + Other:** 2 + 6 + 0

**CTT F121 Train the Trainer**
2 Credits
Journeypersons are needed to transfer their skills to younger workers and this program will provide the skilled person with an intense series of discussions related to teaching strategies, classroom management and leadership, group dynamics and evaluation of training. Program completers may qualify for adjunct status with UAF.
**Prerequisites:** Skilled journeyperson in specific skill area.
**Lecture + Lab + Other:** 2 + 0 + 0

**CTT F130 Introduction to Facility Maintenance**
1 Credit
Offered As Demand Warrants
Introduction to building systems and different types of building maintenance; deferred, preventative, emergency, proactive and reactive. Provides students with basic safety instruction of hand and power tools and chemicals used in the facility maintenance occupation in accordance with Federal OSHA regulations. Instruction in Personal Protective Equipment (PPE) requirements.
**Lecture + Lab + Other:** 1 + 0 + 0

**CTT F131 Interior Repairs**
1 Credit
Offered As Demand Warrants
Provides students with basic skills needed to install and repair drywall. Students will learn how to identify components of drywall assembly and identify tools and fasteners needed to install drywall. Students will identify different materials and proper tools needed in drywall finishing.
**Lecture + Lab + Other:** 1 + 0 + 0

**CTT F132 Flooring Installation**
1 Credit
Offered As Demand Warrants
Introduces students to concepts and practical applications of floor coverings. Students will learn how to install underlayment, floor coverings and trim. Introduction to special tools necessary for safely and correctly installing flooring.
**Lecture + Lab + Other:** 1 + 0 + 0

**CTT F133 Cabinet Installation with Countertops**
1 Credit
Offered As Demand Warrants
Provides students with basic concepts of installing cabinets with countertops. Identify various types of cabinet construction (stock/semi-custom/custom-built). Introduction to different types of wood products and special tools. Instruction in and practical application of different techniques of installing base cabinets and top or wall cabinets.
**Lecture + Lab + Other:** 1 + 0 + 0

**CTT F134 Garbage Disposal Installation**
1 Credit
Offered As Demand Warrants
Inform students of the basic knowledge of installing a garbage disposal unit in a basic kitchen cabinet. Students will learn how to use special tools in connecting drain and waste piping and venting systems from a house unit. Students will review safety issues related to the proper handling of plumbing hand and power tools in the installation process.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**CTT F135 Boiler Troubleshooting and Burner Repair**
2 Credits
Offered As Demand Warrants
Focuses on the basic components of boilers and burners used in industry for heating residential and commercial properties. Key concepts and strategies related to the process and safety operations of combustion, boiler thermodynamics, control systems, fuel pumps, ignition systems, draft and venting principles and boiler operation according to hydronic principles and Alaska code.
**Lecture + Lab + Other:** 0 + 0 + 0

**CTT F136 Landscaping and Horticulture**
2 Credits
Offered As Demand Warrants
Introduces students to the process/procedure of preparing and landscaping a grounded area. Students will be introduced to concepts of placement of appropriate plants and vegetation, maintenance of edged and mowed lawn area, weed and fertilization control and watering schedules.
**Lecture + Lab + Other:** 2 + 0 + 0

**CTT F137 Appliance Troubleshooting and Repair**
2 Credits
Offered As Demand Warrants
Provides students with conceptual and practical applications in troubleshooting and repairing appliances. Students will be instructed in diagnostic skills that support repairing and replacing components in various equipment such as refrigerators, washing machines, dishwashers, clothes dryer and oven and cook-tops.
**Lecture + Lab + Other:** 2 + 0 + 0

**CTT F138 Residential Heating Controls**
2 Credits
Offered As Demand Warrants
Provides conceptual and practical applications for students wishing to become a residential heating control technician. Topics will explore diagnosis of equipment problems in operation, testing and adjusting conventional and electronic thermostats. Students will also receive instruction on the operation of common electrical and electronic circuits used to control residential heating systems.
**Recommended:** Instructor approval if student has not taken CTT courses.
**Lecture + Lab + Other:** 0 + 0 + 0

**CTT F141 Door and Window Installation**
1 Credit
Offered As Demand Warrants
Introduces students to door and window installation. Students will learn skills and trade techniques of installation, finish casing and trim. Course will identify Rough Openings (RO) and RO sizing. Introduction to tools necessary for correctly and safely installing doors and windows.
**Lecture + Lab + Other:** 1 + 0 + 0

**CTT F150 Plumbing--Level I**
4 Credits
Offered As Demand Warrants
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into ten (10) modules. Each module must be successfully completed.
**Prerequisites:** CTT F110.
**Lecture + Lab + Other:** 3 + 2 + 0

**CTT F151 Introduction to Plumbing Tools and Drawings**
1 Credit
Offered As Demand Warrants
Introduction to a plumber's basic hand and power tools, their care and maintenance, and safety procedures. Includes the basics of reading plumbing blueprints and drawings and specific plumbing drawings such as isometric and oblique pictorial drawings, orthographic drawings and schematic drawings.
**Prerequisites:** CTT F110.
**Lecture + Lab + Other:** 1 + 0.5 + 0

**CTT F153 Plumbing Piping and Tools**
2 Credits
Offered As Demand Warrants
Introduction to basic hand and power tools and various types of piping used in the plumbing industry. Methods of joining various types of pipe and fittings commonly found in commercial and residential dwellings. Basics of reading plumbing blueprints and drawings, including specific drawings such as isometrics and oblique pictorial.
**Lecture + Lab + Other:** 2 + 0 + 0

**CTT F154 Fixtures, Faucets and Venting Systems**
1 Credit
Offered As Demand Warrants
Covers the various types of fixtures plumbers install, including sinks, bathtubs, water closets, garbage disposals, dishwashers and mop basins. An overview of the drain, waste and vent system from inside the building, where the liquid drains into pipes, to the sewer and waste treatment plants.
**Lecture + Lab + Other:** 1 + 0 + 0

**CTT F155 Plumbing--Level II**
8 Credits
Offered As Demand Warrants
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into thirteen modules. Each module must be successfully completed. Generally, each will have two components, a written exam and a hands-on competency test.
**Prerequisites:** CTT F150.
**Lecture + Lab + Other:** 4.5 + 7 + 0

**CTT F160 Photovoltaic Systems I**
5 Credits
Offered As Demand Warrants
This course is a practical introduction to electric power generation through photovoltaic cells. During this course the student will build a solar panel to understand its operation, installation and maintenance.
**Prerequisites:** CTT F106 and CTT F100.
**Lecture + Lab + Other:** 4 + 2 + 0

**CTT F161 Photovoltaic Systems II**
5 Credits
Offered As Demand Warrants
This course covers practical methods of installing photovoltaic systems in residential settings. The students will also learn basic troubleshooting techniques.
**Prerequisites:** CTT F160.
**Lecture + Lab + Other:** 4 + 2 + 0

**CTT F170 Residential Electrical--Level I**
9 Credits
Offered As Demand Warrants
Introduction to basic electrical techniques, electrical theory, and extraction of information from construction drawings, tools, and materials used in the electrical trades. Course is divided into twelve modules. Each module must be successfully completed.
**Prerequisites:** CTT F115.
**Lecture + Lab + Other:** 8 + 2 + 0

**CTT F171 Electrical Safety and Electric Theory**
2 Credits
Offered As Demand Warrants
Course covers the safety rules as applied to handling and working with electrical systems and circuits. Includes the required OSHA mandated lockout/tag out procedure, basic electric theory and circuit calculations involving the application of Ohm's and Kirchoff's laws. The student is made aware of precautions to take for various electrical hazards found on the job site.
**Prerequisites:** CTT F115.
**Lecture + Lab + Other:** 2 + 0 + 0

**CTT F172 Alternating Current, Electrical Test Equipment and the NEC**
2 Credits
Offered As Demand Warrants
Introduction to the principles of alternating current and the operation and applications of various types of electrical test equipment. Includes National Electrical Code.
**Prerequisites:** CTT F171.
**Lecture + Lab + Other:** 2 + 0 + 0

**CTT F175 Residential Electrical--Level II**
8 Credits
Offered As Demand Warrants
Introduction to basic electrical techniques, electrical theory and extraction of information from construction drawings, tools and materials used in the electrical trades. This course is divided into ten modules. Each module must be successfully completed.
**Prerequisites:** CTT F170.
**Lecture + Lab + Other:** 4 + 8 + 0

**CTT F199 Student Practicum I**
1-3 Credits
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site. Course may be repeated twice for a total of three credits.
**Prerequisites:** CTT F115.
**Lecture + Lab + Other:** 0 + 2-6 + 0

**CTT F240 Introduction to Project Development for Tribal Residential Construction**
3 Credits
Offered As Demand Warrants
This course introduces the roles and responsibilities of project managers who manage and supervise the construction of housing projects in rural Alaska. Because they are funded predominantly by the U.S. Department of Housing and Urban Development (HUD) through the Native American Housing Assistance and Self-Determination Act (NAHASDA), projects conducted by rural housing authorities and tribal organizations have unique planning and administrative requirements. Project managers working in rural Alaska also require specialized training due to complicating factors such as problematic soil conditions, materials availability, transportation and other logistical challenges, and variable workforce capacity. Students will gain skills in developing plans and specifications for rural construction projects, ensure building codes are met during project development, and learn processes and materials unique to isolated locations with limited services.
**Prerequisites:** CIOS F150, CTT F106, Certificate in Construction Trades Technology.
**Lecture + Lab + Other:** 3 + 0 + 0

**CTT F241 Introduction to Estimating, Cost Control, and Quality Control for Tribal Residential Construction**
3 Credits
Offered As Demand Warrants
This course builds upon the skills obtained in CTT F240 by introducing the roles and responsibilities of project managers relative to project scheduling, estimating, cost control and quality control. Because they are funded predominately by the U.S. Department of Housing and Urban Development (HUD) through the Native American Housing Assistance and Self-Determination Act (NAHASDA), projects conducted by rural housing authorities and tribal organizations have unique planning and administrative requirements. Students will learn to use project scheduling and cost control tools which incorporate these requirements and that have been developed for and proven effective in the management of residential construction projects in rural Alaska. Complicating factors for rural Alaska projects such as materials availability, transportation and other logistical challenges, variable workforce capacity, and complex political environment as they relate to project estimating, cost control and quality assurance will also be discussed.
**Prerequisites:** CTT F240, Certificate in Construction Trades Technology.
**Lecture + Lab + Other:** 3 + 0 + 0

**CTT F250 Current Topics in Construction Trades**
1-3 Credits
Offered As Demand Warrants
Various topics of current interest in the Construction Trades. Topics announced prior to each semester. Course may be repeated for credit.
**Prerequisites:** CTT F100.
**Recommended:** CTT F106.
**Lecture + Lab + Other:** 1-3 + 0.5-1.5 + 0

**CTT F299 Student Practicum II**
1.5 Credits
Offered As Demand Warrants
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site.
**Prerequisites:** CTT F155.
**Lecture + Lab + Other:** 0 + 3 + 0

**CTT F299P Student Practicum II**
1.5 Credits
Offered As Demand Warrants
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site.
**Prerequisites:** CTT F155.
**Lecture + Lab + Other:** 0 + 3 + 0

# Counseling (COUN)

**School of Education**
Counseling (https://www.uaf.edu/soe/academics.php)
907-474-7341

**COUN F601 Research in Counseling and Educational Settings**
3 Credits
Offered Summer
Provides an understanding of research occurring in educational and behavioral healthcare settings. Provides basic knowledge in utilizing a needs assessment and program evaluation to guide program planning and evaluate effectiveness. Addresses basic qualitative, quantitative, mixed methods and indigenous research designs. Addresses knowledge and skills for becoming critical consumers of research.
**Prerequisites:** Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F615 Foundations of Counseling**
3 Credits
Offered Fall and Spring
Introduction to the philosophies, organization, patterns and techniques that aid counselors in preparing clients for responsible decision-making in modern society. Contact counseling department for semesters offered.
**Prerequisites:** Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F617P Pre-practicum**
3 Credits
Offered As Demand Warrants
This course is a fundamental counseling skills course, with the purpose of developing relationship building, basic assessments, goal setting, selecting client-aligned interventions, and evaluation of client outcomes required for Field Practicum. The course is designed as a content and practice-oriented skills development experience within a safe and encouraging environment.
**Prerequisites:** COUN F615; COUN F623; COUN F647; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F623 Counseling Theories and Applications I**
3 Credits
Offered Fall and Summer
A survey of the major theoretical systems of counseling and psychotherapy combined with a laboratory experience focused on building microskills in counseling. Specific application of theoretical principles will be investigated, analyzed and described. Contact counseling department for semesters offered.
**Prerequisites:** Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 2 + 0

**COUN F627 Developmental Interventions**
3 Credits
Offered Spring
Designed to give students an opportunity for limited practice in applying developmental theory to work with children and youth. Attention is placed on assisting children and youth to accomplish developmental tasks appropriate to their psychological growth.
**Prerequisites:** COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F628 Child and Adolescent Development**
3 Credits
Offered Fall and Summer
Focus on developmental processes and sequences of change that children experience within each developmental domain from birth through adolescence. Contact counseling department for semesters offered.
**Prerequisites:** Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F629 Counseling Interventions for Adults**
3 Credits
Offered Fall
Examines various intervention strategies for working primarily with adult individuals in a variety of settings. Attention is placed on assisting adults in accomplishing developmental tasks appropriate to their psychosocial growth. Descriptive intervention techniques with respect to assessing individuals in crisis will be discussed and strategies for handling those crisis situations will be examined.
**Prerequisites:** COUN F623; admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F630 Appraisal for Counselors**
3 Credits
Offered Fall and Spring
Introduction to the kinds of assessment information school and community counselors utilize in the assessment process.
**Prerequisites:** COUN F623; admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F632 Career Development**
3 Credits
Offered Spring and Summer
An introduction to the theories of career development, career choices and how to translate theory into practice. Emphasis will be on career education development and the utilization of information resources for facilitating the career choice decision-making process.
**Prerequisites:** COUN F615; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F634P Practicum**
3 Credits
Offered Fall and Spring
Supervised practice in basic counseling skills and techniques. Supervised work with one-on-one counseling relationships. Actual practice in listening, problem identification, goal setting and session management.
**Prerequisites:** COUN F615, COUN F623, COUN F647; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 2 + 7 + 0

**COUN F635 Field Practicum**
3 Credits
Offered Fall and Spring
Field practicum serves as the first external training placement in the Counseling program's practicum and internship training series. This placement offers the counselor-in-training introductory exposure, experience and supervised practice in the broad scope of activities engaged in by fully credentialed school counselors or licensed professional counselors.
**Prerequisites:** COUN F627, COUN F628, COUN F629, COUN F638, COUN F617P or COUN F634P; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 5

**COUN F636 Internship I**
3 Credits
Offered Fall, Spring and Summer
Supervised practice in school or community setting. Focus on directed practice of particular skills relevant to the counselor's role. Weekly seminars will cover actual and role playing situations providing opportunities to operationalize theory in counseling, interventions and ethical issues.
**Prerequisites:** COUN F634P; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 20

**COUN F638 Adult Development**
3 Credits
Offered Spring
An overview of physical, cognitive, personality and social development across the adult life span, from high school graduation through death. Major theories and research findings in the field of adult development are explored with an emphasis on examining how individuals progress through a series of predictable stages during their lifetime.
**Prerequisites:** COUN F615; admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F646 School Counseling**
3 Credits
Offered Fall
Topics related to the role of the school counselor such as consultation, career guidance and culturally appropriate assessment.
**Prerequisites:** COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 3 + 0

**COUN F647 Professional Ethics**
3 Credits
Offered Fall and Spring
The ethical standards of the American Counseling Association and the American School Counseling Association will be examined, discussed and compared. Students will be provided with opportunities to apply these general principles to specific cases. Students will be expected to demonstrate knowledge of the principles of these ethical codes in practice.
**Prerequisites:** Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F650 Multicultural Psychopathology**
3 Credits
Offered Fall
Overview of child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in clinical application of the DSM-IV diagnostic system. Examination of the role of culture, ethnicity, gender and social class in symptom formation and the experience of illness.
**Prerequisites:** PSY F345; COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Cross-listed with** PSY F650.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F651 Counseling for Addictions**
3 Credits
Offered Spring
An in-depth analysis of the theoretical models explaining addiction, guiding treatment, and supporting recovery. The physiological, psychological, and behavioral influences of various substances and addictions and their associated classifications are addressed. Attention on the most common substances of use in Alaska as well as rural communities in circumpolar north.
**Prerequisites:** COUN F650; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F660 Multicultural Counseling**
3 Credits
Offered Spring
An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Focus on the nature and function of culture, universal- and culture-specific aspects of the counseling process, barriers to effective cross-cultural counseling, and methods of intellectual training with emphasis on Alaskan applications.
**Prerequisites:** Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Cross-listed with** PSY F661.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F666 Family and Couples Counseling**
3 Credits
Offered Fall
Survey of concepts and theories of function and dysfunction in the area of couples and families as social networks. Introduction to the skills necessary for intervention in these systems.
**Prerequisites:** COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F667 Ethnicity and Family Studies**
3 Credits
Offered As Demand Warrants
Focus on the contribution of ethnic background to family makeup and functioning. Course topics include: counseling, social justice, and advocacy approaches for major ethnic groups; cultural context of relationships; theories of multicultural counseling, and systems-oriented intervention strategies; the role of counseling in eliminating biases, prejudice, oppression, and discrimination.
**Prerequisites:** COUN F666.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F674 Group Counseling**
3 Credits
Offered Spring and Summer
Kinds and types of groups with emphasis on methods, problems and skills needed in working with groups in a counseling situation.
**Prerequisites:** COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 0

**COUN F686 Internship II**
3 Credits
Offered Fall, Spring and Summer
Opportunity to perform all the activities that a regularly employed counselor is expected to perform in a school or community setting. At the completion of the internship, the student will be able to demonstrate knowledge and skills needed to administer school and/or community counseling services.
**Prerequisites:** COUN F636; COUN F650; admittance to Counseling program or School Counseling Certification program.
**Lecture + Lab + Other:** 3 + 0 + 20

**COUN F687 Internship III**
3 Credits
Offered Fall, Spring and Summer
The course is designed to give counseling program candidates experience and supervised practice in the broad scope of activities (i.e. record keeping, individual and group counseling, information and referral, consultation, in-service and staff/faculty meetings, supervision) engaged in by either fully credentialed school counselors or licensed professional counselors.
**Prerequisites:** COUN F686; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 20

**COUN F688 Internship IV**
3 Credits
Offered Fall, Spring and Summer
The course is designed to give counseling program candidates experience and supervised practice in the broad scope of activities (i.e. record keeping, individual and group counseling, information and referral, consultation, in-service and staff/faculty meetings, supervision) engaged in by either fully credentialed school counselors or licensed professional counselors.
**Prerequisites:** COUN F687; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Lecture + Lab + Other:** 3 + 0 + 20

**COUN F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**COUN F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**COUN F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Cross-Cultural Studies (CCS)

**College of Rural and Community Development**
Center for Cross-Cultural Studies (https://www.uaf.edu/cxcs/)
907-474-1902
uaf-cxcs@alaska.edu

**CCS F602 Cultural and Intellectual Property Rights**
3 Credits
Offered Spring
Examines issues associated with recognizing and respecting cultural and intellectual property rights with respect to the documentation, publication and display of knowledge, practices, beliefs and artifacts of cultural traditions. Appropriate research principles, ethical guidelines and legal protections will be reviewed for their application to cross-cultural studies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F603 Field Study Research Methods**
3 Credits
Offered Spring and Summer
Focus on techniques for conducting both quantitative and qualitative field research. Particular emphasis on considerations for conducting field research in cross-cultural settings.
**Prerequisites:** Graduate standing.
**Cross-listed with** ED F603.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F604 Documenting Indigenous Knowledge**
3 Credits
Offered Fall
A thorough grounding in research methodologies and issues associated with documenting and conveying the depth and breadth of Indigenous knowledge systems and their epistemological structures. Includes a survey of oral and literate data-gathering techniques, a review of various modes of analysis and presentation, and a practical experience in real-life settings.
**Prerequisites:** Recommended: Graduate-level survey course in research methods.
**Cross-listed with** ED F604.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F606 Indigenous Ways of Healing**
3 Credits
Offered As Demand Warrants
Explores healing from a variety of Indigenous perspectives, particularly from an Alaska Native perspective. Emphasizes the preparation and education of healers, their roles and work and integration within the community. Students will have the opportunity to examine the possible integration of clinical and community psychology with indigenous approaches to healing.
**Prerequisites:** Graduate standing in Psychology.
**Crosslisted with** PSY F606.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F608 Indigenous Knowledge Systems**
3 Credits
Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various Indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska.
**Prerequisites:** Graduate standing.
**Cross-listed with** RD F608; ED F608; ANL F608.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F610 Education and Cultural Processes**
3 Credits
Offered Fall Even-numbered Years
Advanced study of the function of education as a cultural process and its relation to other aspects of a cultural system. Students will be required to prepare a study in which they examine some aspect of education in a particular cultural context.
**Cross-listed with** ED F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F611 Culture, Cognition and Knowledge Acquisition**
3 Credits
Offered Fall Odd-numbered Years
An examination of the relationship between learning, thinking and perception in multicultural contexts. Particular emphasis will be on the implications of these relationships for schooling. Content will focus on cultural influences on perception, conceptual processes, learning, memory and problem solving. Content will also reflect concern for practical teaching problems.
**Cross-listed with** ED F611.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F612 Traditional Ecological Knowledge**
3 Credits
Offered Spring
Examines the acquisition and utilization of knowledge associated with long-term inhabitation of particular ecological systems and adaptations that arise from the accumulation of such knowledge. Attention will be given to the contemporary significance of traditional ecological knowledge as a complement to academic fields of study.
**Prerequisites:** Graduate standing.
**Cross-listed with** RD F612.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F613 Alaska Standards for Culturally Responsive Schools**
3 Credits
Offered As Demand Warrants
Guidelines, rationale and resources for adapting educational policies, programs and practices to better address the cultural well-being of the students and communities they serve. Content will be grounded in the "Alaska Standards for Culturally Responsive Schools" including standards for students, teachers, curriculum, schools and communities.
**Cross-listed with** ED F613.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F616 Education and Socioeconomic Change**
3 Credits
Offered Fall
An examination of social change processes, particularly in relation to the deliberate development of new institutions and resulting forms of new consciousness. Emphasis is placed on the role of education and schooling in this development dynamic.
**Cross-listed with** ED F616.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F619 Cultural Atlases as a Pedagogical Strategy**
3 Credits
Offered Spring Even-numbered Years
The course provides an in-depth look at how teachers can utilize technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity.
**Prerequisites:** Graduate standing.
**Cross-listed with** ED F619.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F621 Indigenous Ways of Knowing**
3 Credits
Offered Fall
Covers the appropriate and valid ways of describing and explaining human behavior by using the social context, culture and history of Indigenous groups. Includes Indigenous approaches to values, health, the interconnection of family and community; the nature of spirituality and Indigenous healing; and the importance of Elders and spiritual healers.
**Prerequisites:** Admittance to the Indigenous Studies or the Psychology Ph.D. program.
**Cross-listed with** PSY F621.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F631 Culture, Community and the Curriculum**
3 Credits
Offered As Demand Warrants
Salient issues involved with the development of effective programs of instruction in small schools, including foundational design, conceptual models, organizational strategies, technical skills, current issues and trends, and their implications and application to the environment of rural Alaska.
**Cross-listed with** ED F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F656 Sustainable Livelihoods and Community Well-being** (s)
3 Credits
Offered Fall
Review principles governing the sustainability of systems, cultural practices and behaviors that enhance or degrade sustainable livelihoods and community wellbeing. Emphasis is on historical context of sustainability, nature and magnitude of the social, economic and ecological dimensions of contemporary change, and "best practices" for communities to respond effectively to change.
**Prerequisites:** Graduate standing.
**Cross-listed with** NRM F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F682 Rethinking Multicultural Education**
3 Credits
Offered Spring Odd-numbered Years
This multi-disciplinary course focuses on two parts: 1) critically analyze and reflect on current multicultural education issues at the national, state, and local level; 2) translate/apply what is learned to individual classrooms, schools, school districts and beyond. Fieldwork required.
**Prerequisite:** Graduate standing.
**Crosslisted with** ED F682.
**Lecture + Lab + Other:** 3 + 0 + 1

**CCS F690 Seminar in Cross-Cultural Studies**
3 Credits
Offered Fall and Spring
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program.
**Prerequisites:** Advancement to candidacy; permission of student's graduate committee.
**Cross-listed with** ANL F690; ED F690; RD F690.
**Lecture + Lab + Other:** 3 + 0 + 0

**CCS F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**CCS F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**CCS F698 Non-thesis Research/Project**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-12

**CCS F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 1-12 + 0 + 0

# Culinary Arts and Hospitality (CAH)

**Community & Technical College**
Culinary Arts
907-455-2800

**CAH F101 Introduction to the Culinary Field**
1 Credit
Offered Fall and Spring
Provides an overview of the many facets of the food industry and begins the student portfolio. Students will learn culinary related math concepts; topics include basic math principles, weights and measures, recipe conversion and baking formulas. These lessons will be used throughout the culinary program.
**Lecture + Lab + Other:** 1 + 0 + 0

**CAH F117 Art in Cake Icing**
2 Credits
Offered As Demand Warrants
The preparation of cakes for icing and decorating. Topics include borders, clowns, flowers, leaves, pattern transfer, frozen buttercream, confectionery coating, royal icing, plus designing cakes, and rolled buttercream. Use of an airbrush, flow in techniques and tiered cake assembly covered.
**Lecture + Lab + Other:** 1 + 2 + 0

**CAH F140 Culinary I: Principles and Techniques**
4 Credits
Offered Fall
The student learns concepts of sanitation and safety as they relate to the foodservice industry. Areas addressed include: tools, equipment, knife skills, kitchen safety, food and plate presentation, food evaluation, basic cooking principles to include moist and dry heat methods, seasonings, flavorings and aromatics, fats, emulsions, dairy products, eggs and palate development.
**Prerequisites:** CAH F101; CAH F150 (both may be taken concurrently).
**Lecture + Lab + Other:** 1 + 6 + 0

**CAH F141 Culinary II: Stocks, Soups and Sauces**
4 Credits
Offered Spring
Students study and apply cooking methods of scratch cookery through small batch assignments. Areas of study include stocks, thickeners, roux based sauces to include the four mother sauces, hot and cold emulsions, butter sauces, salsas, vinaigrettes, and reductions as well as soups to include cream, clear and potage soups.
**Prerequisites:** CAH F140; CAH F150.
**Lecture + Lab + Other:** 1 + 6 + 0

**CAH F146 Introduction to Baking and Pastry**
4 Credits
Offered Fall
Students learn to apply fundamental baking skills in preparing yeast breads, quick breads, cookies, pies, pastries, cakes, custards, creams and sauces. Students will gain confidence in their abilities while learning in a professional bakery setting.
**Prerequisites:** CAH F101; CAH F140; CAH F150 (may be taken concurrently).
**Lecture + Lab + Other:** 1 + 6 + 0

**CAH F150 Food Service Sanitation**
2 Credits
Offered Fall and Spring
Designed for entry-level through supervisory positions of food service establishments. Basic microbiology, safe food handling techniques, good hygienic practices, pest control, employee training, and the Alaska laws governing food service establishments. Upon successful completion the student can earn ServSafe Managers Certification from the National Restaurant Association Education Foundation.
**Lecture + Lab + Other:** 2 + 0 + 0

**CAH F154 Food and Beverage Service**
2 Credits
Offered Spring
Introduce students to dining room and front-of-the-house operations. Students will gain competence in dining room operation and table service techniques. Students will perform duties in the dining room of our student-run restaurant.
**Prerequisites:** CAH F150 (may be taken concurrently).
**Lecture + Lab + Other:** 0.5 + 3 + 0

**CAH F160 Principles of Nutrition**
2 Credits
Offered Fall
Basic principles of nutrition with emphasis on nutrients and their function in relation to human health.
**Lecture + Lab + Other:** 2 + 0 + 0

**CAH F161 Pastry Tube Art**
1.5 Credits
Offered As Demand Warrants
Basic cake and food product techniques including borders, flowers, cake designing and proper use of pastry tube bags.
**Lecture + Lab + Other:** 0.5 + 2 + 0

**CAH F170 Gourmet Cooking**
2 Credits
Offered As Demand Warrants
Preparation and service of gourmet beef, poultry and seafood entrees for the home cook. Recipes represent new ideas in home entertainment and menus change every semester.
**Lecture + Lab + Other:** 2 + 0 + 0

**CAH F171 Gourmet Baking**
2 Credits
Offered As Demand Warrants
Preparation of a wide range of breads, pastries, fancy desserts, French pastry and simple tortes. Recipes represent traditional methods of baking along with current trends in home entertainment.
**Lecture + Lab + Other:** 0.5 + 3 + 0

**CAH F172 Gourmet Asian Cooking**
2 Credits
Offered As Demand Warrants
Preparing and serving Asian dishes. Study and use of proper cooking methods will be emphasized. Students prepare and enjoy a full meal
**Lecture + Lab + Other:** 0.5 + 3 + 0

**CAH F174 Vegetarian Cooking**
2 Credits
Offered As Demand Warrants
Preparation and service of vegetarian foods and balanced meals. Use of nourishing condiments will be explored. Recipes will include some seasonal, ethnic and gourmet foods; however the emphasis will be on preparing quick, healthful, tasty meatless meals.
**Lecture + Lab + Other:** 0.5 + 3 + 0

**CAH F175 Protein Fabrication**
3 Credits
Offered Fall
Study focuses on the identification and fabrication of protein items to include poultry, beef, veal, pork, lamb, shellfish, and finfish. Students will be introduced to the concepts of protein cookery. Emphasis is on product fabrication to practical industry applications.
**Lecture + Lab + Other:** 1 + 4 + 0

**CAH F176 Techniques of Healthy Cooking**
2 Credits
Offered As Demand Warrants
Demonstrations of healthy cooking techniques employing limited quantities of salt, sugar and fat. Participants will explore the use of fresh herbs, acidity, seasonings and cooking methods to provide flavor in a healthy and nutritional way. Basic cooking skills and recipe utilization will be taught through the semester.
**Lecture + Lab + Other:** 0.5 + 3 + 0

**CAH F177 Understanding Brewing and Fermentation**
1 Credit
Offered As Demand Warrants
The student will receive an introduction to the history, science and process of brewing. Focus will be on the importance of sanitation for the home brewery, brewing traditional styles with an introduction to specialty brews. Attention will be given to the pairing of beer styles to food.
**Prerequisites:** Students must be 21 years of age to enroll.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**CAH F178 Intermediate Brewing and Fermentation**
1 Credit
Offered As Demand Warrants
Emphasis in brewing will focus on the use of adjuncts and their specific purposes. The effects they have on the brewing/fermentation process will be paramount. Focus will be on the more advanced style of brewing called partial mash.
**Prerequisites:** CAH F177; student must be 21 years of age to enroll.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**CAH F180 Artisan Breads**
2 Credits
Offered As Demand Warrants
Learn the fundamentals of bread making. Take simple ingredients and transform them into handcrafted fresh-baked bread. Learn how to mix, ferment, proof, and bake like a skilled artisan baker. Explore the world of breads starting with crusty French baguettes to sourdough, ciabatta, focaccia, multigrain and much more.
**Lecture + Lab + Other:** 0.5 + 3 + 0

**CAH F181 International Breads**
2 Credits
Offered As Demand Warrants
Take a culinary tour around the world. Visit all the great bread baking countries and experience the diversity each place has to offer. Flaky and buttery croissants and brioche from France, sweet and fruity panettone from Italy, fresh mocha from Japan and much more!
**Lecture + Lab + Other:** 0.5 + 3 + 0

**CAH F199 Culinary Arts Externship**
2 Credits
Offered As Demand Warrants
The student will complete a 240 hour externship. Student will begin to apply their education within the industry providing genuine experience that reflects the student's career goals. The student will study in an approved establishment and will be evaluated by both the employer and the instructor. Enrollment in this class will be after completing the 2nd, 3rd or 4th semester.
**Prerequisites:** Departmental approval required.
**Lecture + Lab + Other:** 0 + 0 + 18

**CAH F230 Menu Planning**
1 Credit
Offered Fall
The importance of the menu in various food operations will be emphasised. Students will learn contemporary menu planning concepts and be introduced to costing, menu psychology and pricing.
**Special Notes:** Recommended CAH F140; CAH F146; CAH F150.
**Lecture + Lab + Other:** 1 + 0 + 0

**CAH F242 Culinary III: Vegetables and Starch**
4 Credits
Offered Fall
Students study and apply cooking methods of scratch cookery through small batch assignments. Areas of study include rice and grains, potato products, pastas, dumplings, beans and soy products, fruits, vegetables, salads, and sandwiches. Students will continually be given the opportunity to express themselves through the art of plate presentation.
**Prerequisites:** CAH F140.
**Lecture + Lab + Other:** 1 + 6 + 0

**CAH F243 Culinary IV: A la Carte Cookery**
4 Credits
Offered Spring
Study focuses on the preparation of food items for service in a guest-centered a la carte environment. Students will work in a la carte stations to include salads, broiler, saute and expediter. Line cooking skills for fine dining as well as time budgeting and management will be emphasized.
**Prerequisites:** CAH F141, CAH F175, CAH F242.
**Lecture + Lab + Other:** 1 + 6 + 0

**CAH F248 Intermediate Baking and Pastry**
4 Credits
Offered Spring
This course is designed to give the student an overall appreciation and increased understanding of bread and fine pastry. Students will learn to effectively produce a variety of specialty dough, pastries, and desserts such as tarts, individual pastries, souffles, chocolates, plated desserts, ice cream and sugar work.
**Prerequisites:** CAH F146, CAH F150.
**Lecture + Lab + Other:** 1 + 6 + 0

**CAH F250 Garde Manger**
4 Credits
Offered Spring
Students study traditional upscale pantry preparation. Students practice techniques for artistic displays of hors d'oeuvres, canape', pate', terrines and charcuterie. The student gains practical experience preparing and serving theme buffets for guests.
**Prerequisites:** CAH F141, CAH F175, CAH F242.
**Lecture + Lab + Other:** 1 + 6 + 0

**CAH F253 Storeroom Purchasing and Receiving**
2 Credits
Offered Fall
Purchasing and receiving methods and specifications in a variety of food operations are covered in this course. Students will gain exposure to purchasing specifications for a variety of foods, using general purchasing methods, requirements, procedures and ethics.
**Lecture + Lab + Other:** 2 + 0 + 0

**CAH F255 Human Resource and Supervision in Hospitality**
3 Credits
Offered Spring
Approaches for effective culinary or hospitality supervision are considered in this course. Methods of recruiting, selecting, training, and evaluating personnel are covered. Team building and conflict management concepts are examined. Skills in communication, empowerment and planning are introduced. This course fulfills a requirement of certification with the American Culinary Federation.
**Lecture + Lab + Other:** 3 + 0 + 0

**CAH F256 Restaurant and Hospitality Cost Management**
2 Credits
Offered Spring
A course designed to relate principles of calculation to the food service industry. Recipe computations, food cost estimates, cash procedures, and payroll practices are studied. Practices for controlling portions, inventories and costs are explored as they affect business operations.
**Prerequisites:** CAH F101.
**Lecture + Lab + Other:** 2 + 0 + 0

**CAH F257 Introduction to Wine Appreciation**
1 Credit
Offered As Demand Warrants
This is a foundation wine course with a focus on learning systematic professional tasting techniques, identifying the classic grape varietals, understanding the characteristics of wine, learning the language of wine, and beginning to identify how to pair wine with food. How to navigate a wine list will also be explored.
**Prerequisites:** Students must be at least 21 years of age to enroll.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**CAH F258 Intermediate Wine Appreciation**
1 Credit
Offered As Demand Warrants
This course will focus on the study of wine from around the world with an emphasis on the similarities and differences of those regions. Consideration will be given to the influence of many factors that affect the grapes. A goal will be to identify the varietals through tastings. Must be 21 years of age to enroll.
**Prerequisites:** CAH F257.
**Lecture + Lab + Other:** 0.5 + 1 + 0

# Dental Assisting (DA)

**Community & Technical College**
Dental Assistant Program (https://www.ctc.uaf.edu/programs/dental-assistant/)
907-455-2800

**DA F100 Introduction to Dental Assisting**
3 Credits
Offered Fall and Spring
Introduction to basic concepts of dentistry and the dental assistant role. This includes: dental terminology, patient communication, HIPAA, legal and ethical issues, nutrition, basic anatomy, management of hazardous materials, preparation for patient care, tooth numbering and knowing tooth surfaces, dental charting, pharmacology, basic administrative office duties, and preparing for employment.
**Prerequisites:** Placement into MATH F055; placement into WRTG F110.
**Special Notes:** Submission of dental assisting program packet, including documentation of required immunizations.
**Lecture + Lab + Other:** 3 + 0 + 0

**DA F132 Administrative Procedures for the Dental Assistant**
2 Credits
Offered Fall
Administrative responsibilities performed by dental assistants in dental facilities. Includes duties of the office assistant, receptionist or secretary, and insurance coordinator. Focus on reception, telephone procedures, scheduling, public relations, insurance and professionalism.
**Prerequisites:** High school graduation or GED.
**Lecture + Lab + Other:** 2 + 0 + 0

**DA F150 Dental Radiography**
4 Credits
The study of film and digital radiographic techniques in the dental practice. Introduces student to radiographic anatomy and radiation physics. Includes safety in exposing, processing and mounting dental radiographs. Presents hazardous materials handling, equipment operation and maintenance. Prepares students for the Dental Assisting National Board's radiology health and safety examination.
**Lecture + Lab + Other:** 3 + 2 + 0

**DA F151 Dental Infection Control**
2 Credits
Principles and practices of infection control in the dental office. Includes knowledge of disease, microbiology, transmission prevention and methods of compliance with OSHA and CDC regulations. Prepares students for the Dental Assisting National Boards infection control examination.
**Lecture + Lab + Other:** 2 + 0 + 0

**DA F152 Dental Materials and Applications**
4 Credits
Physical and chemical properties of restorative dental materials and the application of those materials. Includes properties and manipulation of gypsum material, impression materials and custom trays, basic crown and bridge procedures.
**Prerequisites:** DA F151 or may be taken concurrently.
**Lecture + Lab + Other:** 2 + 4 + 0

**DA F153 Anatomy for Dental Assistants**
3 Credits
Study of anatomy as it applies to the field of dental assisting. Includes basic body systems and an in-depth examination of dental embryology, histology, morphology and head/neck anatomy.
**Lecture + Lab + Other:** 3 + 0 + 0

**DA F251 Beginning Chairside for Dental Assistants**
4 Credits
Offered Fall
Introduction to dental assisting. Beginning skills necessary to function as a chairside dental assistant in a general dentistry practice. Emphasis on developing clinical skills in four-handed dentistry techniques.
**Prerequisites:** Placement into MATH F055; Placement into WRTG F111X.
**Lecture + Lab + Other:** 2 + 4 + 0

**DA F252 Advanced Chairside for Dental Assistants**
4 Credits
Offered Spring
Emphasizes advanced dental assisting skills necessary in general dentistry. Includes taking impressions for study models, radiography, matrix assembly, rubber dam application, assisting with the administration of local anesthetics, temporary crowns, oral health and nutrition. Includes introduction to specialty practices.
**Prerequisites:** DA F251, Department approval.
**Special Notes:** Dental assistant packet and documentation of all required immunizations will need to be submitted.
**Lecture + Lab + Other:** 2 + 4 + 0

**DA F253 Clinical Chairside III for Dental Assistants**
3 Credits
Continued learning in the dental specialties including prosthodontics, endodontics, periodontics, pedodontics, orthodontics, and oral and maxillofacial surgery.
**Prerequisites:** DA F251; DA F252; permission of program coordinator.
**Lecture + Lab + Other:** 2 + 2 + 0

**DA F254 Dental Assistant Practicum**
4 Credits
Clinical, off-campus course for dental assisting students. Placement in general and specialty dental offices under direct supervision by participating dentist and program faculty. Includes seminars to discuss progress and experiences.
**Prerequisites:** DA F132; DA F150; DA F152; DA F153; DA F251; DA F252; DA F253; enrollment by special permission only.
**Lecture + Lab + Other:** 1 + 0 + 20

# Developmental Studies (DEVS)

**Community and Technical College**
Developmental Education (http://catalog.uaf.edu/services/developmental-education/)
907-455-2800

**DEVS F052 Reading Enhancement**
3 Credits
Offered As Demand Warrants
Intensive instruction in reading designed to increase vocabulary and comprehension skills necessary for successful reading in the content areas of college courses. Focus is on improved reading comprehension and vocabulary development.
**Prerequisites:** Appropriate placement test scores.
**Lecture + Lab + Other:** 3 + 0 + 0

**DEVS F058 Reading Skills**
1-3 Credits
Offered As Demand Warrants
Course emphasis is on improving reading comprehension using texts and other materials. Focus is on paragraph structure to recognize main idea, supporting details and author's purpose. Study techniques for recognizing new vocabulary. Small groups allow individually designed course of instruction to meet the needs of the students. May be repeated.
**Prerequisites:** Placement.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**DEVS F101 Skills for College and Career Success**
3 Credits
Offered As Demand Warrants
A diverse menu of study skills for students entering college. Skills include active listening, effective reading, taking notes, test taking, communication, time and money management. Students learn personal development skills addressing intrusive issues impacting learning processes, increasing self-esteem, and relating these skills to the classroom and later a career.
**Lecture + Lab + Other:** 3 + 0 + 0

**DEVS F104 University Communications**
1-3 Credits
Offered As Demand Warrants
Introduces the unique methods of communication required at the college level, including combinations of reading, writing and oral communication as required for degree content purposes for certificate degree programs. May link with selected lecture and/or discussion courses. May be repeated for credit when content varies.
**Recommended:** Placement into WRTG F090.
**Special Notes:** Does not meet prerequisite requirements for WRTG F111X without further placement testing.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**DEVS F105 Academic Reading for College**
3 Credits
Offered As Demand Warrants
Strengthens academic and critical reading and literacy skills required for college-level courses. Emphasizes practice and transfer of reading and study skills that increase comprehension and retention of narrative and expository materials typically encountered in college courses, e.g. textbooks, websites, research articles, etc.
**Lecture + Lab + Other:** 3 + 0 + 0

**DEVS F107 Reader-writer Workshop**
3 Credits
Offered As Demand Warrants
A reader-writer workshop to develop fluency in reading and writing skills for persons whose first language is not English. Intensive speaking, listening, reading and writing activities.
**Prerequisites:** Placement by examination or student decision.
**Lecture + Lab + Other:** 3 + 0 + 0

**DEVS F108 Study Skills Lab**
1 Credit
Offered As Demand Warrants
Improvement of study skills in areas of greatest need on an individual or small group basis in the lab or other workshop or individualized format. Topics include time and stress management, listening/note taking, library research and memory. Course may be repeated for credit when content varies.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F110 College Success Skills**
1 Credit
Offered As Demand Warrants
An introduction and overview of the diverse skills, strategies and resources available to ensure success in the college experience. Topics include study skills, time management, career planning, stress management, communication skills, test taking and personal development skills.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F111 Math Study Skills**
1 Credit
Offered As Demand Warrants
This course is designed to help students learn math by developing successful study skills and exam-taking methods. This course addresses learning styles, how to read a math book, completing homework assignments, how to take notes and exams, and techniques for overcoming math anxiety.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F112 Reading in the Natural Sciences**
1 Credit
Offered As Demand Warrants
Will improve student success in their current and future natural science classes. Will provide supplemental instruction time focusing on introducing and/or developing reading skills that will aid in reading, understanding, and retaining science information delivered in the natural science lecture and lab. Skills emphasized will include identifying, organizing and prioritizing topic, main idea, and details, note taking, and using effective reading to improve test performance. Must be linked to freshman level science class.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F114 Reading in the Humanities/Social Sciences**
1 Credit
Offered As Demand Warrants
Introduction and application of effective reading strategies for increased comprehension and retention of course content delivered via written formats, e.g., textbooks, articles, web pages, etc.
**Corequisites:** Core humanities/social science course.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F150 Life Work Planning**
1 Credit
Offered As Demand Warrants
Planning for a satisfying career choice based on realistic assessment of self, accurate knowledge of the world of work and experience with ways to activate career plans. Enables students to evaluate potential careers and to make educational and job search plans.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F160 The Resume: Key to Success**
1 Credit
Offered As Demand Warrants
Use the resume writing process to develop job seeking skills: locating the hidden market; researching job potential; learning to fill out effective applications; designing and printing a custom resume; assembling a portfolio; and developing effective interview skills.
**Recommended:** DEVS F150.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F160P The Resume: Key to Success**
1 Credit
Use the resume writing process to develop job seeking skills: locating the hidden market; researching job potential; learning to fill out effective applications; designing and printing a custom resume; assembling a portfolio; and developing effective interview skills.
**Recommended:** DEVS F150.
**Lecture + Lab + Other:** 1 + 0 + 0

**DEVS F185 Critical Thinking**
3 Credits
Offered As Demand Warrants
A study of inductive, deductive and seductive thinking, and skill building to recognize and use all three. Critical thinking skills to analyze newspaper, magazine and spoken arguments. Political speeches and other media presentations examined. Effective and convincing presentation of one's own ideas including formal and informal logic.
**Lecture + Lab + Other:** 3 + 0 + 0

# Diesel Technology (DSLT)

**Community & Technical College**
Diesel/Heavy Equipment (https://www.ctc.uaf.edu/programs/diesel-heavy-equipment/)
907-455-2800

**DSLT F101 Safety Including Rigging and Lifting**
1 Credit
Offered Fall
This course is an introduction to working safely in a shop environment. Discussions and practical exercises cover the proper use of personal protective gear and air ventilation systems; identifying harmful chemicals and interpreting Safety Data Sheets; procedures for lifting heavy items; use of power and hand tools.
**Lecture + Lab + Other:** 1 + 0 + 0

**DSLT F103 Basic Equipment and Truck Operation**
1 Credit
Offered Fall
Basic operation of heavy equipment and diesel trucks to include: stating, clutching, braking, and steering procedures. Basic forklift operation to include: lifting weight, calculation and point of balance of machine versus lifting load.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**DSLT F105 Preventive Maintenance**
3 Credits
Offered Fall
Perform scheduled preventive maintenance on vehicles and heavy equipment. Gain knowledge of lubricants, filters, lubrication points and proper fluid levels and understanding of what to look for when performing a visual inspection.
**Prerequisites:** DSLT F101; DSLT F103.
**Lecture + Lab + Other:** 1.5 + 3 + 0

**DSLT F107 Basic Electrical Systems**
3 Credits
Offered Fall
Basic electrical theory and DC voltage and amperage is followed by battery operation and testing. Circuit protection and control will also be covered culminating in reading and writing electrical schematics as well as identification, testing and repair of basic circuits.
**Lecture + Lab + Other:** 1.5 + 3 + 0

**DSLT F110 Basic Industrial Fabrication**
2 Credits
Offered Fall
Students will learn the concepts of industrial fabrication. When working with heavy equipment, things can break. This class will teach the basics of how to fabricate and repair heavy equipment in and out of the field using various techniques.
**Prerequisite:** Department or Instructor approval required.
**Lecture + Lab + Other:** 1 + 2 + 0

**DSLT F111 Diesel Emissions**
2 Credits
Offered Spring
Diesel engine emissions concepts and their air pollution contribution. Knowledge to create cleaner-running diesel engines, promote pollution-control technology, prevent unnecessary idling, and make diesel engine smoke puff an extinct image. Study/practice diesel emission-reducing actions using measuring devices, learn catalytic converter/particulate filter terms and technologies, exhaust fluid usage, troubleshoot emission components.
**Prerequisite:** Department or Instructor approval required.
**Lecture + Lab + Other:** 1 + 2 + 0

**DSLT F123 Heavy Duty Braking Systems**
3 Credits
Offered Fall
Commercial trucks/heavy equipment braking systems applications; compressor testing/overhaul, relay valves, actuators, wear limits, acceptable tolerances, brake lining replacement, government regulations and pneumatic controls; evolving technologies such as anti-lock brakes. Remove/replace brake shoes, drums, hardware, S-cams and air chambers. Includes inspection, preventive maintenance and a commercial truck/heavy equipment braking system overhaul.
**Prerequisites:** DSLT F101; DSLT F103.
**Lecture + Lab + Other:** 1.5 + 3 + 0

**DSLT F154 Diesel Fuel Injection**
3 Credits
Offered Spring
Theory and functional operation of all common diesel fuel injection systems including modern Bosch, Mack, Cummins, Caterpillar and Detroit Diesel. Direct injection and pre-combustion fuel injection systems. Testing procedures, when testing high pressure diesel injection pumps and injectors; removing, installing and adjusting common systems used in the heavy truck/equipment industry.
**Lecture + Lab + Other:** 2 + 2 + 0

**DSLT F201 Manual Transmissions and Differentials**
3 Credits
Offered Spring
Theory, diagnosis and repair of manual transaxles and transmissions, transfer cases, differentials, clutch assemblies, power take off units, driveshafts and axles as well as removing and installing clutches, transmissions and differentials in a truck or piece of heavy equipment. Preventive maintenance and cold weather component problems will also be covered.
**Prerequisites:** DSLT F101; DSLT F103.
**Lecture + Lab + Other:** 1 + 4 + 0

**DSLT F202 Heavy Duty Automatic Transmissions**
2 Credits
Offered Spring
Theory, operation and troubleshooting of heavy duty automatic transmissions; hydraulic, electrohydraulic, pneumatic and electronic controls. Prepares the student to overhaul Allison, ZF and similar automatic transmissions.
**Lecture + Lab + Other:** 1 + 3 + 0

**DSLT F210 Heavy Equipment Fabrication**
2 Credits
Offered Spring
Students will learn advanced concepts of industrial fabrication in the maintenance of heavy duty equipment, develop a strong understanding of metals and their applications, and have the ability to bend, heat, and apply welding techniques that will support heavy duty equipment for long term use.
**Prerequisite:** Department or Instructor approval is required.
**Lecture + Lab + Other:** 1 + 2 + 0

**DSLT F254 Engine**
6 Credits
Offered Spring
Theory and operation of the two-cycle and four-cycle diesel engine injection and combustion process. Operation and maintenance of internal components and systems including tune-ups and fuel system troubleshooting, culminating in disassembly and reassembly of a large bore diesel engine commonly found in heavy trucks or heavy equipment.
**Prerequisites:** DSLT F101; DSLT F103; DSLT F105.
**Lecture + Lab + Other:** 2.5 + 6.5 + 0

# Drafting Technology (DRT)

**Community & Technical College**
Drafting & Design Technology (https://www.ctc.uaf.edu/programs/drafting-design-technology/)
907-455-2800

**DRT F101 Introduction to Drafting**
3 Credits
Offered As Demand Warrants
Introduction to basic drafting skills necessary to communicate in the building, construction, design and process technology industries for freshman-level students and for certificate or associate degree-seeking students. Limited manual drafting techniques will be used to gain basic skills and to contrast the speed and accuracy to that of computer-aided drafting (CAD).
**Lecture + Lab + Other:** 2 + 2 + 0

**DRT F121 Construction Documents and Drawings**
3 Credits
Offered As Demand Warrants
Reading and interpretation of construction documents for residential, light commercial and heavy commercial structures using conventional symbols and representation.
**Lecture + Lab + Other:** 3 + 0 + 0

**DRT F140 Architectural Drafting**
3 Credits
Offered As Demand Warrants
Architectural drafting principles including site plans, foundations, floor plans, elevations, architectural sections, framing plans, area plans and graphic standards.
**Lecture + Lab + Other:** 2 + 2 + 0

**DRT F145 Structural Drafting**
3 Credits
Offered As Demand Warrants
Introduces technical skills needed by structural drafters and technicians to work with structural engineers. Includes office practices, staff relationships, and structural drawing production. Develops computer-aided drafting skills in symbols, conventions, dimensioning systems, sheet organizations, code analysis and research methods for steel, wood, and reinforced concrete buildings.
**Prerequisites:** DRT F170 or permission of program coordinator.
**Lecture + Lab + Other:** 3 + 0 + 0

**DRT F150 Civil Drafting**
3 Credits
Offered As Demand Warrants
Civil drafting principles including plotting traverse and surveys by bearing and distance, latitudes and departures, topographic drawings and maps, contours and elevations, profiles and highway curves, cross-section drawings and grading plans.
**Lecture + Lab + Other:** 2 + 2 + 0

**DRT F155 Mechanical and Electrical Drafting**
3 Credits
Offered As Demand Warrants
Introduces technical analysis, theory, code requirements, and CAD techniques to produce construction drawings for mechanical and electrical building systems. Includes drafting conventions, drawing symbols, terminology, and research methods for residential and commercial building systems and equipment.
**Prerequisites:** DRT F170 or permission of program coordinator.
**Lecture + Lab + Other:** 3 + 0 + 0

**DRT F170 Beginning CAD**
3 Credits
Offered As Demand Warrants
Instruction in basic working knowledge of CAD software and its applications in drafting. Topics covered include an introduction to CAD software applications, basic CAD skills and tools, through plotting finished drawings. Practical applications.
**Lecture + Lab + Other:** 2 + 2 + 0

**DRT F210 Intermediate CAD**
3 Credits
Offered As Demand Warrants
Techniques for construction and drafting output using CAD. Emphasis will be on the construction drawings produced for a building project and the software tools used in this process.
**Prerequisites:** DRT F170 or enrolled as a CE Major or permission of the program coordinator.
**Lecture + Lab + Other:** 2 + 2 + 0

**DRT F260 Drafting Internship**
1-6 Credits
Offered As Demand Warrants
Supervised work experience in process organizations. Assignments will be individually arranged with cooperating organizations from the private and public sectors. A maximum of 6 credits may be earned.
**Prerequisites:** Permission of program coordinator.
**Lecture + Lab + Other:** 0 + 3-18 + 0

**DRT F270 Advanced CAD**
3 Credits
Offered As Demand Warrants
Advanced areas of CAD (3-D, menu modifications and Auto lisp).
**Prerequisites:** DRT F170; DRT F210; or permission of program coordinator.
**Lecture + Lab + Other:** 2 + 2 + 0

# Early Childhood Education (ECE)

**Community and Technical College**
Early Childhood Education (https://www.ctc.uaf.edu/programs/early-childhood-education/)
907-455-2800

**ECE F101 Introduction to Early Childhood Profession**
3 Credits
Offered Fall, Spring and Summer
Includes historical foundation, current issues and trends, exposure to a variety of developmentally appropriate programs, contemporary needs of children and families, the importance of being an advocate, professional standards and career opportunities, introduction to NAEYC and the code of ethical conduct.
**Lecture + Lab + Other:** 2.75 + 0.5 + 0

**ECE F104X Child Development I: Prenatal, Infants and Toddlers** (s)
3 Credits
Offered Fall, Spring and Summer
Foundation in child development prenatal to age 3. Includes anticipating the emerging development during the rapid growth of these critical years. Focuses on domains, theories, cultural perspectives and multiple influences on development, with an emphasis on prenatal development, healthy childbirth, the importance of relationships, and meaningful environments. Includes observation, reflection, early intervention and labs.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F107X Child Development II: The Preschool and Primary Years** (s)
3 Credits
Offered Fall, Spring and Summer
Foundation for the study of children ages 3 to adolescence, including developmental domains, theories, milestones and cultural influences, including Indigenous traditional practices. Emphasis on helping students use their knowledge of child development to predict and promote optimal growth in children. Practical experiences, such as observations and laboratory participation will be included.
**Recommended:** ECE F104X.
**Special Notes:** Not offered Odd-numbered Summer years.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F110 Safe, Healthy Learning Environments**
3 Credits
Offered Fall, Spring and Summer
Establishing and maintaining inclusive, safe, healthy, culturally and developmentally appropriate environments for children ages birth-8 years of age. Topics include preventative health care, safety aspects of field trips and indoor and outdoor settings. Completing coursework fall 2017 or later will meet the SOA Child Care Licensing health and safety requirements.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F115 Responsive and Reflective Teaching**
3 Credits
How to be ethical, responsive, productive, and well-informed practitioners in the field of early childhood. Emphasis on using traditional and local knowledge and values to inform practice, manage personnel and programs, and provide appropriate services and support to young children and their families. Includes the NAEYC Code of Ethics and NAEYC Standards. Use of observation to transform teaching and management practices. Lab required. This course is comparable to ECE F170. Students should take either ECE F115 or ECE F170 to meet the practicum and reflection requirement for the Certificate and A.A.S. degree.
**Prerequisites:** ECE F101; placement in WRTG F111X; or permission of program head.
**Recommended:** Computer with adequate and appropriate software, access to printer, audio conference and internet, and fax machine as needed.
**Lecture + Lab + Other:** 2 + 2 + 0

**ECE F117 Practical Math Skills**
3 Credits
Offered Spring
Computation involving percentages, estimation, problem-solving, reading and creating graphs and tables, data organization and interpretation. Applications of computational skills will be emphasized.
**Cross-listed with** HUMS F117.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F119 Curriculum I: Principles and Practices**
3 Credits
Offered Fall, Spring and Summer
Methods of creating and facilitating individually and culturally appropriate curriculum for young children. Establishing integrated, meaningful and relevant experiences applied to the area of language and literacy. Includes a balance of individual and small group experiences, child-centered curriculum and teacher-directed times, as well as transitions. Focus on emergent curriculum, active learning and play. The use of local materials and resources is incorporated. Labs required.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F130 Culture, Learning and the Young Child**
2 Credits
Offered Fall, Spring and Summer
Ways each child within a culture comes to know, accept and take pride in himself or herself. Maintaining a culturally appropriate, open, friendly and cooperative caring relationship with each child's family.
**Special Notes:** Not offered Even-numbered Summer years.
**Lecture + Lab + Other:** 2 + 0 + 0

**ECE F132 Young Child and the Family**
1 Credit
Offered As Demand Warrants
Introduction to the importance of a positive and productive relationship between families and the child development centers. Emphasis on using this relationship to coordinate child rearing efforts of both the family and the educator.
**Lecture + Lab + Other:** 0.75 + 0.5 + 0

**ECE F140 Positive Social and Emotional Development**
3 Credits
Offered Fall and Spring
Explores the importance of self-regulation, a strong self-concept and methods for helping children develop positive self-esteem. Focus on emotional intelligence, pro-social orientation, and social competence. Anti-bias curriculum is included. Techniques explored for working with groups of children birth-8 years old including social problem solving and developing skills for making friends.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F170 Practicum I**
3 Credits
Offered Fall, Spring and Summer
A guided student teaching experience in working with a group of 0-8 year old children. Students apply skill in providing quality early care and education based on the knowledge of early childhood theories and approved practices. Assumes increasing responsibility for planning and lead teaching.
**Prerequisites:** ECE F101; ECE F104X; ECE F107X; ECE F110, ECE F119; ECE F140; ECE F213; ECE F229X.
**Lecture + Lab + Other:** 0.5 + 0 + 14

**ECE F210X Child Guidance** (s)
3 Credits
Offered Fall, Spring and Summer
Guidance and discipline approaches for young children, based on an understanding of child development and of developmentally appropriate education practices. Such an understanding assists teachers and parents in addressing the cause of a behavior problem rather than the symptoms.
**Prerequisites:** Placement in WRTG F111X; or permission of the program head.
**Special Notes:** Not offered Odd-Numbered Summer years.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F213 Curriculum: Thinking, Reasoning and Discovery**
3 Credits
Offered Fall, Spring and Summer
Emphasizes culturally and developmentally appropriate curriculum and activities to advance the cognitive development of young children, with particular focus on science, math and creativity. Includes a variety of approaches to curriculum development, assessment and necessary skills for early childhood teachers. Lab required.
**Recommended:** ECE F104X; ECE F107X; ECE F119.
**Special Notes:** Not offered Even-Numbered Fall years.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F214 Infants and Toddlers**
3 Credits
Offered Fall, Spring and Summer
Developmentally appropriate care and nurturance of infants and toddlers, with an emphasis on the importance of building relationships as the foundation of curriculum. Course will include segments which will prepare students to create, facilitate, and evaluate infant/ toddler curriculum utilizing relationship-based practices, knowledge of child development, and routines. Includes activities to stimulate development and learning and support communication, guidance and health. Research-based techniques and cultural practices included. Weekly practice labs (14 hours) required.
**Prerequisites:** ECE F104X; or permission of program head.
**Special Notes:** Not offered Odd-Numbered Fall years, Odd-Numbered Spring Years, or Even-Numbered Summer Years.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F229X Foundations in Nutrition and Physical Wellness** (s)
3 Credits
Offered Fall, Spring and Summer
Become a good role model/teacher for children's wellness through analysis, problem-solving, planning, participation, teaching and reflection on healthy nutrition and movement education/fitness. Covers science of nutrients for energy/growth/regulation; food safety; planning meals. Includes mind-body connection for academic success; elements of movement; environments; fundamental skills of balance, locomotion, music/rhythm and manipulation.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F235 Screening, Assessment and Recording**
3 Credits
Offered Fall and Spring
Information to help teachers of young children understand the purpose of screening. Presents use of good screening procedures. Explores the importance of assessing young children's development and provides tools and practice for recording and evaluating children's progress towards goals. Includes a variety of evaluation tools for assessing young children's development.
**Prerequisites:** ECE F104X; ECE F107X.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F240 Inclusion of Children with Special Needs** (s)
3 Credits
Offered Fall and Spring
Developmental, social, educational and legal (PL94-142 and 99-457) issues related to the education of young children with special needs. Includes the categories of exceptionality and the role of the teacher in identifying, assessing and individualizing educational programs to help young children succeed in the least restrictive and most responsive environments. Emphasis is on promoting positive outcomes for each child and building effective learning environments, including using assistive technology for children with disabilities.
**Prerequisites:** ECE F104X or ECE F107X; placement in WRTG F111X; or permission of the program head.
**Special Notes:** Not offered Even-numbered Fall years.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F242 Child and Family Ecology**
3 Credits
Offered Spring
Examines the influences the family has on the child, family dynamics and issues impacting families. Focus on the importance of understanding relationship building, support for families and interpersonal skill development that is culturally conducive with individual communities. Examines the ECE program's policies and procedures on families and parental involvement. Includes practical applications of course reading and content.
**Prerequisites:** Placement in WRTG F111X; permission of program head.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F249 Current Issues in Early Childhood Education**
1-3 Credits
Offered As Demand Warrants
Selected current issues of importance to the human services, early childhood education or child development and family studies fields. Repeatable for credit by Early Childhood Education and Child Development and Family Studies majors to a maximum of nine credits.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ECE F270 Practicum II**
3 Credits
Offered Fall, Spring and Summer
An advanced guided field experience in working with a group of young children in a school or center. May include teaching in a team situation and working with families.
**Prerequisites:** ECE F170; placement in WRTG F111X.
**Lecture + Lab + Other:** 0.5 + 0 + 15

**ECE F299 Practicum for CDAs**
1-3 Credits
A practical application of all previous CDA competency courses. The student will assume responsibility for children in an approved early childhood setting. (CDA curriculum.)
**Prerequisites:** Placement in WRTG F111X.
**Lecture + Lab + Other:** 0 + 0 + 0

**ECE F301 Parents as Partners in Education**
3 Credits
Offered Spring as Demand Warrants
Study of strategies that will assist those who work with children and/or families to facilitate supportive partnerships with parents. Includes partnerships, contemporary issues, school and home-based programs, rights and responsibilities, professional ethics, and parents with special or unique needs.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F302 Building Home Program Relationships: Prenatal to 3 Years**
3 Credits
Offered As Demand Warrants
Focuses on professionalism, family support, ethics, cultural continuity, child development, attachment and curriculum of home-based programs. Addresses the broad continuum of services across multiple domains and how staff that work in these programs can meet the needs of children prenatal to 3 and their families in the home setting.
**Prerequisite:** WRTG F111X.
**Recommended:** WRTG F211X or WRTG F213X; ECE F342.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F304 Attachment and Social Development** (s)
3 Credits
Offered Fall or As Demand Warrants
Principles and practices in understanding and supporting attachment and social development in conjunction to reciprocal communication streams and social interactions. Strategies working with families as continuum for each specific child's development.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** ECE F104X and ECE F107X, or ECE F110, ED F245 or PSY F245 or other early development course.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F305 Social Emotional Development: Reflection and Practice**
3 Credits
Offered Fall; As Demand Warrants
Examination of the many ways teachers can help young children with their social development by addressing the common problems and situations that arise in teaching all children between the ages of 3 and 6 years. Development of strategies to improve teacher practices that will support social and emotional competence.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F306 Building Bridges to Support Family Mental Health**
3 Credits
Offered Spring or As Demand Warrants
Understanding and providing assistance to families who live in environments with multi-risk factors requires professionals working together providing best possible interventions. Demonstration and examples of strategies that help multi-risk families that assists in bringing together most effective intervention techniques from a variety of theoretical approaches, parenting strategies and innovative programs.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F310 Constructivist Curriculum**
3 Credits
Offered Fall
A focus on the issues involved in developing constructive curriculum for young children. Includes a foundation in the aims and assumptions of constructivist teaching and key components of this type of curriculum. Emphasis is on best practices for constructivist classrooms.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F311 Theories, Methodologies and Pedagogy for Early Childhood**
3 Credits
Offered Fall
Expanded studies on context and theoretical perspectives of appropriate practice in early care and education for children from birth through age 8. Examines roles of early childhood educators and identifies best practices for curriculum and teaching strategies. Theories and philosophies include Montessori, Erikson, Piaget and Vygotsky, Reggio-Emilia and Project Approach.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F320 Environment and Curriculum for Infants and Toddlers**
3 Credits
Offered Fall
Roles and practices adults take for supporting learning and development in infants and toddlers aged birth - 3 years of age. Stresses the adoption of the child's individual abilities and interests while supporting their exploration, discovery, relationship building and problem solving through environment development. Prominence for family inclusion in curriculum development through reciprocal relationships.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2.5 + 0 + 1.5

**ECE F340 Financial Management of Early Childhood Programs**
3 Credits
Offered Fall Odd-numbered Years
The financial aspects of managing a child care center or preschool program. Includes budgeting, program resource management, marketing, purchasing, pay and compensation, and fee collection issues important to maintaining quality programs for young children.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F341 Personnel Management of Early Childhood Programs**
3 Credits
Offered As Demand Warrants
Management of personnel of child care programs, including recruitment, hiring, in-service training, staff meetings and communication, supervision, evaluation, motivation, burnout prevention and termination of employees. Focus on maintaining quality programs for young children.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F342 Family Relationships**
3 Credits
Offered Fall
Examination of relationships in contemporary family life. Focus on the changing family, gender roles, living together, and relationships with children and grandchildren. Includes current family research and issues within and effect of public policy on families in our multicultural society.
**Prerequisites:** COJO F131X or COJO F141X; upper-division standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F345 Screening, Assessment and Data Collection Tools**
3 Credits
Overview of the diversity of tools used for screening, ongoing child and classroom assessment, data collection and reporting within early childhood programs. Tools can be used individually or collectively to support the development of a high quality early care and learning environment and positive outcomes for young children.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F350 Play: Foundation for Development** (s)
3 Credits
Offered As Demand Warrants
Concepts, theories and empirical research on the role of the play in the total development of children. Utilizing three major ideas -- the effective quality of play in early childhood development, as a means of self-expression, and as a channel of communication. Examines the effects culture, media and technology have on play. Includes roles of early care-giving staff, teachers, and parents in supporting appropriate play experiences.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ECE F104X; ECE F107X; or approved development class.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F360 Assessment in Early Childhood**
3 Credits
Offered Spring
Examination of policies and practices related to evaluation and assessment of young children's progress. Includes legal, ethical and professional responsibilities in assessment. Exploration of "what, when, why and how" to assess young children. Includes practice and analysis of various assessment styles and tools as well as how to use information gained through assessment.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F365 Social Studies Pedagogy in Early Childhood**
3 Credits
Offered Spring
Guidance on how to teach social studies to young children to cultivate bias and discrimination-free learning communities. Emphasis on encouraging development of teachers' pedagogical practices, and resources for building positive social attitudes and dispositions that value the contributions of young children as citizens of their living and learning communities.
**Prerequisites:** ECE F311; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F405 Seminar in Culture and Child-rearing Practices**
3 Credits
Offered As Demand Warrants
Seminar course providing opportunity for students, cross regionally throughout Alaska and beyond, to engage in the comparative study of issues associated with culture and child-rearing practices of families within Alaska and throughout the world. An emphasis will be placed on the role of caregiver working with children aged birth through three years of age.
**Prerequisite:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** ECE F104X, ECE F107X or PSY F245 or ED F245, ECE F130, ECE F342.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F410 Supporting Family Relationships through Mentoring**
3 Credits
Offered Fall
Focus on policies, leadership and professional practices inherent of successful relationships with parents. Consideration of individual communication styles and cultural diversity emphasized in relation to best mentoring practices.
**Prerequisites:** ECE F242; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F420 Developing Literacy in the Early Years**
3 Credits
Offered Fall
Principles and practices in understanding and supporting young children's emerging literacy. Links importance of oral language and early exploration with later reading and writing skills. Strategies for assisting emergent readers and writers are included, as well as how to use play and children's interests to assist in developing their literacy.
**Prerequisites:** ECE F310; ECE F360; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper-division standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F421 From Babbling to Talking to Early Literacy**
3 Credits
Offered Spring As Demand Warrants
This course provides the opportunity for exploration and understanding of infant-toddler beginning language and early literacy development as it reflects on research from multiple fields. Looks at the importance of oral language development and early explorations with literacy while considering principles and practices that provide support for families and culture.
**Prerequisite:** ECE F214; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2.5 + 0 + 1.5

**ECE F430 Fine Arts for the Early Years** (h)
3 Credits
Offered Spring
Focused on promoting the arts in children's lives. Explores the role of the teacher in helping children become aware of the beauty around them and to appreciate the variety and skill of many different kinds of art including: theatre, two- and three-dimensional art, crafts, vocal and instrumental music and dance. Strategies for assessing artistic development and working with families are incorporated.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ECE F240; ECE F310.
**Lecture + Lab + Other:** 2.5 + 0 + 1.5

**ECE F440 Exploring Math and Science**
3 Credits
Offered Fall Odd-numbered Years
Focused on constructivist teaching of math and science. Explores the role of the teacher in helping children become theory builders in an environment designed to promote learning in math and science. Includes specific examples in chemistry, biology, ecology, numbers, patterns, geometry, measurement and data analysis. Emphasis is on teaching children an interactive, analytic and reflective process of inquiry.
**Prerequisites:** ECE F310; ECE F360; upper-division standing.
**Recommended:** Completion of at least one natural science course.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F442 Family Resource Management**
3 Credits
Offered Fall As Demand Warrants
Management of resources which help families meet and alter the increasing complexities of life. Involves purposeful actions that affect the use of time, money, energy, skills, talents and knowledge. Explores roles, goals and decision-making within our multicultural society throughout the life cycle.
**Prerequisites:** ECE F242; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F445 Adolescence Through the Lifespan**
3 Credits
Offered Spring Odd-numbered Years
Study of the inter-relationships between early childhood and future development from adolescence through adulthood. Achievement in school, anorexia, chemical dependency and other health issues, family happiness, personal confidence and career success have all been linked to the early years. This course helps students understand these vital connections.
**Prerequisites:** ECE F107X or ED F245 or PSY F245; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2.5 + 0 + 1.5

**ECE F450 Leadership and Advocacy in the Early Childhood Field**
3 Credits
Offered As Demand Warrants
An overview of the early childhood field as a profession, the history of policy changes, and origin of policy reform. Topics will include system building strategies and models, ways to promote advocacy in early childhood, and leadership qualities necessary to be an advocate in the field.
**Prerequisites:** WRTG F211X or WRTG F213X and ECE F340 or ECE F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECE F470 Advanced Practicum**
3 Credits
Offered As Demand Warrants
Advanced practicum requiring 200 hours of work in an early childhood program or family support agency as a teacher, curriculum specialist, family advocate or in another related position. A capstone course available only to those who have completed the other required course work for the B.A. in Child Development and Family Studies degree and their designated specialty.
**Prerequisites:** Senior standing; permission of instructor.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**ECE F471 Clinical Practice: Organizational Action Research**
3 Credits
Offered Spring Odd-numbered Years or As Demand Warrants
Theory and application of action research within an organization. Emphasis on use of personal reflection to understand practice and the development of a planned theory of action. Techniques for observing action through the use of examining the evidence are learned. Students should expect to be involved within an early childhood administrative setting for some or all of the day for a minimum of 10 weeks.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; completion of all CDFS core major and Administration or Family Support concentration course work.
**Lecture + Lab + Other:** 1 + 0 + 14

**ECE F472 Clinical Practice: Classroom Research**
3 Credits
Offered Spring or As Demand Warrants
Theory and application of classroom research with emphasis on teacher as researcher. Techniques of classroom research will be studied and applied; including observation, question posing, note taking, data analysis, data interpretation, practica, and research report writing. Students should expect to be involved in the classroom setting for some or all of the school day for the entire university semester; approximately 200 hours.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; completion of all CDFS core major and concentration course work, excluding ECE F473.
**Lecture + Lab + Other:** 1 + 0 + 14

**ECE F473 Clinical Practice: Classroom Management**
3 Credits
Offered Spring or As Demand Warrants
Supervised clinical field practice within an early childhood setting. Intent of this course is to provide a capstone for students who have completed all course work within the Curriculum and Teaching or Infant and Toddler concentration of the Child Development and Family Studies B.A. program. Practica activity will demonstrate application of appropriate curriculum, assessment and classroom environments developed to enhance the learning and development of young children. This course may be taken in conjunction with ECE F480.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; completion of all CDFS core major and concentration course work, excluding ECE F472.
**Lecture + Lab + Other:** 1 + 0 + 14

**ECE F480 Child Development and Family Studies Portfolio**
1 Credit
Offered Fall and Spring As Demand Warrants
Entry into development of a capstone project that documents the graduating candidate's professional development as a result of the Child Development and Family Studies program within the standards set by the National Association for the Education of Young Children. The portfolio is required for final completion of the CDFS B.A. degree program in lieu of a written comprehensive exam or thesis. This course introduces students to the portfolio process, which will be completed with final assessment as the finishing piece of the CDFS program.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; admittance to the CDFS B.A. program.
**Lecture + Lab + Other:** 0.5 + 0 + 1

# Economics (ECON)

**College of Business and Security Management**
Department of Business Administration (https://www.uaf.edu/som/degrees/undergraduate/ba/)
907-474-7461

**ECON F101X Principles of Microeconomics** (s)
3 Credits
Offered Fall, Spring and Summer
Presents the tools and concepts needed for analysis of economic decision-making at the level of the individual (consumer, firm, government), and explores how those decisions affect market outcomes. Explores the theory of prices and markets, industrial organization, public policy, income distribution, and contemporary problems of labor and business.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F102X Principles of Macroeconomics** (s)
3 Credits
Offered Fall, Spring and Summer
Theoretical approach to determination of the national income level and economic activity including coverage of the history of macroeconomic theory with special emphasis on economic growth, inflation, business cycles, international finance, and monetary and fiscal policy.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F111X The Economy of Rural Alaska** (an)
3 Credits
Offered Fall and Spring
Examine the significance of Alaska Native economies and their role in the modern Alaska economy. To include the challenges facing rural communities, and the role of social and cultural capital. Economic indicators which incorporate Alaska Native health, education, food, energy and resource security, and economic opportunity are evaluated also.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F120X Introduction to Economic Analysis** (s)
3 Credits
Offered As Demand Warrants
This course will introduce you to the fundamentals of economic analysis and reasoning and provide you the tools to analyze the behavior of individuals, firms, communities and government under conditions of unlimited wants and scarce resources.
**Prerequisites:** Placement in WRTG F111X.
**Attributes:** UAF Core Political Economy, UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F227 Introductory Statistics for Economics and Business**
3 Credits
Offered Fall, Spring and Summer
Introduces statistical theory and methods with an emphasis on economics and business applications. Includes descriptive statistics, probability and probability distribution, statistical inference and regression modelling.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F235X Introduction to Natural Resource Economics** (s)
3 Credits
Offered Fall
Microeconomic principles and their application to natural resource issues. Topics include supply, demand, marginality, optimality, elementary production economics, economic rent and comparative advantage. These principles applied to agency budget allocation decisions, multiple use, resource valuation, conservation, market failure and public outdoor recreation problems.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F321 Intermediate Microeconomics** (s)
3 Credits
Offered Fall and Spring
Analysis of demand and supply under various market forms, cost and theory of production, factor pricing and theory of distribution and survey of welfare economics.
**Prerequisites:** ECON F101X; ECON F102X; MATH F122X or equivalent.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F322 Managerial Economics**
3 Credits
Interpretation of economic data and applications of economic theory in business firms. Bridging the gap between theory and practice through empirical studies, cases and decision problems. Emphasis upon decision-making using analysis of research data.
**Prerequisites:** ECON F101X; ECON F102X; MATH F230X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F324 Intermediate Macroeconomics** (s)
3 Credits
Offered As Demand Warrants
This is a one-semester undergraduate-level course in intermediate macroeconomics. We will study the concepts and measurement of income, analysis of aggregate demand and supply and their relation to the level of prices, employment and economic growth.
**Prerequisites:** ECON F101X; ECON F102X; MATH F122X or equivalent.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F327 Intermediate Econometrics for Forecasting and Business**
3 Credits
Offered As Demand Warrants
Extension of topics discussed in ECON F227. Understanding the fundamental theory underlying regression methods and learning how to appropriately apply these techniques in the analysis of economic and business problems. Simple and multiple regression and correlation, analysis of variance, forecasting techniques, quality control, nonparametric methods and decision theory.
**Prerequisites:** STAT F200X or ECON F227.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F335 Intermediate Natural Resource Economics** (s)
3 Credits
Extension of concepts developed in ECON F235X, using a higher level of economic analysis. Topics include welfare economics and economic efficiency concepts, benefit/cost analysis, resource allocation over time, resource taxation, common property problems, externalities, public goods, valuation of non-market resources, and land use planning issues.
**Prerequisites:** COJO F131X or COJO F141X; ECON F101X; ECON F102X or ECON F235X; MATH F230X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F350 Money and Banking** (s)
3 Credits
Offered As Demand Warrants
The liquid wealth system in the United States, including the commercial banking system, the Federal Reserve System and nonbank financial institutions; the regulation of money and credit and its impact on macroeconomic policy objectives.
**Prerequisites:** ECON F101X; ECON F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F351 Public Finance** (s)
3 Credits
Offered As Demand Warrants
Economic justifications for government; federal, state and local government, taxation, spending and debt; their effects on allocation, distribution, stabilization and growth.
**Prerequisites:** ECON F101X; ECON F102X; MATH F122X or equivalent.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F409 Industrial Organization and Public Policy** (s)
3 Credits
The relationship of market structure to the economic conduct and performance of firms and industries, the determinants, measurement and classification of market structure, public policy toward mergers, industrial and aggregate concentration.
**Prerequisites:** ECON F101X; ECON F102X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X; upper division standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F420 Labor Markets and Public Policy** (s)
3 Credits
Offered As Demand Warrants
Application of labor market analysis and wage theory as they relate to public policy issues. Topics include determination of wages, taxation and employment, economic impact of unions, economics of discrimination, and issues relating to women's and minorities' changing roles in the labor market.
**Prerequisites:** ECON F101X; ECON F102X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F434 Environmental Economics**
3 Credits
Offered As Demand Warrants
An extension of concepts introduced in ECON F235X, using a higher level of economic analysis. An analysis of the economic forces involved in environmental degradation, preservation and regulation. Topics include pollution, biodiversity, wilderness and climatic change.
**Prerequisites:** ECON F101X and ECON F102X or ECON F235X; MATH F122X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F439 Energy Economics** (s)
3 Credits
Offered As Demand Warrants
Market forces and institutions affecting the allocation of energy resources. Special attention to intertemporal allocative decisions and the role that public policy plays in influencing the rate at which energy resources are used over time.
**Prerequisites:** ECON F101X and ECON F102X or ECON F235X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Stacked with** ECON F639.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F451 Public Expenditure Analysis**
3 Credits
Offered Spring Odd-numbered Years
Purposes and economic effects of governmental expenditures, budgeting techniques, and their effects on resource allocation.
**Prerequisites:** ECON F101X; ECON F102X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F463 International Economics** (s)
3 Credits
Pure theory of international trade: comparative cost, terms of trade, and factor movements. International disequilibrium: balance of payments and its impact on national economy, capital movement and economic development through international trade.
**Prerequisites:** ECON F101X; ECON F102X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F230X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F601 Microeconomic Theory I**
3 Credits
Offered As Demand Warrants
Analysis of consumer and producer theory, price determination and welfare economics.
**Prerequisites:** ECON F321; MATH F251X; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F602 Economic Modeling**
3 Credits
Offered As Demand Warrants
A hands on approach to applied microeconomics and resource modeling. Students extend their training in economic theory and econometrics to model real life problems in the areas of renewable and exhaustible resources, non-market valuation and environmental economics. Special emphasis will be given to the use of econometric analyses.
**Prerequisites:** ECON F601; ECON F626; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F603 Macroeconomic Theory I**
3 Credits
Offered As Demand Warrants
Analysis of the underlying causes of unemployment, economic instability, inflation and economic growth.
**Prerequisites:** ECON F321; ECON F324; MATH F251X; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F613 Resilience Internship**
2 Credits
Offered As Demand Warrants
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.
**Prerequisites:** ANTH F667, BIOL F667, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or NRM F668.
**Cross-listed with** ANTH F617; BIOL F613; NRM F613.
**Lecture + Lab + Other:** 2 + 0 + 0

**ECON F616 Economics Background for Resilience and Adaptation**
1 Credit
Offered As Demand Warrants
Provides the economics background that is necessary for understanding the role of economics in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology.
**Prerequisites:** Graduate student enrollment.
**Lecture + Lab + Other:** 1 + 0 + 0

**ECON F623 Mathematical Economics**
3 Credits
Offered As Demand Warrants
Mathematical techniques including matrix algebra, differential and integral calculus. Particular attention is given to static and comparative statics analysis and dynamic models.
**Prerequisites:** MATH F251X; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F626 Econometrics**
3 Credits
Offered As Demand Warrants
Introduction to econometric theory. Single equation and multiple equation system estimation, including inference and hypothesis testing and results of assumption violation.
**Prerequisites:** ECON F227; MATH F251X; STAT F401; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F627 Advanced Econometrics**
3 Credits
Offered As Demand Warrants
Advanced Econometrics is the second graduate econometrics course in the Ph.D. in Resource Economic program. This course builds upon the theoretical and empirical tools developed in ECON F626. Large sample theory and the Maximum Likelihood estimation theory are covered. Limited dependent variable models widely used in applied microeconometric modeling are developed and extended. Univariate and multivariate time series modeling and forecasting is developed.
**Prerequisites:** ECON F626; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F635 Renewable Resource Economics**
3 Credits
Offered As Demand Warrants
The theory, methods of analysis and current literature of natural resource economics and policy for fisheries, forests and wildlife. Topics include externalities, property rights, public goods, benefit-cost analysis, amenity values and other non-market resource services, and environmental policy.
**Prerequisites:** ECON F321; ECON F335; MATH F251X; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F636 Nonrenewable Resource Economics**
3 Credits
Offered As Demand Warrants
Exploration of issues relating to the mineral and energy markets. The analysis of energy and mineral use over time, capital investment problems and world market dynamics are explored. Topics include futures markets, present value, energy value and entropy.
**Prerequisites:** ECON F321; ECON F335; MATH F251X; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F637 Evolution of Conservation Concepts and Policy**
3 Credits
Offered As Demand Warrants
Resource policy issues development and implementation including forestry, mining, fisheries, oil, wildlife and other topics as demand warrants. Focus on policy issues involved in management of Alaska's resources.
**Prerequisites:** Graduate standing.
**Cross-listed with** NRM F637.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F639 Energy Economics**
3 Credits
Offered As Demand Warrants
Market forces and institutions affecting the allocation of energy resources. Special attention to intertemporal allocative decisions and the role that public policy plays in influencing the rate at which energy resources are used over time.
**Prerequisites:** ECON F101X and ECON F102X or ECON F235X; graduate standing.
**Stacked with** ECON F439.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F647 Sustainability in the Changing North**
3 Credits
Offered As Demand Warrants
Explores the basic principles of sustainability of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F647; BIOL F647; NRM F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F649 Integrated Assessment and Adaptive Management**
3 Credits
Offered As Demand Warrants
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management.
**Prerequisites:** Graduate student standing in a natural science, social science or interdisciplinary program at UAF or another university.
**Recommended:** ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.
**Cross-listed with** ANTH F649; BIOL F649; NRM F649.
**Special Notes:** In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**ECON F667 Resilience Seminar I**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor.
**Prerequisites:** Enrolled in Resilience and Adaptation Graduate Program.
**Recommended:** ANTH F647, BIOL F647, ECON F647 or NRM F647 (taken concurrently).
**Cross-listed with** ANTH F667; BIOL F667; NRM F667.
**Lecture + Lab + Other:** 2 + 0 + 0

**ECON F668 Interdisciplinary Research Methods-Resilience Seminar II**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.
**Prerequisites:** ANTH F647, BIOL F647, ECON F647 or NRM F647; ANTH F667, BIOL F667, ECON F667 or NRM F667.
**Cross-listed with** ANTH F668; BIOL F668; NRM F668.
**Lecture + Lab + Other:** 2 + 0 + 0

**ECON F670 Seminar in Research Methodology**
1 Credit
Offered As Demand Warrants
Philosophy of research and importance of the scientific method to solution of research problems.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**ECON F692 Seminar**
1-12 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ECON F698 Non-thesis Research/Project**
1-9 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ECON F699 Thesis**
1-9 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

# Education (ED)

**School of Education**
Education (https://www.uaf.edu/soe/academics.php)
907-474-7341

**ED F099 Practicum in Education**
1-3 Credits
Individualized work experience. Credit is variable from 1 to 3 credits, depending upon the quality and quantity of the work experience. Credit may be earned in most disciplines and programs.
**Lecture + Lab + Other:** 0 + 0 + 0

**ED F100 Language, Education, Linguistics** (h)
3 Credits
Offered Fall and Spring
Introduction to the field of linguistics as it pertains to the field of education. Includes discussions of language structure, acquisition and bilingualism, and variation and public policy. The course does not satisfy requirements for the B.A. in Linguistics.
**Cross-listed with** LING F100.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F110 Becoming a Teacher in the 21st Century**
1 Credit
Offered Fall and Spring
Introduction to the UAF School of Elementary and Secondary undergraduate teaching degrees with a review of requirements, resources, and opportunities. Overview of K-12 teaching as a career with a focus on working in culturally, linguistically and geographically diverse schools and communities in Alaska and other locations.
**Lecture + Lab + Other:** 1 + 0 + 0

**ED F111 Teaching for Alaska's Future**
3 Credits
Offered Fall and Spring
Participants will complete a series of six web-based modules introducing and investigating five core practices in place-based teaching and classroom management. For students interested in pursuing a teaching certification program, this course provides an introduction to the profession and an overview of pathways to teaching in Alaska.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F201 Introduction to Education**
3 Credits
Offered Fall and Spring
Introduction to the profession of education and specifically, the field of teaching. Review of social, political, cultural and historical factors that influence education and schools at the national and Alaska state level. Field experience required.
**Prerequisites:** ED F110, ED F111; WRTG F111X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F204 Literature for Children**
3 Credits
Offered Fall and Spring
Examination of effective uses of literature to promote learning. Critical analysis of authors, illustrators and content of children's literature representative of multiple genres and diverse peoples and perspectives-including Alaska literature. Criteria review for book selection and application of review process to books selected by students based on professional recommendations/reviews.
**Prerequisites:** ED F201.
**Special Notes:** Field experience required.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F206 Core Practices in Place and Arts-Based Teaching** (h)
3 Credits
Offered Fall and Spring
Examination of how to bring local cultural knowledge into the curriculum and equip teachers with the knowledge and skills to teach in and through culture and the arts. Participants will investigate high-leverage teaching practices focused on arts and place-based teaching.
**Prerequisites:** ED F110, ED F201, WRTG F111X (C or better grade) and sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F237A Technology Tools for Teachers: Collaborate/Hangouts**
0.5 Credit
Offered As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately 6 hours of direct instruction and 4-8 hours of lab work. This module covers the use of Blackboard Collaborate and Google Hangouts for participating in UA course work online.
**Lecture + Lab + Other:** 0.5 + 2 + 0

**ED F237B Technology Tools for Teachers: Blackboard**
0.5 Credit
Offered As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and four to eight hours of lab work. This module covers the use of calendar and discussion board, submitting assignments, and checking grades.
**Lecture + Lab + Other:** 0.5 + 2 + 0

**ED F237C Technology Tools for Teachers: Google Drive**
0.5 Credit
Offered As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours direct instruction and four to eight hours of lab work. This module covers the use of Google Drives (Google Apps) for word processing, creating presentation, working with spreadsheets/charting, converting documents to Office format, and sharing of documents.
**Lecture + Lab + Other:** 0.5 + 2 + 0

**ED F237D Technology Tools for Teachers: Office**
0.5 Credit
Offered As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and four to eight hours of lab work. This module covers the basic uses of Microsoft Office (Word, PowerPoint, Excel) for productivity tasks.
**Prerequisite:** Access to MS Office is required.
**Lecture + Lab + Other:** 0.5 + 2 + 0

**ED F245 Child Development** (s)
3 Credits
Offered Fall and Spring
A study of the physical, cultural, emotional, cognitive and social aspects of a child's development from prenatal period through early adolescence. Focus on developmental theories including Erickson, Gardner, Gilligan, Kagen, Sternberg, Vygotsky and other contemporary theories of child and adolescent development.
**Prerequisites:** WRTG F111X.
**Cross-listed with** PSY F245.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F299 Practicum in Education**
1-3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ED F303 Language Acquisition** (s)
3 Credits
Offered As Demand Warrants
Theories of the acquisition and development of first and second languages, including consideration of biological and sociocultural factors. Survey of traditional and contemporary theories, and implications for pedagogy and public policy.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** LING F101X.
**Cross-listed with** LING F303.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F329 Teaching with Technology**
3 Credits
Offered Fall and Spring
Participants will examine multiple technology-based strategies that promote learning in P-12 classrooms. The class will examine mobile as well as desktop/laptop technologies, exploring a variety of topics including: collaboration, communication, content and classroom management apps, the role of social media in school, and the ISTE Standards for Educators.
**Prerequisites:** Approval from School of Education academic advisor, laptop or iPad required.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F330 Assessment of Learning**
3 Credits
Offered Fall and Spring
Review and examination of the range of traditional and alternative assessment and evaluation approaches used in educational contexts. Focus is on developing assessment practices and policies that are appropriate for the diverse student population in Alaska's rural and urban schools. Field experience required.
**Prerequisites:** ED F201; a mathematics baccalaureate core course.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F344 Foundations of Literacy Development**
3 Credits
Offered Fall and Spring
Introduction to best practices in research-based methods for teaching and learning of reading and writing. Emphasis on a developmental approach to the literacy development of children in school and home settings. Field experience required.
**Prerequisites:** ED F201; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper-division standing; laptop computer required.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F411 Reading, Writing, Language Arts: Methods and Curriculum Development**
3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of reading, writing and language arts concepts. Includes content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of integrated reading and writing unit. Concurrent internship required.
**Prerequisites:** Admission to Internship Year.
**Lecture + Lab + Other:** 2.5 + 0 + 1.5

**ED F412 Integrated Social Studies and Language Arts: Methods and Curriculum Development**
3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of social studies concepts, content, and methods integrated with language arts for students in elementary classrooms with diverse populations. Requires development and classroom implementation of integrated social studies and language arts unit.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; admission to Internship Year.
**Co-requisites:** Concurrent internship required; ED F411; ED F414; ED F466; ED F467; ED F478.
**Stacked with** ED F602.
**Lecture + Lab + Other:** 2 + 0 + 3

**ED F414 Art, Music and Drama in Elementary Classrooms**
3 Credits
Offered Fall
Exploration and application, in the classroom, of theory, practice, methods and materials used in teaching in and through visual art, music and drama. Concurrent internship required.
**Prerequisites:** Admission to the Internship Year.
**Co-requisites:** ED F411; ED F412; ED F466; ED F467; ED F478.
**Stacked with** ED F605.
**Lecture + Lab + Other:** 1.5 + 0 + 4.5

**ED F417 Physical Activity and Health Education for Elementary Teachers**
3 Credits
Offered Spring
Introduction and application of the relationship between physical fitness and good health in a school setting. Includes introducing students to fundamental movement activities and games. Includes incorporating health curriculum and injury prevention and safety into practices and policies, and issues specific to the Alaska context. Concurrent internship required.
**Prerequisites:** Admission to the Internship Year.
**Co-requisites:** ED F468; ED F469; ED F476; ED F479.
**Stacked with** ED F617.
**Lecture + Lab + Other:** 1.5 + 0 + 4.5

**ED F420 Alaska Native Education** (an, s)
3 Credits
Offered Fall and Spring
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required.
**Prerequisites:** ANS F242X; junior standing.
**Cross-listed with** ANS F420.
**Stacked with** ED F606.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F431 Web 2.0 Fundamentals: Participate, Produce, Publish**
3 Credits
Offered Fall
Examine the impact of Web 2.0, cloud computing and mobile technologies on K-12 education and other social institutions. Establish and publish to frameworks--web-based e-portfolio, personal learning network, blog, podcasts--that will form the core elements of the M.Ed. Instructional Technology Innovation (MITI).
**Prerequisites:** Admission to the Master of Education program.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F432 Fundamentals of Media Design**
3 Credits
Offered As Demand Warrants
Create and publish materials with proper media design for use in teaching and learning. Topics include photo and graphics formatting, video production, video podcast production, SMART technologies, static screen capture and motion screen capture. These productions will be included on students' MITI e-portfolios. This course is a prerequisite for subsequent MITI courses and should be taken after or concurrently with ED F431 Web 2.0 Fundamentals: Participate, Produce, Publish.
**Prerequisites:** Admission to the Master of Education program.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F439 Supporting Multilingual Learners in the Elementary Classroom**
3 Credits
Offered As Demand Warrants
Participants will complete web-based modules investigating the history of and current teaching practices for supporting English Learners in the classroom. The history and contemporary context of supporting English learners in schools will be explored as well as ways to create positive learning environments and scaffolding instruction throughout content areas.
**Prerequisites:** Junior or senior standing.
**Stacked with** ED F639.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F440 Gender and Education** (s)
3 Credits
Offered As Demand Warrants
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender, patterns of access and achievements, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change.
**Prerequisites:** Junior standing.
**Cross-listed with** WGS F440.
**Stacked with** ED F640.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F449 Elementary Art Methods**
3 Credits
Offered As Demand Warrants
Methodologies of instruction and assessment in art education at the elementary level. Focus is on the knowledge and tools necessary to become excellent elementary art educators. Students will be expected to construct lessons reflecting theory and practice that are developmentally appropriate for elementary level students of all ages.
**Prerequisites:** Admission to K-12 Art post-baccalaureate licensure program or to M Ed in Curriculum and Instruction option for post-baccalaureate students.
**Stacked with** ED F649.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F452 Elementary Internship**
3-15 Credits
Supervised teaching in elementary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Post-baccalaureate students must be admitted to the Art K-12 licensure program. Passing Praxis I scores.
**Prerequisites:** COJO F131X or COJO F141X; successful completion of methods practicum and methods course work with a C or better.
**Cross-listed with** ART F458.
**Lecture + Lab + Other:** 1 + 0 + 42

**ED F453 Secondary Internship**
3-15 Credits
Offered As Demand Warrants
Supervised teaching in secondary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments. Post-baccalaureate students must be admitted to K-12 Art licensure program. Passing Praxis I scores.
**Prerequisites:** COJO F131X or COJO F141X; and successful completion of methods practicum and methods course work with a C or better.
**Cross-listed with** ART F459.
**Lecture + Lab + Other:** 1 + 0 + 42

**ED F454 Student Teaching K-12**
15 Credits
Offered As Demand Warrants
Supervised teaching in both elementary and secondary schools approved by the Music Department and the School of Education. Open only to Music majors seeking K-12 certification. Students should expect to be involved in the school setting for the entire school day for the entire university semester. The department may limit. Passing Praxis scores. For Bachelor of Music students, see B.M. degree requirements.
**Prerequisites:** COJO F131X or COJO F141X, successful completion of methods practicum and methods course work with a C or better.
**Lecture + Lab + Other:** 1 + 0 + 42

**ED F456 Orientation to Teaching in Rural Alaska**
3 Credits
Offered As Demand Warrants
Needs of rural schools, their environments and the recipients of school services with special attention given to cross-cultural educational issues.
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 2 + 3 + 0

**ED F461 Native Ways of Knowing** (an, h)
3 Credits
Offered Spring Odd-numbered Years
Focus on how culture and worldview shape who we are and influence the way we come to know the world around us. Emphasis on Alaska Native knowledge systems and ways of knowing.
**Prerequisites:** Upper-division standing.
**Cross-listed with** ANS F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F466 Internship and Collaborative Student Teaching**
3 Credits
Offered Spring
Supervised internship for students in the first half of a year-long professional internship in elementary teacher education. Includes immersion in planning and teaching. Course work is integrated into the internship experience. Interns are assessed in relationship to UAF/Alaska state and national standards.
**Prerequisites:** Admission to Internship Year.
**Lecture + Lab + Other:** 1.5 + 0 + 12

**ED F467 Classroom Management Communication and Collaboration I**
2 Credits
Offered Spring
For student interns participating in the first half of the professional internship year. Focus, of course, is UAF/Alaska Teacher Standards 6 (Classroom Management and Organization), Standard 7 (Partnerships with Parents, Families and Community) and Standard 8 (Professionalism and Collaboration). Interns complete and reflect on collaborative experiences and activities both within and outside their school and improve classroom communication skills through collection and analysis of selected artifacts to document and provide evidence of professional development and achievement relative to UAF/Alaska Teacher Standards. Concurrent internship required.
**Prerequisites:** Admission to Internship Year.
**Lecture + Lab + Other:** 1 + 0 + 8

**ED F468 Internship and Student Teaching**
4 Credits
Offered Fall
For student interns participating in the second half of the year-long professional elementary teacher education internship. Interns must spend at least four days per week in the classroom, one month full-time in the classroom including at least three weeks of full responsibility for the classroom. Builds on ED F466 requirements.
**Prerequisites:** COJO F131X or COJO F141X; admission to the Internship Year.
**Lecture + Lab + Other:** 2 + 0 + 6

**ED F469 Classroom Management Communication and Collaboration II**
2 Credits
Offered Fall
For student interns participating in the second half of the professional internship year. Interns use the UAF/Alaska Teacher Standards 1 (Philosophy), 5 and 6 (planning components), 7 (Families and Community) and 8 (Professionalism) as a basis for examining field- and course-based experiences and activities during the internship year. Requires collection and analysis of selected artifacts to document and provide evidence of professional development and achievement relative to UAF/Alaska educational standards. Interns formally present completed portfolios for reviews and evaluations. Concurrent internship required.
**Prerequisites:** Admission to 2nd semester of the Internship Year.
**Lecture + Lab + Other:** 1 + 0 + 3

**ED F476 Assessment of Literacy Development**
1 Credit
Offered Spring
Interns will review, evaluate and create assessments to document elementary student literacy development. Interns will analyze results of literacy assessments and develop plans for instruction for each elementary student. Assessments may include teacher-made quizzes or tests, anecdotal records based on observing children, student reading and writing samples, and spelling assessments. Interns will identify important characteristics of each student including, but not limited to, student interests and goals for literacy development.
**Prerequisites:** Admission to the internship year.
**Lecture + Lab + Other:** 1 + 0 + 22

**ED F478 Mathematics Methods and Curriculum Development**
3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of mathematical concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of mathematics unit. Concurrent internship required.
**Prerequisites:** Admission to Internship Year.
**Stacked with** ED F678.
**Lecture + Lab + Other:** 2 + 0 + 8

**ED F479 Science Methods and Curriculum Development**
3 Credits
Offered Spring
Study and application in the classroom of the best practices from research-based strategies for the teaching and learning of science concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of science unit. Classroom internship required.
**Prerequisites:** Admission to internship year; concurrent enrollment in other internship year courses; Alaska passing scores for three Praxis I exams.
**Stacked with** ED F688.
**Lecture + Lab + Other:** 2.5 + 0 + 4

**ED F486 Media Literacy** (h)
3 Credits
Offered Fall and Spring
Promotes critical thinking skills that empower people to make independent judgments and informed decisions in response to information conveyed through the channels of mass communications. Emphasis on developing students and others into critical viewers, listeners and readers of media.
**Prerequisites:** COJO F131X or COJO F141X; junior standing; laptop computer.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F601 Introduction to Applied Social Science Research**
3 Credits
Offered Fall, Spring and Summer
Review of the most common educational research paradigms, data gathering techniques and analytical tools used in the study of human behavior and educational institutions. Attention will be given to collaborative research models, with a focus on the translation of research results into practical application.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F602 Integrated Social Studies and Language Arts: Methods and Curriculum Development**
3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of social studies concepts, content, and methods integrated with language arts for students in elementary classrooms with diverse populations. Requires development and classroom implementation of integrated social studies and language arts unit.
**Prerequisites:** Admission to the Internship Year.
**Co-requisites:** Concurrent internship required; ED F411; ED F466; ED F467; ED F605; ED F678.
**Stacked with** ED F412.
**Lecture + Lab + Other:** 2 + 0 + 3

**ED F603 Field Study Research Methods**
3 Credits
Offered Spring and Summer
Focus on techniques for conducting both quantitative and qualitative field research. Particular emphasis on considerations for conducting field research in cross-cultural settings.
**Prerequisites:** Graduate standing.
**Cross-listed with** CCS F603.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F604 Documenting Indigenous Knowledge**
3 Credits
Offered Fall
A thorough grounding in research methodologies and issues associated with documenting and conveying the depth and breadth of Indigenous knowledge systems and their epistemological structures. Includes a survey of oral and literate data-gathering techniques, a review of various modes of analysis and presentation, and a practical experience in real-life settings.
**Prerequisites:** Recommended: Graduate-level survey course in research methods.
**Cross-listed with** CCS F604.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F605 Art, Music and Drama in Elementary Classrooms**
3 Credits
Offered Fall
Exploration and application, in the classroom, of theory, practice, methods and materials used in teaching in and through visual art, music and drama. Concurrent internship required.
**Prerequisites:** Admission to the Internship Year.
**Co-requisites:** ED F411; ED F466; ED F467; ED F602; ED F678.
**Stacked with** ED F414.
**Lecture + Lab + Other:** 1.5 + 0 + 4.5

**ED F606 Alaska Native Education**
3 Credits
Offered Fall and Spring
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required.
**Prerequisite:** ANTH F242 and graduate standing.
**Stacked with** ANS F420; ED F420.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F608 Indigenous Knowledge Systems**
3 Credits
Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various Indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska.
**Prerequisites:** Graduate standing.
**Cross-listed with** CCS F608; RD F608; ANL F608.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F610 Education and Cultural Processes**
3 Credits
Offered Fall Even-numbered Years
Advanced study of the function of education as a cultural process and its relation to other aspects of a cultural system. Students will be required to prepare a study in which they examine some aspect of education in a particular cultural context.
**Cross-listed with** CCS F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F611 Culture, Cognition and Knowledge Acquisition**
3 Credits
Offered Fall Odd-numbered Years
An examination of the relationship between learning, thinking and perception in multicultural contexts. Particular emphasis will be on the implications of these relationships for schooling. Content will focus on cultural influences on perception, conceptual processes, learning, memory and problem solving. Content will also reflect concern for practical teaching problems.
**Cross-listed with** CCS F611.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F612 Foundations of Education**
3 Credits
Offered As Demand Warrants
Introduces a range of philosophical thought with emphasis on schooling in the cross-cultural context and on issues of social justice and quality in education. Students will explore the interplay between cultural processes and various philosophical positions adopted by educators in the design and practice of pedagogy, learn the history of public school education in the U.S. and Alaska and analyze the policies affecting public school education today.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F613 Alaska Standards for Culturally Responsive Schools**
3 Credits
Offered As Demand Warrants
Guidelines, rationale and resources for adapting educational policies, programs and practices to better address the cultural well-being of the students and communities they serve. Content will be grounded in the Alaska Standards for Culturally Responsive Schools, including standards for students, teachers, curriculum, schools and communities.
**Cross-listed with** CCS F613.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F616 Education and Socioeconomic Change**
3 Credits
Offered Fall
An examination of social change processes, particularly in relation to the deliberate development of new institutions and resulting forms of new consciousness. Emphasis is placed on the role of education and schooling in this development dynamic.
**Cross-listed with** CCS F616.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F617 Physical Activity and Health Education for Elementary Teachers**
3 Credits
Offered Spring
Introduction and application of the relationship between physical fitness and good health in a school setting. Includes introducing students to fundamental movement activities and games. Includes incorporating health curriculum and injury prevention and safety into practices and policies, and issues specific to the Alaska context. Concurrent internship required.
**Prerequisites:** Admission to the Internship Year.
**Co-requisites:** ED F468; ED F469; ED F476; ED F688.
**Stacked with** ED F417.
**Lecture + Lab + Other:** 1.5 + 0 + 4.5

**ED F619 Cultural Atlases as a Pedagogical Strategy**
3 Credits
Offered Spring Even-numbered Years
The course provides an in-depth look at how teachers can utilize technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity.
**Prerequisites:** Graduate standing.
**Cross-listed with** CCS F619.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F620 Language, Literacy and Learning**
3 Credits
Offered Spring
This course examines the relationship among language, culture and mind to understand literacy. Specific areas of emphasis include literacy theory, literacy acquisition, orality, critical literacy, multi-modal literacies, media literacy and future literacies. The goal is the understand literacy as a cultural and cognitive phenomenon that informs praxis. Fieldwork is required.
**Lecture + Lab + Other:** 3 + 0 + 1

**ED F621 Cultural Aspects of Language Acquisition**
3 Credits
Offered As Demand Warrants
An expanded view of the ways in which individuals become socialized into particular patterns of first and second language and literacy. The ongoing acquisition of both oral and written language(s) from early childhood through adult life. Topics will include: the cultural dimensions of language development; the relationship between communication and culture; bilingualism; and the role of language in the transmission of sociocultural knowledge.
**Cross-listed with** LING F621.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F624 Foundations of Education in Alaska: From Segregation to Standards**
3 Credits
Offered Summer
Review the foundation of American and Alaska education and examine historical, political, social and cultural factors that impact today's schools. Examine how local, state and national laws and policies influence the teaching profession. Consider the role standards play in education, and identify ways to utilize assessment data to shape instruction.
**Prerequisites:** Admission to Internship Year; a laptop computer.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F625 Exceptional Learners and Child Development: Individual and Cultural Characteristics**
3 Credits
Offered Summer
Foundation for understanding, identifying and teaching to developmental abilities of children and early adolescents. Human development examined in context of cognition, personality, social behavior, language and physical development with focus on understanding and using cross-cultural influences specific to Alaska. Emphasis on development of children with exceptional abilities. Design, develop and modify curriculum and instruction to developmentally and culturally appropriate approaches. Theory is applied to practice in practicum.
**Prerequisites:** Admission to Internship Year.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F626 Teaching Reading, Writing and Language Arts**
3 Credits
Offered Summer
Examination of the nature and process of reading and writing for elementary students and focus on process of developing a language arts program. Includes acquisition and role of language in this process. Examination and evaluation of materials and methods of teaching language arts, including those used in some Alaska districts. Examination and evaluation of children's literature. Practicum with application of language arts concepts.
**Prerequisites:** Admission to Internship Year.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F630 Curriculum Development**
3 Credits
Offered Fall
Study of curriculum foundation. Examines types of curricular frameworks, including traditional and indigenous models. Current influences of district, state, national and international curriculum models are discussed. Curriculum design practice connects standards, goals and learning experiences to guide student learning. Fieldwork is required.
**Lecture + Lab + Other:** 3 + 0 + 1

**ED F631 Culture, Community and the Curriculum**
3 Credits
Offered As Demand Warrants
Salient issues involved with the development of effective programs of instruction in small schools, including foundational design, conceptual models, organizational strategies, technical skills, current issues and trends, and their implications and application to the environment of rural Alaska.
**Cross-listed with** CCS F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F637 Designing Social Science Research Overview**
2 Credits
Offered As Demand Warrants
Overview of designing social science research. Investigations into constructing and analyzing a variety of research designs and data collection methods for social science research. General procedures for conducting literature reviews. Includes overview of Institutional Review Board (IRB) policy and procedures. This course as the first (of six) of the series is intent on learning how to design research.
**Prerequisites:** ED F601, ED F603, or similar graduate level introductory research course.
**Lecture + Lab + Other:** 2 + 0 + 0

**ED F638 Designing Social Science Research in Depth**
2 Credits
Offered As Demand Warrants
In-depth learning of quantitative and/or qualitative within social science research. Investigations into constructing and analyzing research designs and data collection methods for social science research. Introductions to the software applications of Atlas.ti for qualitative analysis and SPSS for quantitative analysis. This course as the second of the series is intent on completing students' research design by looking ahead to data collection and refining all of the essential pieces such as problem statement, research questions, methodology and methods.
**Prerequisites:** ED F637.
**Lecture + Lab + Other:** 2 + 0 + 0

**ED F639 Supporting Multilingual Learners in the Elementary Classroom**
3 Credits
Offered As Demand Warrants
Participants will complete web-based modules investigating the history of and current teaching practices for supporting English Learners in the classroom. The history and contemporary context of supporting English learners in schools will be explored as well as ways to create positive learning environments and scaffolding instruction throughout content areas.
**Prerequisites:** Graduate level standing.
**Stacked with** ED F439.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F640 Gender and Education**
3 Credits
Offered As Demand Warrants
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender, patterns of access and achievements, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change.
**Stacked with** ED F440; WGS F440.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F647 Conducting Social Science Research Overview**
2 Credits
Offered As Demand Warrants
Data collection techniques for quantitative and/or qualitative methods. Investigations into collecting and synthesizing quantitative and/or qualitative data for use in social science research. Includes software applications of Atlas.ti for qualitative analysis and SPSS for quantitative analysis. This course as the third of six of the series moves to actual data collection techniques connected to students' social science research. Topics included are often not covered in many other courses such as how to create tools to gather the necessary data. Alignment with the methodology, research questions and design are built in through the series as the work here continues to build upon the courses prior.
**Prerequisites:** ED F638.
**Lecture + Lab + Other:** 2 + 0 + 0

**ED F648 Conducting Social Science Research in Depth**
2 Credits
Offered As Demand Warrants
In depth investigations into collecting and synthesizing quantitative and qualitative data for use in mixed methods research. Includes software applications of Atlas.ti for qualitative analysis and SPSS for quantitative analysis. This course as the fourth of six of the series is intent on completing the data collection by investigating psychometrics, looking ahead to data analysis and looking back for consistency with the methodology, research questions and research design.
**Prerequisites:** ED F647.
**Lecture + Lab + Other:** 2 + 0 + 0

**ED F649 Elementary Art Methods**
3 Credits
Offered As Demand Warrants
Methodologies of instruction and assessment in art education at the elementary level. Focus is on the knowledge and tools necessary to become excellent elementary art educators. Students will be expected to construct lessons reflecting theory and practice that are developmentally appropriate for elementary level students of all ages.
**Prerequisites:** Admission to K-12 Art post-baccalaureate licensure program or M Ed in Curriculum and Instruction option for post-baccalaureate students.
**Stacked with** ED F449.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F650 Multicultural Education And Design**
3 Credits
Offered Fall
Participants study professional and personal technology based topics relevant to various career fields in education, with emphasis on current events, emerging technologies and ethical considerations. Readings, research papers, and discussions lead to the development of an instructionally oriented technology proposal that includes an implementation plan and formal presentation.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F651 Analyzing Social Science Research**
2 Credits
Offered As Demand Warrants
Data analysis techniques for social science research. Investigations into qualitative coding and analysis and/or review of statistical analysis both univariate and multivariate within the context of social science research. Includes use of SPSS and Atlas.ti. This course as the fifth of six of the series moves to actual data analysis techniques for social science research. Topics included are specialized to support the research design, methodology and data collection efforts of the peer group.
**Prerequisites:** ED F648.
**Lecture + Lab + Other:** 2 + 0 + 0

**ED F652 Presenting Social Science Research Results**
2 Credits
Offered As Demand Warrants
Data presentation techniques for social science research. Investigations into presenting qualitative and/or statistical analysis results within the context of social science research. Includes use of SPSS and Atlas.ti. This course as the sixth and final of the series concludes the process with a focus on data presentation from a holistic perspective. Topics included are specialized to support the research design, methodology and data collection efforts of the peer group.
**Prerequisites:** ED F651.
**Lecture + Lab + Other:** 2 + 0 + 0

**ED F653 Instructional Design**
3 Credits
Offered Spring
Instructional design combines technology skills with application of learning theory to maximize the effectiveness of education. This course explores instructional design from a practical perspective. Students will acquire hands-on practice with a variety of computer-based tools while exploring instructional methods and principles of design.
**Prerequisite:** Admission to the Master of Education program.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F654 Digital Citizenship, Internet Legal Issues, Digital Copyright and Fair Use**
3 Credits
Offered Summer
An examination of critical elements of digital citizenship, a survey of contemporary legal issues, and an exploration of copyright, fair use, and intellectual property relevant to educators and instructional designers. Also available online via UAF eCampus.
**Prerequisites:** Admission to the Master of Education program.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F655 Online Pedagogy**
3 Credits
Offered Fall
A study of theory, tools and methods for teaching online courses. Topics include prominent learning theories, affordance of new technologies, strategies for assessment and techniques for classroom management in an online environment. Students will develop and articulate a personal philosophy of teaching and learning appropriate for the 21st Century.
**Prerequisite:** Admission to the Master of Education program.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F659 Multimedia Tools for Educators**
3 Credits
Offered Fall
Emerging technologies and software applications in education. The use of multimedia in designing teaching/learning experiences will be emphasized. Students will develop a multimedia classroom presentation and will demonstrate knowledge of Internet resources.
**Lecture + Lab + Other:** 1 + 6 + 0

**ED F660 Educational Administration in Cultural Perspective**
3 Credits
Offered As Demand Warrants
Issues related to the social organization and socio-political context of schools, administrative and institutional change processes and the changing role of administrators in education, using a cross-cultural framework for analysis.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F670 Developing Literacy: ECE-12**
3 Credits
Offered Fall
Explores literacy from early childhood through grade 12. Includes an emphasis on developmental aspects of literacy, underlying social and cognitive processes, cultural influences, and the pedagogical implications for teachers. Considers the needs of English language learners with respect to reading/literacy.
**Prerequisite:** LING F602.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F673 Literacy in the Content Area**
3 Credits
Offered Spring
Students will develop knowledge of strategies that support literacy in the content areas. Emphasis is on the interrelated processes of thinking, writing, reading, listening and speaking of students across languages, modes, and genres. Technology as a tool to enhance disciplinary literacies is explored. The role of teacher as researcher is addressed.
**Prerequisite:** ED F670.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F676 Emerging Instructional Modalities and Strategies**
3 Credits
Offered As Demand Warrants
The course provides students with the skills necessary to support student learning in a variety of pedagogical and technological environments. Students will study the theory, tools, and methods behind emerging instructional modalities and strategies: personalized, adaptive, blended, and hybrid learning; flipped classroom models; online course facilitation; accessibility; and classroom management.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F677 Digital Storytelling**
3 Credits
Offered Spring
This course examines the principles of storytelling in general and digital storytelling in particular, paying close attention to the use of digital storytelling to inform, persuade and entertain across a variety of social and cultural institutions. Elements of digital storytelling will be investigated and used to create original digital stories in a variety of media.
**Prerequisites:** Admission to the Master of Education program.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F678 Mathematics Methods and Curriculum Development**
3 Credits
Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of mathematical concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of mathematics unit. Concurrent internship required.
**Prerequisites:** Admission to the post-baccalaureate elementary licensure program; graduate standing.
**Stacked with** ED F478.
**Lecture + Lab + Other:** 2 + 0 + 8

**ED F681 Place-based Education**
3 Credits
Offered Spring
An examination of the relationship between local landscape and community and the development of human perception. Emphasis on the importance of the development of ecologically appropriate community-based educational programs in rural and urban schools. Priority placed on project-centered programs lending themselves to experimental learning opportunities. Includes literature review, discussion, curriculum exploration and design and on-site community exploration of active place-based educational programs.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F682 Rethinking Multicultural Education**
3 Credits
Offered Spring Odd-numbered Years
This multi-disciplinary course focuses on two parts: 1) critically analyze and reflect on current multicultural education issues at the national, state, and local level; 2) translate/apply what is learned to individual classrooms, schools, school districts and beyond. Fieldwork required.
**Prerequisite:** Graduate standing.
**Crosslisted with** CCS F682.
**Lecture + Lab + Other:** 3 + 0 + 1

**ED F683 Instruction and Assessment in Literacy**
3 Credits
Offered Spring
Examines standardized assessments and how they are used in schools, with emphasis on the needs of English Language Learners. Formal and informal assessments are examined and evaluated. The links between assessment and instruction and the implications for teachers, families, and communities are explored. Students will conduct action research around assessment.
**Prerequisites:** ED F673.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F685 Children as Cultural Change Agents**
3 Credits
Offered As Demand Warrants
This course aims at examining, promoting and engaging children as active agents of culture and change. Notions of "children's agency" will be considered in light of Western and non-Western/Indigenous understandings, participatory research methodologies, childhood embodiment, children's rights and ethics, new media technologies, and education for sustainability and social change.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F686 Assessment and Testing in Education**
3 Credits
Offered As Demand Warrants
This course provides a foundational knowledge of assessment in K-12 public schools, including interpretation and analysis of multiple and varied assessments. Common national and international assessments are examined. Assessment design practice connects standards, goals, instruction, and learning experiences with varied assessment approaches to document student learning and support curricular decisions.
**Prerequisites:** Admission to the internship year.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F687 Alaska: Resources, People and Perspectives**
3 Credits
Offered As Demand Warrants
Introduces a broad range of essential Alaska information for educators including information on history, geography, literature, economics and politics.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F688 Science Methods and Curriculum Development**
3 Credits
Offered Spring
Study and application in the classroom of the best practices from research-based strategies for the teaching and learning of science concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of science unit. Classroom internship required.
**Prerequisites:** Admission to the post-baccalaureate elementary licensure program; graduate standing.
**Stacked with** ED F479.
**Lecture + Lab + Other:** 2.5 + 0 + 4

**ED F689 Proseminar in Applied Educational Research**
3 Credits
Offered As Demand Warrants
Application of social science and educational research methods to the description and analysis of the student's research topic. The research topic chosen will be the substance of each student's literature review and synthesizing paper. Conceptually integrated with ED F698 (to be taken a subsequent semester), where the final master's project is completed. Completion and approval of the synthesizing paper, by the committee, is required for successful completion of this course.
**Special Notes:** Acceptance into an MEd degree program; completion of all required core courses; at least nine credits in the area of concentration.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F690 Seminar in Cross-Cultural Studies**
3 Credits
Offered Fall and Spring
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program.
**Prerequisites:** Advancement to candidacy; permission of student's graduate committee.
**Cross-listed with** CCS F690; ANL F690; RD F690.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F691 Contemporary Issues in Education**
3 Credits
Offered As Demand Warrants
A critical overview of the current status of the field of education. Students will participate in a thorough investigation of select problems, trends and issues that presently characterize the institution of public education. Seminar sessions will focus on student research regarding the development, present impact and potential implications of each topic discussed.
**Lecture + Lab + Other:** 3 + 0 + 0

**ED F692 Seminar**
1-6 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ED F692P Seminar**
1-6 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**ED F698 Non-thesis Research/Project**
1-9 Credits
Offered Fall, Spring and Summer
**Lecture + Lab + Other:** 0 + 0 + 0

**ED F699 Thesis**
1-12 Credits
Offered Fall, Spring and Summer
**Lecture + Lab + Other:** 0 + 0 + 0

# Education: Secondary Education (EDSC)

School of Education (https://www.uaf.edu/soe/)
Secondary Education (https://www.uaf.edu/soe/academics.php)
907-474-7341

**EDSC F110 Becoming a Middle/High School Teacher**
1 Credit
Offered Fall and Spring
This course familiarizes students with requirements for becoming a middle or high school teacher. Advisors from the School of Education, guest presenters from area school districts address issues pertaining to licensure and teaching. Current issues in secondary teaching are addressed. Participation in a secondary classroom is required.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDSC F205 Introduction to Secondary Education**
3 Credits
Offered Spring
Introduction to the profession of teaching in middle/high school. Incorporates historical, cultural and sociological factors, with attention to the Alaska context influencing current practice. Students will have the opportunity to explore current issues and reform facing educators today and to observe master teachers in the field.
**Prerequisites:** WRTG F111X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0.5

**EDSC F407 Developing Literacy in the Content Areas**
3 Credits
Offered Fall and Summer
Preparation for secondary teachers to integrate listening, speaking, reading, writing, viewing and meaning-making strategies into a content area of the classroom. Students examine and evaluate learning theories related to literacy development and varied methods of instruction and assessment to help design and develop an appropriate pedagogical model for teaching.
**Recommended:** Completion of a freshman academic writing course, EDSC F205 or EDSC F415, and junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F414 Learning, Development and Special Needs Instruction**
3 Credits
Offered As Demand Warrants
Survey of learning theory, adolescent development and special needs instruction. Attention will be given to the cognitive, social and moral theories of development, and to current theories of learning. Consideration will be given to cultural and individual differences among learners including those with special needs. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course.
**Prerequisites:** WRTG F111X; junior standing or above.
**Stacked with** EDSC F614.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F415 Foundations of Modern Educational Practice**
3 Credits
Offered Fall and Summer
Historical, political, sociological and curricular foundations of secondary education in the U.S. with particular attention to Alaska. For pre-service teachers to understand and reflect on the teaching profession at the secondary level and to explore current issues and controversies confronting education at national, state and local levels.
**Prerequisites:** WRTG F111X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F431 Secondary Instruction and Assessment in the Content Area**
3 Credits
Offered As Demand Warrants
Methodologies of instruction and assessment in the candidate's specific content area. Course is taught by content specialists. Discusses current issues, methodologies and teaching strategies specific to the various disciplines. A maximum of nine credits may be earned.
**Prerequisites:** Admission to the secondary post-baccalaureate licensure program.
**Stacked with** EDSC F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F432 English/Language Arts Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in English/language arts. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to English/language arts.
**Prerequisites:** Admission to the Internship year.
**Stacked with** EDSC F632.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F433 Mathematics Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in mathematics. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies and practical application lessons for teaching mathematics.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F633.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F434 Science Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in science. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, inquiry-based lessons, laboratory experiences and field trips for teaching science.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F634.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F435 Social Studies Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in social studies. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, project-based activities and community-as-laboratory experiences for teaching social studies.
**Prerequisites:** Admission to the Internship year.
**Stacked with** EDSC F635.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F436 Art Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in art. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to arts.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F636.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F437 World Language Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in world languages. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, and current application of teaching strategies and assessment specific to world languages.
**Prerequisites:** Admission to the Internship year.
**Stacked with** EDSC F637.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F442 Technology Applications in Education I**
1 Credit
Offered Fall
Focuses on instruction in educational technology and applications as a resource for the delivery of secondary classroom instruction to enhance student learning. Introduces students to technology tools to create, implement, and assess instructional material in a variety of media relative to International Society for Technology in Education (ISTE) Standards.
**Prerequisites:** Admission to the Internship year.
**Stacked with** EDSC F642.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDSC F443 Technology Application in Education II**
2 Credits
Offered Spring
Facilitates students' use of technology tools to create and implement instructional material in a variety of media to support instruction and assess learning. Participants will develop an electronic portfolio that demonstrates professional development and achievement in their student teaching relative to International Society for Technology in Education (ISTE) Standards.
**Prerequisites:** Successful completion of EDSC F442.
**Stacked with** EDSC F643.
**Lecture + Lab + Other:** 2 + 0 + 0

**EDSC F457 Multicultural Education and School-community Relations**
3 Credits
Offered Spring
Through a distinct Alaska lens, focuses on multicultural education and development of positive school-community relationships. Encourages pre-service educators to identify their own identity, philosophy and culture, and to value students' identities and cultures as they instruct students. Helps educators clarify the value and impact of diversity on learning and classrooms.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F657.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F458 Classroom Organization and Management**
3 Credits
Offered Fall
Focus on establishment of a positive learning environment, development of a successful discipline plan consistent with an educator's philosophy of education and a review of the major discipline models. Candidates will examine the role that factors such as culture, gender, interest, ability and exceptionality play in student's behavior. Techniques to maintain positive student-teacher interactions in the classroom and establish a positive relationship with parents. Developing strategies to incorporate local knowledge and community culture in to classroom practice. Field experience required.
**Prerequisites:** WRTG F111X; junior standing or above.
**Recommended:** Completion of EDSC F205 or EDSC F415 prior to enrollment in this course.
**Stacked with** EDSC F658.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F471 Secondary Teaching: School Internship I and Seminar**
3 Credits
Offered Fall
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.
**Prerequisites:** Admission to secondary post-baccalaureate licensure program.
**Stacked with** EDSC F671.
**Lecture + Lab + Other:** 1 + 3 + 15

**EDSC F472 Secondary Teaching: School Internship II and Seminar**
3-9 Credits
Offered Spring
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. Credits may be added upon completion of designated special projects developed by students and faculty. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.
**Prerequisites:** COJO F131X, COJO F141X; admission to the secondary post-baccalaureate licensure program.
**Stacked with** EDSC F672.
**Lecture + Lab + Other:** 1 + 6 + 29

**EDSC F614 Learning, Development and Special Needs Instruction**
3 Credits
Offered As Demand Warrants
Survey of learning theory, adolescent development and special needs instruction. Attention will be given to the cognitive, social and moral theories of development, and to current theories of learning. Consideration will be given to cultural and individual differences among learners including those with special needs. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course.
**Stacked with** EDSC F414.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F631 Secondary Instruction and Assessment in the Content Area**
3 Credits
Offered As Demand Warrants
Methodologies of instruction and assessment in the candidate's specific content area. Course is taught by content specialists. Discusses current issues, methodologies and teaching strategies specific to the various disciplines. A maximum of nine credits may be earned.
**Prerequisites:** Admission to the secondary post-baccalaureate licensure program.
**Stacked with** EDSC F431.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F632 English/Language Arts Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in English/language arts. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to English/language arts.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F432.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F633 Mathematics Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in mathematics. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies and practical application lessons for teaching mathematics.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F433.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F634 Science Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in science. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, inquiry-based lessons, laboratory experiences and field trips for teaching science.
**Prerequisites:** Admission to the Internship year.
**Stacked with** EDSC F434.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F635 Social Studies Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in social studies. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, project-based activities and community-as-laboratory experiences for teaching social studies.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F435.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F636 Art Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in art. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to arts.
**Prerequisites:** Admission to Internship year.
**Stacked with** EDSC F436.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F637 World Language Secondary Instruction and Assessment**
3 Credits
Offered Fall
Methodologies of instruction and assessment in world languages. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, and current application of teaching strategies and assessment specific to world languages.
**Prerequisites:** Admission to the Internship year.
**Stacked with** EDSC F437.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F642 Technology Applications in Education I**
1 Credit
Offered Fall
Focuses on instruction in educational technology and applications as a resource for the delivery of secondary classroom instruction to enhance student learning. Introduces students to technology tools to create, implement, and assess instructional material in a variety of media relative to International Society for Technology in Education (ISTE) Standards.
**Prerequisites:** Admission to the Internship year.
**Stacked with** EDSC F442.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDSC F643 Technology Application in Education II**
2 Credits
Offered Spring
Facilitates students' use of technology tools to create and implement instructional material in a variety of media to support instruction and assess learning. Participants will develop an electronic portfolio that demonstrates professional development and achievement in their student teaching relative to International Society for Technology in Education (ISTE) Standards.
**Prerequisites:** Successful completion of EDSC F642.
**Stacked with** EDSC F443.
**Lecture + Lab + Other:** 2 + 0 + 0

**EDSC F657 Multicultural Education and School-community Relations**
3 Credits
Offered Spring
Through a distinct Alaska lens, focuses on multicultural education and development of positive school-community relationships. Encourages pre-service educators to identify their own identity, philosophy and culture, and to value students' identities and cultures as they instruct students. Helps educators clarify the value and impact of diversity on learning and classrooms.
**Prerequisites:** Admitted to the Internship year.
**Stacked with** EDSC F457.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F658 Classroom Organization and Management**
3 Credits
Offered Fall
Focus on establishment of a positive learning environment, development of a successful discipline plan consistent with an educator's philosophy of education and a review of the major discipline models. Candidates will examine the role that factors such as culture, gender, interest, ability and exceptionality play in student's behavior. Techniques to maintain positive student-teacher interactions in the classroom and establish a positive relationship with parents. Developing strategies to incorporate local knowledge and community culture in to classroom practice. Field experience required. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course.
**Stacked with** EDSC F458.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSC F671 Secondary Teaching: School Internship I and Seminar**
3 Credits
Offered Fall
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.
**Prerequisites:** Admission to secondary post-baccalaureate licensure program.
**Stacked with** EDSC F471.
**Lecture + Lab + Other:** 1 + 3 + 15

**EDSC F672 Secondary Teaching: School Internship II and Seminar**
3-9 Credits
Offered Spring
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. Credits may be added upon completion of designated special projects developed by students and faculty. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work.
**Prerequisites:** COJO F131X, COJO F141X; admission to the secondary post-baccalaureate licensure program.
**Stacked with** EDSC F472.
**Lecture + Lab + Other:** 1 + 6 + 29

# Education: Special Education (EDSE)

School of Education (https://www.uaf.edu/soe/)
Special Education Program (https://www.uaf.edu/soe/academics.php)
907-474-7341

**EDSE F316 Introduction to Special Education for Elementary Classroom Teachers**
3 Credits
Offered Fall and Spring
Course provides introduction to special education for elementary teachers. It focuses on understanding concepts, strategies and issues identifying and supporting needs of students who experience disabilities. Course includes review of all special education categorical disabilities, developmental disabilities and laws. Fieldwork in special education classroom or inclusive general elementary classroom required.
**Prerequisites:** ED F201.
**Lecture + Lab + Other:** 2.5 + 0 + 1

**EDSE F320 Adapting and Accommodating Instructions for Students with Disabilities**
3 Credits
Offered Fall and Spring
Methods of instruction and strategies for addressing the needs of students with mild learning and behavior problems. A theoretical basis for selecting approaches is presented along with practical strategies that can be used in the classroom. Field experience required.
**Prerequisites:** ED F201; EDSE F316.
**Lecture + Lab + Other:** 2.5 + 0 + 1

**EDSE F410 Assessment of Students with Exceptionalities**
3 Credits
Offered Fall
Techniques and methods used for assessing students with disabilities. Focuses on the purpose of assessment, testing terminology and statistics, and administration and interpretation of formal and informal assessment procedures. Address assessment issues in all Alaskan communities. Field experience required.
**Prerequisites:** ED F201; Praxis 1; EDSE F320, EDSE F422, or EDSE F482.
**Stacked with** EDSE F610.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F412 Curriculum, Management and Strategies I: Low Incidence**
3 Credits
Offered Spring
Provides understanding of best practice strategies for supporting students with low incidence disabilities in culturally responsive ways. Includes development, implementation and evaluation of Individual Education Programs (IEPs), Behavior Intervention Plans (BIPs), and Transition Plans for students with intensive needs. Field experience required.
**Prerequisites:** ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
**Stacked with** EDSE F612.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F422 Curriculum, Management and Strategies II: High Incidence**
3 Credits
Offered Fall, Spring and Summer
Provides in-depth understanding of best practice strategies for supporting students with high incidence disabilities. A theoretical basis for selecting approaches is presented along with practical strategies of methods of instruction and classroom management for addressing the needs of students. Development, implementation, support and evaluation of Individual Education Program (IEP) plan for students with high incidence disabilities as well as classroom management techniques and plans developed for inclusion of high incidence disabilities in culturally responsive ways. Field experience and research are required.
**Stacked with** EDSE F622.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F425 Teaching Mathematics to Special Learners**
3 Credits
Offered Fall
Provides assessment and diverse instructional strategies in mathematics for teachers of students with disabilities. Focuses on standards-based instruction, explicit instruction, curriculum-based assessments and preparation of students for high stakes testing, as well as consumer math for special needs learners who need to develop functional skills. Field experience required.
**Prerequisites:** ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
**Stacked with** EDSE F625.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F432 Special Education Law: Principles and Practices**
3 Credits
Offered Summer
Examines three federal laws that form the foundation of disability law: Individuals with Disabilities Education Act (IDEA) 2004; Section 504 of the Rehabilitation Act of 1973; and the Americans with Disabilities Act. Focuses on substantive principles that underlie procedural requirements including due process issues, case law analysis, policy changes.
**Prerequisites:** ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
**Stacked with** EDSE F632.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSE F442 Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions**
3 Credits
Offered Summer
Review functional behavioral assessments, development of behavior plans, evaluation of sensory issues, use of social stories, social skills and life skills instruction to assist inclusive practices of students with autism spectrum disorders and other developmental disabilities. Field experience required.
**Prerequisites:** ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
**Stacked with** EDSE F642.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F448 Understanding FASD: Diagnosis, Intervention and Strategies**
3 Credits
Offered Spring and Summer
This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting.
**Cross-listed with** PSY F448.
**Stacked with** EDSE F648; PSY F648.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSE F477 English Language Arts Assessment, Curriculum and Strategies for Special Learners**
3 Credits
Offered Spring
Provides in-depth review and analysis of current research on language and English Language Arts (reading, writing and spelling) acquisition, assessment and intervention. Emphasizes the use of evidence-based practices. Identifies the link between language and literacy development. Considers academic, cultural and linguistic diversity. Field experience required.
**Prerequisites:** ED F201; Praxis I; EDSE F320, EDSE F422, or EDSE F482.
**Stacked with** EDSE F677.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F478 Special Education Clinical Practice: Initial**
3 Credits
Offered Fall, Spring and Summer
Initial licensure candidates only, must be completed before EDSE F680. Part-time fieldwork experience (minimum 120 hours) with individuals who have disabilities in approved K-12 public schools. Includes immersion in special education planning and teaching under the direction of a supervising teacher and university supervisor, regularly scheduled seminars included.
**Prerequisites:** 18 hours of special education coursework.
**Stacked with** EDSE F678.
**Lecture + Lab + Other:** 3 + 0 + 20

**EDSE F482 Inclusive Classrooms for All Children**
3 Credits
Offered Summer
An in-depth understanding of concepts, strategies and issues that surround supporting the needs of students who experience disabilities in the general education classroom. Field experience required.
**Prerequisites:** ED F201.
**Special Notes:** Elementary Education students are required to submit Praxis I scores to School of Education prior to enrolling in EDSE F482.
**Lecture + Lab + Other:** 2.5 + 0 + 1

**EDSE F605 Early Childhood Special Education**
3 Credits
Offered Fall Odd-numbered Years
Survey of philosophical, legal, and programmatic foundations of early childhood special education; characteristics of young children with disabilities; strategies to support young children with disabilities in inclusive settings; development, implementation, and evaluation of Individual Family Services Program (IFSP) plans in culturally diverse settings. Field experience required.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F610 Assessment of Students with Exceptionalities**
3 Credits
Offered Fall
Techniques and methods used for assessing students with disabilities. Focuses on the purpose of assessment, testing terminology and statistics, and administration and interpretation of formal and informal assessment procedures. Address assessment issues in all Alaskan communities. Field experience required.
**Prerequisites:** Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
**Stacked with** EDSE F410.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F612 Curriculum, Management and Strategies I: Low Incidence**
3 Credits
Offered Spring
Provides understanding of best practice strategies for supporting students with low incidence disabilities in culturally responsive ways. Includes development, implementation and evaluation of Individual Education Programs (IEPs), Behavior Intervention Plans (BIPs), and Transition Plans for students with intensive needs. Field experience required.
**Prerequisites:** Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
**Stacked with** EDSE F412.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F622 Curriculum, Management and Strategies II: High Incidence**
3 Credits
Offered Fall, Spring and Summer
Provides in-depth understanding of best practice strategies supporting students with high incidence disabilities. A theoretical basis for selecting approaches is presented along with practical strategies of methods of instruction and classroom management for addressing the needs of students. Development, implementation, support and evaluation of Individual Education Program (IEP) plan for students with high incidence disabilities as well as classroom management techniques and plans developed for inclusion of high incidence disabilities in culturally responsive ways. Field and research experience required.
**Stacked with** EDSE F422.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F624 Social/Emotional Development, Assessment and Intervention**
3 Credits
Offered Spring Even-numbered Years
Review current research on typical and atypical social/emotional development within a cultural context. Emphasizes the use of research-based practices in assessment and intervention. Explores academic and cultural diversity in the social/emotional growth of students with learning differences. Field experience required.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F625 Teaching Mathematics to Special Learners**
3 Credits
Offered Fall
Provides assessment and diverse instructional strategies in mathematics for teachers of students with disabilities. Focuses on standards-based instruction, explicit instruction, curriculum-based assessments and preparation of students for high stakes testing, as well as consumer math for special needs learners who need to develop functional skills. Field experience required.
**Prerequisites:** Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
**Stacked with** EDSE F425.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F632 Special Education Law: Principles and Practices**
3 Credits
Offered Summer
Examines three federal laws that form the foundation of disability law: Individuals with Disabilities Education Act (IDEA) 2004; Section 504 of the Rehabilitation Act of 1973; and the Americans with Disabilities Act. Focuses on substantive principles that underlie procedural requirements including due process issues, case law analysis, policy changes.
**Prerequisites:** Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
**Stacked with** EDSE F432.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSE F633 Autism and Other Developmental Disabilities: Communication and Social Interventions**
3 Credits
Offered Spring Odd-numbered Years
Current methods for assessment and intervention of students with autism and other developmental disabilities Current issues and trends affecting educational practices are analyzed. Case study method used to make assessment and instructional decisions for pro-social solutions. Parent communication is emphasized. Field experience required.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F640 Culturally Responsive Collaboration: Working with Parents, Colleagues and Paraprofessionals**
3 Credits
Offered Spring Even-numbered Years
How to coordinate with regular education teachers, paraprofessionals, speech language therapists, Alaska Native Education Liaisons, coaches, principals, counselors and outside agencies in culturally responsive ways. Field experience required.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F642 Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions**
3 Credits
Offered Summer
Review functional behavioral assessments, development of behavior plans, evaluation of sensory issues, use of social stories, social skills and life skills instruction to assist inclusive practices of students with autism spectrum disorders and other developmental disabilities. Field experience required.
**Prerequisites:** Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
**Stacked with** EDSE F442.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F648 Understanding FASD: Diagnosis, Intervention and Strategies**
3 Credits
Offered Spring and Summer
This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Research projects required.
**Prerequisites:** Graduate standing.
**Cross-listed with** PSY F648.
**Stacked with** EDSE F448; PSY F448.
**Lecture + Lab + Other:** 3 + 0 + 0

**EDSE F677 English Language Arts Assessment, Curriculum and Strategies for Special Learners**
3 Credits
Offered Spring
Provides in-depth review and analysis of current research on language and English Language Arts (reading, writing and spelling) acquisition, assessment and intervention. Emphasizes the use of evidence-based practices. Identifies the link between language and literacy development. Considers academic, cultural and linguistic diversity. Field experience required.
**Prerequisites:** Praxis I, and to have successfully completed an introductory-level course on special education, experience with students who have disabilities, and an understanding of childhood development.
**Stacked with** EDSE F477.
**Lecture + Lab + Other:** 3 + 0 + 1

**EDSE F678 Special Education Clinical Practice: Initial**
3 Credits
Offered Fall, Spring and Summer
Initial licensure candidates only, must be completed before EDSE F680. Part-time fieldwork experience (minimum 120 hours) with individuals who have disabilities in approved K-12 public schools. Includes immersion in special education planning and teaching under the direction of a supervising teacher and university supervisor, regularly scheduled seminars included.
**Prerequisites:** Successful completion of 18 approved credits in graduate-level special education course work.
**Stacked with** EDSE F478.
**Lecture + Lab + Other:** 3 + 0 + 20

**EDSE F680 Special Education Clinical Practice**
3 Credits
Offered Fall and Spring
For certified and initial licensure special education candidates. Full time field experience with individuals who have disabilities in approved K-12 public schools and affiliated facilities. Fieldwork assignments vary across areas of teaching specialization. Candidates assume full classroom responsibilities for planning, instruction and assessment under the direction of site and university supervisors. Includes regular seminars.
**Prerequisites:** Successful completion of 18 approved credits in graduate level special education course work; EDSE F678 (for initial licensure students only).
**Lecture + Lab + Other:** 1 + 0 + 35

# Educator: Para-professional (EDPA)

**College of Rural and Community Development**
Department of Alaska Native Studies and Rural Development (https://www.uaf.edu/dansrd/)
907-474-6528 Toll-free 1-866-478-2721

**EDPA F110 Introduction to Para-professional Education**
2 Credits
The roles and responsibilities of the para-professional educator, including requirements of confidentiality, school policies and procedures, and rights and responsibilities, of parents students and school staff.
**Recommended:** ABUS F170; DEVS F104; WRTG F111X or above.
**Lecture + Lab + Other:** 2 + 0 + 0

**EDPA F120 Classroom Management**
2 Credits
Offered As Demand Warrants
Comprehensive course to observe and document a variety of strategies for effective classroom organization, management and communication. Students will discuss and reflect upon the relationship between classroom management and student learning and learn strategies for establishing a positive classroom environment.
**Recommended:** ABUS F170; DEVS F104; WRTG F111X or above.
**Lecture + Lab + Other:** 2 + 0 + 0

**EDPA F130 Differentiating Instruction**
2 Credits
Offered As Demand Warrants
Different modalities of learning and teaching strategies necessary for meeting individual learners' needs. Course may be repeated once for credit.
**Recommended:** ABUS F170; DEVS F104; WRTG F111X or above.
**Lecture + Lab + Other:** 2 + 0 + 0

**EDPA F140 Developing Children as Writers**
1 Credit
Offered As Demand Warrants
How to assist teachers in assessing student writing skills and developing children as writers. Para-professionals will become skilled in linking writing to the culture and environment of the child. Course may be repeated twice for credit.
**Recommended:** ABUS F170; DEVS F104; WRTG F111X or above.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDPA F150 Developing Children as Readers**
1 Credit
Offered As Demand Warrants
Developing skills necessary for assisting teachers in using best practices in teaching reading in the elementary classroom. Para-professionals will become skilled in linking reading to the culture and environment of the child. Course may be repeated twice for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDPA F160 Primary Math Methods**
1 Credit
Offered As Demand Warrants
Developing the skills necessary for assisting teachers in using best practices in teaching math in the primary classroom. Para-professionals will become skilled in linking mathematics to the culture and environment of the child. Course may be repeated twice for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDPA F170 Upper Elementary Math Methods**
1 Credit
Offered As Demand Warrants
Developing the skills necessary for assisting teachers in using best practices in teaching math in the elementary classroom. Para-professionals will become skilled in linking mathematics to the culture and environment of the child. Course may be repeated three times for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDPA F190 Integrating Local Knowledge into the Curriculum**
1 Credit
Offered As Demand Warrants
Learn the prehistory, history and culture of the students' communities and regions, and strategies for integrating this knowledge into the school curriculum. Course may be repeated three times for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDPA F199 Practicum I**
1 Credit
Offered As Demand Warrants
Individualized work experience. The student will work as a para-professional in the classroom with a teacher or para-professional over a sustained period of at least three weeks. Course may be repeated once for credit.
**Recommended:** EDPA F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDPA F210 Technology in the Classroom**
1 Credit
Offered As Demand Warrants
Comprehensive introduction to various ways that technology can be utilized in the classroom. Students will be exposed to practical computer use such as exploring software, electronic grade books, lesson plans, graphics, digital photography, internet use and Internet safety. Course may be repeated once for credit.
**Prerequisites:** CIOS F100.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**EDPA F250 Current Topics for Educators**
1 Credit
Offered As Demand Warrants
Focus on in-service training offered through school districts to update and train para-professionals and teachers on the use of district curriculum, policies, procedures, etc. Course may be repeated three times for credit.
**Lecture + Lab + Other:** 1 + 0 + 0

**EDPA F299 Practicum II**
1 Credit
Offered As Demand Warrants
Individualized work experience. The student will work as a para-professional in the classroom with a teacher or a para-professional over a sustained period of at least three weeks. Course may be repeated once for credit.
**Recommended:** EDPA F110.
**Lecture + Lab + Other:** 1 + 0 + 0

# Electrical Engineering (EE)

**College of Engineering and Mines**
Department of Electrical and Computer Engineering (https://cem.uaf.edu/ece/)
907-474-7137

**EE F102 Introduction to Electrical and Computer Engineering**
3 Credits
Offered Spring
Basic modern devices, concepts, technical skills and instruments of electrical engineering.
**Prerequisite:** MATH F251X (may be taken concurrently).
**Lecture + Lab + Other:** 2 + 3 + 0

**EE F203 Electric Circuits**
4 Credits
Offered Fall
Introduces DC and AC circuit analysis techniques including transient analysis, steady state analysis, three phase circuits and ideal amplifiers.
**Prerequisites:** MATH F251X; MATH F252X (may be taken concurrently); EE F102.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F243 Digital Systems Design**
4 Credits
Offered Fall
Fundamentals and practices of digital design. Analysis, design and implementation of combinational and sequential logic. CMOS implementation fundamentals. Basic building components of microprocessor architecture – FSM, ALU, registers, memories, counters, control. Design using schematic capture and hardware description language techniques; practical implementation using FPGA devices and discrete components.
**Prerequisites:** EE F102; ES F201 or CS F201(may be taken concurrently).
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F253 Circuit Theory**
3 Credits
Offered Spring
Transfer functions, passive and active filters, Laplace transforms and applications, introduction to Fourier series and transforms and two port networks.
**Prerequisites:** EE F203; ES F201 or CS F201; MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F301 Analytical Methods for Electrical and Computer Engineers**
3 Credits
Offered Fall
Discipline-specific analytical methods used in the electrical and computer engineering core subjects. Topics include matrix algebra, eigenanalysis, vector spaces, complex analysis, discrete structures, and probability and statistics with examples from the electrical and computer engineering fields.
**Prerequisites:** MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F303 Electric Power Systems and Machines**
4 Credits
Offered Fall
Introduction to electromechanical energy conversion principles, phasors and complex power, characteristics and applications of power transformers, network equations, synchronous machines, induction machines, DC machines, symmetrical components, and sequence networks.
**Prerequisites:** EE F203.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F311 Engineering Electromagnetics I**
3 Credits
Offered Fall
Electromagnetic theory and applications. Static electric fields in free space and material media; steady current systems and associated magnetic effects. Includes electrostatics, magnetostatics, Maxwell's equations, electromagnetic wave propagation, and transmission lines. Application of the wave equations to engineering systems.
**Prerequisites:** EE F253; MATH F302 (may be taken concurrently); MATH F253X; PHYS F212X.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F331 High-frequency Lab**
1 Credit
Offered Fall
Laboratory experiments in transmission lines, impedances, bridges, scattering parameters, hybrids and waveguides.
**Prerequisite:** EE F311.
**Lecture + Lab + Other:** 0 + 3 + 0

**EE F333 Electronic Devices**
4 Credits
Offered Fall
An introduction to the properties of semiconductors and the analysis of electronics and electrical devices including diodes, field effect transistors (FETs), bipolar junction transistors (BJTs). Large signal and small signal analysis techniques, and common electrical circuit topologies.
**Prerequisites:** EE F253; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F334 Electronic Circuit Design**
4 Credits
Offered Spring
Application of semiconductor devices in circuit design in computation, automatic control and communication.
**Prerequisites:** EE F333.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F341 Digital and Computer Analysis and Design**
4 Credits
Offered Fall
Modular structure of computer systems. Analysis, design and implementation of combinational and sequential logic machines. Introduction to microprocessor architecture and microprocessor programming. Design with traditional and hardware description language techniques.
**Prerequisites:** CS F201; one year of college physics.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F354 Engineering Signal Analysis**
3 Credits
Offered Fall
Analog signals and Fourier transformations. Discrete time signals and DFT. Linear and time-invariant systems. Probability theory and random variables. Random signals and noise.
**Prerequisites:** EE F253; MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F404 Electric Power Systems Analysis**
4 Credits
Offered Spring
Introduction to electric power systems; phasors; complex power; network equations; power transformers; transmission line parameters; transmission lines steady-state operation; power flow with computer-aided analysis; power distribution and smart grids.
**Prerequisites:** EE F303.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F406 Electric Power Protection and Control Systems**
4 Credits
Offered Fall
Deregulation, economic operation of power systems, symmetrical and unsymmetrical faults, power system protection, dynamic power system stability, system controls, and computer-aided fault and transient stability analysis.
**Prerequisites:** EE F303, EE F404.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F408 Power Electronics Design**
4 Credits
Offered Spring Odd-numbered Years
Analysis and design of power electronic conversion, control, and drive systems. Topics will include the theory and application of rectifiers, DC-DC converters, inverters, switching power supplies and variable-frequency drives. Laboratory exercises include simulation using PSpice and construction, measurement, and analysis of prototype power electronic circuits.
**Prerequisites:** EE F303; EE F333; EE F354.
**Stacked with** EE F608.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F412 Engineering Electromagnetics II**
3 Credits
Offered Spring
Use of Maxwell's equations in analysis of plane wave propagation, wave reflection, radiation and antennas, waveguides, cavity resonators, transmission lines and radio propagation.
**Prerequisites:** EE F311; EE F331; MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F432 Electromagnetics Laboratory**
1 Credit
Offered Spring
Laboratory experiments with microwave sources, propagating electromagnetic waves, waveguides and antennas. Design, construction and testing of antenna systems.
**Corequisites:** EE F412.
**Lecture + Lab + Other:** 0 + 3 + 0

**EE F443 Computer Engineering Analysis and Design**
4 Credits
Offered Spring
Advanced digital design, and principles and practices of computer engineering. Analysis and design of computer architecture and organization. Digital signal processing techniques and hardware. Microprocessor operation, control and interfacing. Design with traditional and hardware description language techniques. Implementation with both medium and large scale integrated chips and programmable logic devices.
**Prerequisites:** EE F243.
**Special Notes:** The syllabus contains a more detailed description for the students.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F444 Embedded Systems Design**
4 Credits
Offered Spring
Issues surrounding design and implementation of microcontroller-based embedded systems. Topics include hardware architecture and glue logic, embedded programs design, analysis, and optimization, hardware/firmware partitioning, firmware architecture and design. Includes laboratory exercises using evaluation board and a complete embedded system design project. Emphasis on robust designs, energy efficiency and proper documentation.
**Prerequisites:** EE F243; ES F201 or CS F201.
**Recommended:** EE F443.
**Stacked with** EE F645.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F451 Digital Signal Processing**
4 Credits
Offered Fall
Time, frequency and Z-transformation domain analysis of discrete time systems and signals; discrete Fourier transformation (DFT) and FFT implementations; FIR/IIR filter design and implementation techniques; discrete time random signals and noise analysis; quantization and round off errors; and spectral analysis. Includes applications to medical, speech, electromagnetic and acoustic signal analysis.
**Prerequisites:** EE F354.
**Stacked with** EE F651.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F461 Communication Systems and Networks**
4 Credits
Offered Spring
Foundational information for data communications and computer networking. Data communications, network models, analog and digital signals, transmission media, network switching, wired and wireless networks, multimedia support, and network security considerations.
**Prerequisites:** EE F354.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F463 Communication Networks**
3 Credits
Offered Spring
Design of voice and data networks. Traffic measurement, network topology, circuit sizing and network performance measures. Tariffs and economic considerations. Cost-performance relationships. Cannot take both EE F463 and EE F464 for credit.
**Prerequisites:** EE F354 and Senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F464 Advanced Communications Systems**
4 Credits
Offered As Demand Warrants
Advanced communications systems topics: analog and digital modulation techniques, spectrum power and bandwidth utilization, system noise, multiplexing techniques, signal regeneration and recovery, data encryption and compression, signal processing, antennas and communications systems components. Special emphasis on emergent digital communications systems in space and aerospace applications.
**Prerequisites:** EE F461.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F471 Automatic Control**
3 Credits
Offered Spring
Linear system representation by transfer functions, signal flow graphics and state equations. Feedback, time and frequency response of linear systems. Stability analysis by Routh-Hurwitz criterion and frequency domain methods. Specifications of higher order linear systems. System design and compensation.
**Prerequisites:** EE F253; MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F481 Electrical and Computer Engineering Design I**
1 Credit
Offered Fall
Team-oriented design project with emphasis on practical electrical and computer engineering systems and components, which integrates engineering knowledge and skills that students have acquired. Design process principles, including project management, economics and ethics will be introduced in lecture. Each design team will generate and present a proposal for their design. Special Note: This is the first course in a new two-semester senior capstone design course sequence. The second course is EE F482. This course also meets the upper division effective communication requirement.
**Prerequisites:** EE F354; EE F444; COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**EE F482 Electrical and Computer Engineering Design II**
3 Credits
Offered Spring
Design teams will continue work towards completing their proposed design from the first semester using engineering design process techniques. Each design team will follow a design schedule to complete a simulation and/or prototype, including weekly meetings and progress reports, ending with a final design report and public presentation. The first course is EE F481. This course also meets the upper-division effective communication requirement.
**Prerequisites:** EE F481.
**Special Notes:** This is the second course in a new two-semester senior capstone design course sequence.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F488 Undergraduate Research**
1-3 Credits
Offered Fall, Spring and Summer
Advanced research topics from outside the usual undergraduate requirements.
**Prerequisites:** Permission of instructor.
**Recommended:** A substantial level of technical/scientific background.
**Lecture + Lab + Other:** 0 + 0 + 0

**EE F607 Electric Motor Drives**
3 Credits
Offered Spring
Drive elements and characteristics; four quadrants operation; transportation drive; fully controlled rectifier drives; dc-dc converters-controlled dc motors; three-phase induction motors control; voltage-source and current-source inverter drives; frequency-controlled induction motor drives; vector control of induction motor drives; field oriented control; sensor-less operation, permanent magnet and switched reluctance motor drives.
**Prerequisites:** EE F303.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F608 Power Electronics Design**
4 Credits
Offered Spring Odd-numbered Years
Analysis and design of power electronic conversion, control, and drive systems. Topics will include the theory and application of rectifiers, DC-DC converters, inverters, switching power supplies and variable-frequency drives. Laboratory exercises include simulation using PSpice and construction, measurement, and analysis of prototype power electronic circuits.
**Prerequisites:** Graduate standing.
**Stacked with** EE F408.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F609 Renewable and Sustainable Energy Systems**
3 Credits
Offered As Demand Warrants
Study of renewable energy systems focusing on grid integration of wind turbine generators, solar photovoltaics, geothermal, biomass, hydroelectric, hydrokinetics, and energy storage. Design and analysis for efficient, sustainable, reliable, and resilient grid operation with distributed renewable energy sources considering cogeneration, controls optimization, economic dispatch, emissions, interruptible loads, and waste-heat recovery.
**Prerequisites:** EE F303.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F611 Waves**
3 Credits
Offered As Demand Warrants
Introduction to waves and wave phenomena. Includes electromagnetic, acoustic, seismic, atmospheric and water waves and their mathematical and physical treatment in terms of Hamilton's principle. Discusses propagation, attenuation, reflection, refraction, surface and laminal guiding, dispersion, energy density, power flow, and phase and group velocities. Treatment limited to plane harmonic waves in isotropic media.
**Prerequisites:** MATH F302 or MATH F432.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F634 Microwave Design I**
3 Credits
Offered As Demand Warrants
Analysis, design, fabrication and measurement of passive microwave components and circuits using microstrip construction techniques. Theoretical and computer-aided design of transmission lines, power dividers, hybrids, directional couplers and filters.
**Prerequisites:** EE F334; EE F412; EE F432.
**Lecture + Lab + Other:** 2 + 3 + 0

**EE F635 Microwave Design II**
3 Credits
Offered As Demand Warrants
Analysis and design of solid-state microwave circuits. Amplifier and oscillator circuits are designed and fabricated using microstrip construction techniques and computer-aided design tools.
**Prerequisites:** EE F634.
**Lecture + Lab + Other:** 2 + 3 + 0

**EE F643 Advanced Architectures for Parallel Computing**
3 Credits
Offered As Demand Warrants
This course covers massively parallel computer architectures and their application for computationally intensive engineering problems. Fundamental hardware concepts and issues in designing such systems are introduced. Compute Unified Device Architecture (CUDA), developed by NVIDIA for the compute engines in their graphic processing units (GPUs), will be used as an example and a practical platform for student assignments. Through assignments and a project students will learn simulation, computational engineering, convolution, correlation, filtering, and similar problems of particular interest to engineering students.
**Prerequisites:** CS F201 or ES F201; EE F443 graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F645 Embedded Systems Design**
4 Credits
Offered Spring
Issues surrounding design and implementation of microcontroller-based embedded systems. Topics include hardware architecture and glue logic, embedded programs design, analysis, and optimization, hardware/firmware partitioning, firmware architecture and design. Includes laboratory exercises using evaluation board and a complete embedded system design project. Emphasis on robust designs, energy efficiency and proper documentation.
**Prerequisites:** Graduate standing.
**Stacked with** EE F444.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F646 Wireless Sensor Networks**
3 Credits
Offered As Demand Warrants
The course will survey the area of networked sensors, with a special focus on low-power wireless sensor networks. Topics covered will include communication standards and protocols for sensor networks, embedded operating systems, applications, collaborative processing, data fusion, and system architecture. Students will undertake a theoretical or practical research project.
**Prerequisites:** CS F201 or ES F201; EE F243 or EE F341; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F647 Data Compression**
3 Credits
Offered As Demand Warrants
Study of algorithms and techniques that reduce information storage and transmission requirements. Both lossless and lossy techniques will be studied including: Hoffman coding, arithmetic coding, image compression, and transform techniques.
**Prerequisites:** ES F201 or CS F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F648 VLSI Design**
3 Credits
Offered As Demand Warrants
Study of methods to integrate millions of transistors on a single chip and create optimized design. Topics include CMOS logic design, power and timing issues. VLSI architectures, and full custom layout. Students will use CAD tools to implement a VLSI design.
**Prerequisite:** EE F243.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F651 Digital Signal Processing**
4 Credits
Offered Fall
Time, frequency and Z-transformation domain analysis of discrete time systems and signals; discrete Fourier transformation (DFT) and FFT implementations; FIR/IIR filter design and implementation techniques; discrete time random signals and noise analysis; quantization and round off errors; and spectral analysis. Includes applications to medical, speech, electromagnetic and acoustic signal analysis.
**Prerequisites:** Graduate standing.
**Stacked with** EE F451.
**Lecture + Lab + Other:** 3 + 3 + 0

**EE F655 Adaptive Filters**
3 Credits
Offered As Demand Warrants
Study to self-designing filters which recursively update depending on the statistics of the input data for optimum performance. Topics will include foundational material in probability of stochastic processes, spectral analysis, linear optimum filtering. Wiener-Hopf filters, Yule-Walker equations, forward and backward linear predictors, method of steepest descent, least squares techniques, and auto- regressive filters.
**Prerequisites:** EE F451.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F662 Digital Communication Theory**
3 Credits
Offered As Demand Warrants
Probability in communication systems, power spectral density, baseband formatting, bandpass modulation and demodulation, link analysis, coding and channel models. Sections of this course offered in Anchorage have an additional fee.
**Prerequisites:** EE F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F663 Computational Electromagnetics**
3 Credits
Offered Fall Even-numbered Years
Course covers basic computational techniques for numerical analysis of electromagnetics problems, including finite difference, finite element, and moment methods. Emphasis is placed on the formulation of physical problems into mathematical boundary-value problems, numerical discretization of continuous problems into discrete problems, and development of rudimentary computer codes for each technique.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F671 Digital Control Systems**
3 Credits
Offered As Demand Warrants
Study of digital control theory. Topics will include signal conversion, Z-transforms, state variable techniques, stability, time and frequency domain analysis and system design.
**Prerequisites:** EE F471.
**Lecture + Lab + Other:** 3 + 0 + 0

**EE F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**EE F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Electronics Technology (ELT)

**Community & Technical College**
Process Technology (https://www.ctc.uaf.edu/programs/process-technology/)
907-455-2800

**ELT F101 Basic Electronics: DC Physics**
4 Credits
Offered As Demand Warrants
Basic terms and units. Use of test equipment, hand tools and techniques of soldering. Ohm's law, fundamentals of magnetism, DC circuit analysis, inductance and capacitance in DC circuits.
**Prerequisites:** Placement in MATH F054 or TTCH F131.
**Lecture + Lab + Other:** 4 + 0 + 0

**ELT F102 Basic Electronics: AC Physics**
4 Credits
Offered As Demand Warrants
Principles of alternating current, vectors, phase relationships, inductive and capacitive reactance and impedance. AC circuit analysis, series and parallel resonant circuits, transformers and network analysis.
**Prerequisites:** ELT F101, MATH F105 (may be taken concurrently).
**Lecture + Lab + Other:** 4 + 0 + 0

**ELT F108 Arithmetic/Dc Circuits**
3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 3 + 0 + 0

**ELT F109 Arithmetic/Ac Circuits**
3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 3 + 0 + 0

**ELT F111 FCC Amateur and General Radiotelephone Operator Licensing**
1-3 Credits
Offered As Demand Warrants
An introduction to the study of radio frequency transmission and receiving will be taught. Basic AC electronics in the radio frequency ranges will be studied. Some of the circuits studied are oscillators, modulators, mixers, amplifiers and filters. The classes will include a hands-on demonstration as part of the lecture. Completion of the class will give the student the instruction necessary to complete an Amateur Radio License test and a background for the General Radiotelephone Operator commercial test (GROL).
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ELT F122 Intro/Electronic Devices**
3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 3 + 0 + 0

**ELT F123 Electronic Circuit Fund**
3 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 3 + 0 + 0

**ELT F171 National Electric Code Study**
3 Credits
Offered As Demand Warrants
Systematic study of the National Electric Code and rules governing minimum requirements for installation of electrical services, feeders and branch circuits, and requirements for construction and installation of electrical equipment.
**Prerequisites:** ELT F102.
**Recommended:** MATH F105.
**Lecture + Lab + Other:** 3 + 0 + 0

**ELT F246 Electronic Industrial Instrumentation**
3 Credits
Offered As Demand Warrants
Methods of analog electronic signal transmission. Discussion of the details of several pieces of equipment in-depth, providing practice in establishing correct interconnections. Basic concepts used in troubleshooting this type of equipment are also introduced.
**Prerequisites:** ELT F102.
**Recommended:** MATH F105.
**Lecture + Lab + Other:** 3 + 0 + 0

# Emergency Medical Services (EMS)

**Community and Technical College**
Emergency Medical Services (https://www.ctc.uaf.edu/programs/ems-paramedicine/)
907-455-2800

**EMS F150 Wilderness Emergency Care**
3 Credits
Offered Summer
Introduction to medicine in a remote setting. Assessment and management of life-threatening and non-threatening injuries, common medical emergencies and a variety of environmental injuries. Academically challenging training includes basic anatomy and physiology, appropriate short-term to multi-day patient care, the incident command system and evacuation and considerations.
**Lecture + Lab + Other:** 3 + 0 + 0

**EMS F152 Emergency Trauma Training First Responder**
3 Credits
Offered Summer
Basic emergency care knowledge and skills for the student who will provide the first emergency care. The objective of the first person on the emergency scene is to recognize the needs of the victim and deliver quality care to the patient, minimizing discomfort and preventing further complications.
**Lecture + Lab + Other:** 2 + 2 + 0

**EMS F152P Emergency Trauma Training First Responder**
3 Credits
Basic emergency care knowledge and skills for the student who will provide the first emergency care. The objective of the first person on the emergency scene is to recognize the needs of the victim and deliver quality care to the patient, minimizing discomfort and preventing further complications.
**Lecture + Lab + Other:** 2 + 2 + 0

**EMS F154 Emergency Trauma Training Refresher**
1 Credit
Offered Summer
For individuals who have been previously certified in Emergency Trauma Training (40 hrs.). Certification is valid for two years.
**Prerequisites:** EMS F152 or ETT Certification which may not be expired more than one calendar year.
**Lecture + Lab + Other:** 1 + 0 + 0

**EMS F154P Emergency Trauma Training Refresher**
1 Credit
For individuals who have been previously certified in Emergency Trauma Training (40 hrs.). Certification is valid for two years.
**Prerequisites:** EMS F152 or ETT Certification which may not be expired more than one calendar year.
**Lecture + Lab + Other:** 1 + 0 + 0

**EMS F170 EMT: Emergency Medical Technician I**
6 Credits
Offered As Demand Warrants
Basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels.
**Cross-listed with** ARSK F170.
**Lecture + Lab + Other:** 4 + 4 + 0

**EMS F170P EMT: Emergency Medical Technician I**
6 Credits
Basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels.
**Cross-listed with** ARSK F170.
**Lecture + Lab + Other:** 4 + 4 + 0

**EMS F173 EMT I Internship**
6 Credits
Offered As Demand Warrants
Synthesize cognitive and psychomotor skills from the EMT I course and observe skills performed by Advanced Care Providers. Designed for individuals planning to participate in the CTC paramedic program in the fall semester. Interns will perform all aspects of emergency care for an Alaska certified EMT I under the guidance of an Advanced Care Provider.
**Prerequisites:** EMS F170; concurrent EMT I certification.
**Lecture + Lab + Other:** 0 + 16 + 0

**EMS F181 Clinical Rotation I**
4 Credits
Offered Fall
Perform paramedic skills in the hospital setting under the guidance of a clinical preceptor. Rotations include the emergency department, ICU, operating room, respiratory therapy, and mental health units. Provides an in-depth look at the respiratory, circulatory and nervous systems. Includes interpretation of cardiac rhythms and advanced cardiac life support.
**Prerequisites:** Permission of program coordinator.
**Special Notes:** Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
**Lecture + Lab + Other:** 0 + 4 + 4

**EMS F183 Clinical Rotation II**
4 Credits
Offered Spring
Perform paramedic skills in the hospital setting under the guidance of a clinical preceptor. Rotations include the emergency department, ICU, OR, labor and delivery, pediatrics and geriatrics.
**Prerequisites:** EMS F181.
**Special Notes:** Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
**Lecture + Lab + Other:** 0 + 4 + 4

**EMS F253 Alaska EMT Instructor Orientation**
3 Credits
Offered As Demand Warrants
Adult education and learning environment and regulation governing teaching of EMTs in Alaska. Designed to be an intensive learning experience with extensive out-of-class preparation. Must be certified at EMT level for 3 years.
**Prerequisites:** Current EMT I, II, III or MICP certification and three years of experience; evidence of successful completion of state of Alaska practical exam and written exam with a score of 90% within the last 12 months.
**Recommended:** FIRE F216.
**Lecture + Lab + Other:** 3 + 0 + 0

**EMS F257 Arctic Survival**
3 Credits
Offered Spring
Use of principles, procedures, techniques and equipment to survive extreme Arctic conditions and assist in safe recovery. Lab required.
**Cross-listed with** AVTY F231.
**Lecture + Lab + Other:** 3 + 0 + 0

**EMS F261 EMT: Emergency Medical Technician II**
3 Credits
Offered As Demand Warrants
Advancement of EMT I skills and knowledge through advanced techniques in fluid therapy and advance airway management. Includes use of specific drug therapy.
**Prerequisites:** EMT I certification and proof of 10 patient contacts as an EMT I.
**Lecture + Lab + Other:** 2 + 2 + 0

**EMS F261P EMT: Emergency Medical Technician II**
3 Credits
Advancement of EMT I skills and knowledge through advanced techniques in fluid therapy and advance airway management. Includes use of specific drug therapy.
**Prerequisites:** EMT I certification and documentation of 10 patient contacts by the first day of class as described in State EMT regulations: 7AAC26.010.
**Lecture + Lab + Other:** 2 + 2 + 0

**EMS F265P Emergency Medical Technician III**
2 Credits
Introduction to basic cardiac anatomy and physiology, cardiac electrophysiology, recognition and treatment of basic lethal arrhythmias, use of monitor, defibrillator and pharmacological management.
**Prerequisites:** EMT II certification and proof of 10 patient contacts and venipunctures as an EMT II.
**Lecture + Lab + Other:** 0.5 + 3 + 0

**EMS F270 Advanced Emergency Medical Technician**
10 Credits
Offered Fall and Spring
The Advanced Emergency Medical Technician (AEMT) training includes invasive procedures such as IV therapy, the use of advanced airway devices and medication administration. Individuals that complete the course are eligible to take the National Registry AEMT exam.
**Prerequisites:** Current state or national EMT certification; current AHA CPR certification; departmental approval.
**Lecture + Lab + Other:** 8 + 6 + 0

**EMS F280 Paramedicine I**
12 Credits
Offered Fall
Introduction to emergency medical services, the roles and responsibilities of a paramedic and medical/legal/ethical issues. Basic pathophysiology, pharmacology, venous access and advanced airway management techniques. Also includes an in-depth look at the circulatory, respiratory and nervous systems which includes interpretation of cardiac rhythms, pharmacology and advanced cardiac life support.
**Prerequisites:** EMS F170.
**Recommended:** HLTH F114 or equivalent.
**Special Notes:** Student must apply for admission into the Paramedic Academy; Applications are reviewed by the Paramedic Advisory board; Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
**Lecture + Lab + Other:** 8 + 8 + 0

**EMS F282 Paramedicine II**
12 Credits
Offered Spring
Assessment and management of medical emergencies, geriatrics, pediatrics and traumatic injuries. Includes pediatric advanced life support and basic trauma life support certifications.
**Prerequisites:** EMS F280.
**Special Notes:** Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
**Lecture + Lab + Other:** 8 + 8 + 0

**EMS F283 Paramedic Internship**
12 Credits
Offered Summer
Prehospital field experience under the guidance of a paramedic preceptor on an advanced life support ambulance. Interns perform all aspects of paramedic care.
**Prerequisites:** EMS F183.
**Special Notes:** Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
**Lecture + Lab + Other:** 0 + 24 + 0

**EMS F287 Paramedic Refresher**
3 Credits
Offered As Demand Warrants
Integration of paramedicine knowledge and techniques with evaluation of applied skills.
**Prerequisites:** Current State of Alaska or National Registry paramedic license.
**Special Notes:** Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.
**Lecture + Lab + Other:** 2 + 2 + 0

# Engineering and Science Management (ESM)

**College of Engineering and Mines**
Department of Civil, Geological, and Environmental Engineering (http://cem.uaf.edu/cee.aspx)
907-474-7241

**ESM F422 Engineering Decisions**
3 Credits
Offered Spring
Risk and uncertainty in engineering decisions. Basic applied probability and statistics, data analysis, regression analysis and time series. Practical applications of decision tools: linear programming, inventory analysis, queuing, network models and utility theory. Engineering judgment and uncertainty. Public safety and ethics.
**Recommended:** Calculus through MATH F302.
**Stacked with** ESM F622.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F450 Economic Analysis and Operations**
3 Credits
Offered Fall and Summer
Fundamentals of engineering economy, project scheduling, estimating, legal principles, professional ethics and human relations. Not offered for credit toward the M.S. degree in Engineering Management or Science Management.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ES F201 or CS F201; senior standing in engineering.
**Special Notes:** Undergraduate engineering students taking graduate ESM courses as technical electives should have completed or be concurrently enrolled in ESM F450.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F492 Engineering Mgt Seminar**
1 Credit
**Lecture + Lab + Other:** 0 + 0 + 0

**ESM F492P Engineering Mgt Seminar**
1 Credit
**Lecture + Lab + Other:** 0 + 0 + 0

**ESM F601 Managing and Leading Engineering Organizations**
3 Credits
Offered As Demand Warrants
Leadership knowledge and skills as applied to motivation, direction and communication within engineering and technical organizations, and their relations with other organizations and the public. Leadership training activities include organizational structures, planning, monitoring, directing and controlling. Review of management tools including management theory, communications, conflict resolution.
**Recommended:** B.S. degree in engineering or physical science.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F605 Engineering Economic Analysis**
3 Credits
Offered As Demand Warrants
The economic basis of engineering decisions: capital investment analysis techniques, including present worth, annual cash flow and rate of return. Applications to replacement problems, benefits/cost analysis and capital budgeting. Consideration of impacts of depreciation accounting, income taxes and inflation. Risk and uncertainty in economic decisions.
**Recommended:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F608 Legal Principles for Engineering Management**
3 Credits
Offered As Demand Warrants
Those aspects of law specifically related to technical management. Contracts, sales, real property, business organization, labor, patents and insurance.
**Recommended:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F609 Project Management**
3 Credits
Offered As Demand Warrants
Organizing, planning, scheduling and controlling projects. Use of CPM and PERT; computer applications. Case studies of project management problems and solutions.
**Recommended:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F621 Operations Research**
3 Credits
Offered As Demand Warrants
Mathematical techniques for aiding technical managers in decision making. Linear programming, transportation problem, assignment problem, network models, PERT/CPM, inventory models, waiting line models, computer simulation, dynamic programming. Emphasis on use of techniques in actual technical management situations. Computer applications.
**Recommended:** MATH F253X; STAT F200X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F622 Engineering Decisions**
3 Credits
Offered As Demand Warrants
Risk and uncertainty in engineering decisions. Basic applied probability and statistics, data analysis, regression analysis and time series. Practical applications of decision tools: linear programming, inventory analysis, queuing, network models, utility theory. A class project and paper are required.
**Recommended:** Calculus through MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F684 Engineering Management Project**
3 Credits
Offered As Demand Warrants
Comprehensive study of an actual engineering management problem resulting in reports and presentations which include recommendations for action.
**Prerequisites:** Graduate standing in Engineering Science Management.
**Lecture + Lab + Other:** 3 + 0 + 0

**ESM F692 Engineering Mgt Seminar**
1 Credit
**Lecture + Lab + Other:** 0 + 0 + 0

**ESM F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**ESM F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Engineering Science (ES)

College of Engineering and Mines (https://www.uaf.edu/cem/)

907-474-7730

**ES F100L Makerspace Alaska - A Laboratory Introduction to Engineering**
1 Credit
Offered Fall and Spring
Through hands-on projects, students will learn basic programming with a Raspberry Pi computer kit, basic computer-aided design for 3D printing and using a Laser Cutter. Students will develop leadership, team and communication skills needed to successfully complete project that utilize the engineering design and design thinking processes.
**Prerequisites:** placement into MATH F105.
**Special Notes:** In order to fulfill the GER Natural Sciences requirement, both ES F100X and ES F100L need to be completed; If only one course is completed, no credit is given to the GER Natural Sciences requirement.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 3 + 0

**ES F100X Engineering Alaska - An Introduction to Engineering**
3 Credits
Offered Fall and Spring
Overview of the engineering profession and introduction to the field of engineering with a focus on engineering in the remote and extreme conditions of Alaska. Basic science, mathematics and engineering concepts are applied to problem solving. Communication skills including communicating engineering calculations, word processing and use of spreadsheets are taught.
**Prerequisites:** placement into MATH F105.
**Special Notes:** In order to fulfill the GER Natural Sciences requirement, both ES F100X and ES F100L need to be completed; If only one course is completed, no credit is given to the GER Natural Sciences requirement.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ES F101 Introduction to Engineering**
3 Credits
Offered Fall and Spring
Overview of the engineering profession and introduction to the fields of engineering. Basic concepts from engineering, physics and mathematics applied to engineering problem solving. Basic skills required of engineers, including an introduction to engineering communications: word processing, descriptive geometry, orthographic and isometric drawings, graphs, computer graphics and use of spreadsheets.
**Prerequisites:** MATH F151X, MATH F152X, MATH F156X or placement into MATH F251X.
**Lecture + Lab + Other:** 2 + 2 + 0

**ES F166 Electric Car Conversion**
2 Credits
Offered As Demand Warrants
An introduction to the principles of electrical vehicle propulsion systems. Fundamentals of electrical motors, electrical motor controls, electrical energy storage systems and automotive power-train design. Students will conduct practical design projects culminating with a complete electric car conversion. Relevant codes and standards will be emphasized.
**Lecture + Lab + Other:** 1 + 3 + 0

**ES F201 Computer Techniques**
3 Credits
Offered Fall and Spring
Basic computer programming, in C/C++, with applications from all fields of engineering. Introduction to MATLAB.
**Prerequisites:** (MATH F151X; MATH F152X), MATH F156X or MATH F251X (MATH F251X may be taken concurrently).
**Lecture + Lab + Other:** 2 + 3 + 0

**ES F208 Mechanics**
4 Credits
Offered Fall and Spring
Engineering-oriented coverage of statics and dynamics. Vector methods used where appropriate.
**Prerequisites:** MATH F252X (may be taken concurrently); PHYS F211X (may be taken concurrently); ES F101, GE F101, MIN F110, PETE F101.
**Lecture + Lab + Other:** 3 + 3 + 0

**ES F209 Statics**
3 Credits
Offered Fall and Spring
Analyzes force systems in two and three dimensions; composing and resolving of forces and force systems; applies principles of equilibrium for various bodies and simple structures, friction, centroids, and moments of inertia. Applies concept of vector algebra wherever necessary.
**Prerequisites:** MATH F252X (may be taken concurrently); PHYS F211X (may be taken concurrently); PETE F101 or ES F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**ES F210 Dynamics**
3 Credits
Introduces kinematics and kinetics of particles and rigid bodies' motion. Applies principles of work and energy, impulse and momentum to particles and rigid bodies' motion. Applies concept of vector algebra wherever required.
**Prerequisites:** ES F209; MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ES F301 Engineering Analysis**
3 Credits
Offered Fall and Spring
Application of numerical tools, including software, to typical engineering design problems. Selected topics from all fields of engineering.
**Prerequisites:** MATH F302 (may be taken concurrently); ES F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**ES F307 Elements of Electrical Engineering**
3 Credits
Offered Fall
Elementary circuits and theorems, natural, forced and steady state response, principles of electronics, circuit models and system parameters, elements of measurement and instrumentation, characteristics of DC machines, and AC machines and transformers.
**Prerequisites:** MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ES F331 Mechanics of Materials**
3 Credits
Offered Fall and Spring
Analysis of internal forces in members subjected to axial, torsional and flexural loads, singly and in combination. Stress-strain relationships and material property definitions; shear and moment diagrams, Mohr's Circle. Applications include beams, columns, connections and indeterminate cases.
**Prerequisites:** ES F208 or ES F209; MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ES F341 Fluid Mechanics**
4 Credits
Offered Fall and Spring
Statics and dynamics of fluids; energy and momentum principles. Dimensional analysis; flow in open channels, closed conduits and around submerged bodies.
**Prerequisites:** ES F208 or ES F210; MATH F252X.
**Lecture + Lab + Other:** 3 + 3 + 0

**ES F346 Introduction to Thermodynamics**
3 Credits
Offered Fall and Spring
Fundamental principles and elementary applications of thermodynamics, including the first and second laws of thermodynamics, and thermodynamic systems, properties, processes and cycles.
**Prerequisites:** MATH F252X; PHYS F211X.
**Lecture + Lab + Other:** 3 + 0 + 0

# English (ENGL)

**College of Liberal Arts**
English Department (https://www.uaf.edu/academics/programs/bachelors/english.php)
907-474-7231

**ENGL F104 Institute on Language, Thought and Culture**
3 Credits
Offered As Demand Warrants
Development of critical thinking, writing, and reading skills using the Bard College model. The intensive institute establishes and nurtures learning communities which support bold thinking, risk-taking, collaboration and independence. Only at the Kuskokwim Campus.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F200X World Literature** (h)
3 Credits
Offered Fall, Spring and Summer
Introduction to a wide variety of literary texts from different world cultures. Includes a range of approaches to genres that may include myth, poetry, storytelling, drama and essays. Students will gain an understanding of cross-cultural differences and similarities. Course may be repeated for credit when content varies.
**Cross-listed with** FL F200X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F201X Texts and Contexts**
3 Credits
Offered Fall and Spring
Introduction to the interpretation of humanities texts and their various contexts. Students will explore how certain cultural, historical, formal, generic, rhetorical, material, and/or linguistic contexts shape humanities texts and vice versa. Specific content to be announced at time of registration. May be repeated for credit when content varies.
**Prerequisites:** WRTG F111X, placement in WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F217X Introduction to the Study of Film** (h)
3 Credits
Offered Fall and Spring
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects.
**Prerequisites:** WRTG F111X.
**Cross-listed with** FLPA F217X; COJO F217X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 2 + 2 + 0

**ENGL F218 Themes in Literature** (h)
3 Credits
Offered As Demand Warrants
Exploration of literary themes in various genres of literature, including fiction, poetry and drama. Such themes as "Women in Literature," "Literature of the North," and "Detective Stories in Literature and Film" may be offered. Specific theme is announced at registration. Course may be repeated for credit when content varies.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F230 English Language Proficiency**
3 Credits
Offered Fall
Intensive listening, speaking, reading and writing in English. Especially recommended for all students for whom English is a foreign language. This course does not meet general degree requirements in written communications and is not classified as a humanities. Course may be repeated once for credit.
**Prerequisites:** Permission of instructor.
**Special Notes:** Open only to students for whom English is a foreign language.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F231 English Language Proficiency**
3 Credits
Offered Spring
Intensive listening, speaking, reading and writing in English. Especially recommended for all students for whom English is a foreign language. This course does not meet general degree requirements in written communications and is not classified as a humanities. Course may be repeated once for credit.
**Prerequisites:** Permission of instructor.
**Special Notes:** Open only to students for whom English is a foreign language.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F270X Introduction to Creative Writing** (h)
3 Credits
Offered Fall and Spring
Forms and techniques of fiction, poetry and creative nonfiction for beginning students; discussion of students' work in class and in individual conferences. Close study of the techniques of established writers.
**Prerequisites:** WRTG F111X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F280 Introduction to Colonial and Postcolonial Literature** (h)
3 Credits
Offered Fall Even-numbered Years
Includes readings from the literature of formerly colonized nations. Texts may be chosen from African, Asian, American and Pacific Rim cultures. Although the colonial and postcolonial periods will be central to our investigations, pre-colonial and ancient cultures may also be considered for the purpose of establishing cultural perspectives. May be repeated twice for credit.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** ENGL F200X.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F290 Summer Reading Program (Honors)** (h)
2 Credits
Offered Fall
Selected readings in a variety of disciplines. Group discussions and written responses to the readings follow in the fall. Students keep a summer journal. May be repeated for credit.
**Prerequisites:** WRTG F111X; enrollment in the Honors College.
**Lecture + Lab + Other:** 2 + 0 + 0

**ENGL F301 Literature of the Ancient World** (h)
3 Credits
Offered Fall Even-numbered Years
Ancient Mesopotamian, Greek and Roman texts in translation.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F302 Medieval and Early Modern European Literature** (h)
3 Credits
Offered Fall Odd-numbered Years
Readings from the early Middle Ages through the early modern period. The majority of texts will be in translation.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F306 Survey of American Literature: Beginnings to the Civil War** (h)
3 Credits
Offered Fall
Comprehensive study of American thought as reflected in the works of early explorers, Calvinists, Rationalists and Transcendentalists.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F307 Survey of American Literature: Civil War to the Present** (h)
3 Credits
Offered Spring
Comprehensive study of American thought as reflected in the writers of Realism, Naturalism, Modernism, and Post-modernism.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F308 Survey of British Literature: Beowulf to the Romantic Period** (h)
3 Credits
Offered Fall
Survey of writers and works in Old and Middle English, including Chaucer, through Elizabethan period (Shakespeare), Restoration, and Neoclassic period of the 18th century.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F309 Survey of British Literature: Romantic Period to the Present** (h)
3 Credits
Offered Spring
Survey of writers and works from the early Romantic period (Blake and Burns), through the Victorian period, James Joyce, and stream-of-consciousness, to the present.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F310 Literary Criticism** (h)
3 Credits
Offered Spring
History and principles of literary criticism, from earliest days to present.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F314 Technical Writing** (h)
3 Credits
Offered Fall, Spring and Summer
Writing business letters (letters of inquiry, complaint, evaluation, and job application with resume), preparing tables, graphs, process descriptions, technical instructions, abstracts, grant proposals, and technical reports (progress, laboratory, survey, incident, inspection, feasibility and research). Course does not fulfill the second half of the requirement in written communication.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F317 Traditional English Grammar** (h)
3 Credits
Offered Fall
Identification and usage of the more common types of phrase and sentence structures.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F318 Modern English Grammar** (h)
3 Credits
Offered Spring
Structure of current English as seen through traditional and contemporary grammatical theories.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F333 Women's Literature** (h)
3 Credits
Offered Fall Odd-numbered Years
Reading, discussing and analyzing literary works dealing with the social, cultural and political implications of patriarchal structures and traditions from the perspective of feminist theory and criticism. Focus may be on a particular theme, period or genre, but readings will include both primary and secondary texts.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** WGS F333.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F340 Contemporary Indigenous Literature in North America** (h)
3 Credits
Offered Fall
Contemporary Indigenous literature in North America including novels, short stories, poetry, film, audio expression and genre fluid texts. Works will be discussed in their cultural contexts and explore connecting themes such as historical trauma, survivance, resurgence and decolonization.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** ANS F340.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F341 Contemporary Alaska Native Literature** (h)
3 Credits
Offered As Demand Warrants
Contemporary Alaska Native literature including novels, short stories, poetry and plays. Bibliography, genres and viewpoints, structural and thematic features of stories. May concentrate on specific regional areas of the state.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F347 Voices of Native American Peoples** (h)
3 Credits
Offered Spring Even-numbered Years
Exploration of the forms by which Native American peoples have narrated their life experiences. Includes oral narratives, written autobiographies, memoirs and speeches, and an introduction to the social, historical and cultural content surrounding these texts. Readings selected from all of North America with an emphasis on Alaska Natives.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Cross-listed with** ANS F347.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F349 Narrative Art of Alaska Native Peoples (in English translation)** (an, h)
3 Credits
Offered Fall Even-numbered Years
Traditional and historical tales by Aleut, Eskimo, Athabascan Eyak, Tlingit, Haida and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** ANS F349.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F360 Multiethnic American Literature** (h)
3 Credits
Offered Spring Even-numbered Years
Exploration of literary and cultural works by American writers of diverse ethnic backgrounds. Focus may be on a particular theme, period or genre, but readings will include both primary and secondary texts.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F375 Intermediate Creative Writing: Fiction** (h)
3 Credits
Offered Fall and Spring
Forms and techniques of fiction. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F270X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F376 Intermediate Creative Writing: Poetry** (h)
3 Credits
Offered Fall
Forms and techniques of poetry. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F270X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F377 Intermediate Creative Writing: Nonfiction** (h)
3 Credits
Offered Spring
Forms and techniques of literary nonfiction. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F270X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F380 Topics in Colonial and Postcolonial Literature** (h)
3 Credits
Offered As Demand Warrants
Focus on a particular topic in selected colonial and postcolonial literary texts. Readings will be chosen for their relevance to a particular theme, to be announced by the instructor. Topic will vary from one semester to another, but the goal will be to explore the significance and importance of the chosen topic as it manifests itself in the literature. Readings and discussions will foster in-depth understanding of texts dealing with the chosen topic. Possible topics might include: war and peace, economic imperatives, environmental perspectives, sickness and health, and gender issues. May be repeated three times for credit.
**Prerequisites:** ENGL F200X.
**Recommended:** ENGL F280.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F400 Capstone Portfolio**
0 Credit
Offered Fall and Spring
This course consists of mandatory attendance at a portfolio-creation workshop and submission of a capstone portfolio. The workshop is designed to support the student's development of the portfolio and shall be taken during the semester in which the student intends to graduate. The portfolio will consist of materials from the student's coursework within the English Major; see the English Department website for more information and deadlines. Mandatory attendance at a portfolio-creation workshop and satisfactory completion and submission of a capstone portfolio.
**Prerequisites:** Senior standing.
**Lecture + Lab + Other:** 0 + 0 + 0

**ENGL F410 Studies in American Literature to 1900** (h)
3 Credits
Offered Every Third Spring
Intensive study of variable topics in American literature to 1900. May focus on a specific theme, genre, author or theory. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F414 Research Writing** (h)
3 Credits
Offered Fall
Practice in reporting primary and secondary research in the forms and styles appropriate to the student's field. Preference given to seniors.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F415 Studies in 17th- and 18th-Century British Literature** (h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in 17th- and 18th-century British literature. May focus on a specific theme, genre, author or theory. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F420 Studies in Medieval and 16th-Century British Literature** (h)
3 Credits
Offered Every Third Spring
Intensive study of variable topics in medieval and 16th century British literature. May focus on a specific theme, genre, author or theory. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F422 Shakespeare: History Plays and Tragedies** (h)
3 Credits
Offered Fall
Major chronicle plays and tragedies, including significant criticism.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Recommended:** ENGL F308 desirable but not required.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F425 Shakespeare: Comedies and Nondramatic Poetry** (h)
3 Credits
Offered Spring
Major comedies and non-dramatic poems, including significant criticism.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Recommended:** ENGL F308 desirable but not required.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F427 Topics in Film Studies** (h)
3 Credits
Offered Spring
Intensive study of variable topics in film studies. May focus on themes in film; a specific period of cinematic history; particular genres; an important director; or an aspect of contemporary film theory. Course may be repeated two times for credit when content varies.
**Prerequisites:** ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** FLPA F427.
**Lecture + Lab + Other:** 2 + 2 + 0

**ENGL F433 Women, Gender, and Sexuality Studies in Language, Literature, and Culture** (h)
3 Credits
Offered Fall Even-numbered Years
Intensive study of variable topics in women, gender and/or sexuality studies with a focus on humanities fields such as literature, writing, rhetoric, theory, film and cultural studies. Topics will be placed in dialogue with current debates within women, gender and/or sexuality studies. Specific content to be announced at the time of registration. Course may be repeated for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** WGS F433.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F435 Authors** (h)
3 Credits
Offered Fall
Intensive, in-depth study of the works of an individual author. Readings from the author's oeuvre along with significant criticism and commentary on the author's works. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F440 Studies in 20th- and 21st-Century British Literature** (h)
3 Credits
Offered Every Third Spring
Variable subject matter in significant topics in modern and contemporary British literature. Focus may be prose (fiction and nonfiction), poetry, drama, film, or a combination of the above. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F449 Northern and Environmental Literature** (h)
3 Credits
Offered Spring Odd-numbered Years
Intensive study of particular aspects of Alaska and circumpolar writing, ecocritical theory and the literature of environmental studies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Cross-listed with** ACNS F449.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F450 Studies in 19th-Century British Literature** (h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in 19th-century British literature. May focus on a specific theme, genre, author or theory. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F455 Studies in 20th- and 21st-Century American Literature** (h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in American literature from 1900 to the present. May focus on a specific theme, genre, author or theory. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F460 Studies in Comparative/World Literature** (h)
3 Credits
Offered Every Third Fall
Intensive study of variable topics in comparative/world literature. May focus on a specific theme, genre, author or theory. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F462 Applied English Linguistics** (h)
3 Credits
Offered Spring Even-numbered Years
Topic(s) for each offering of the course are announced. Examples include teaching English as a second language, dialects and education, dictionaries, stylistics, and composition.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F465 Genre** (h)
3 Credits
Offered Spring
Intensive study of genre focusing on variable subjects such as epic, romance, science fiction, horror narratives, detective narratives, utopian fiction, and roman noir. Intensive readings and research in both primary texts and genre theory will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F470 Topics in Creative Writing** (h)
3 Credits
Offered Fall and Spring
Practice and guidance in writing fiction, poetry, drama or essays. Students' work read and discussed in class and in conference with the instructor. Close study of the techniques of established writers.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; ENGL F375, ENGL F376, or ENGL F377; sophomore standing.
**Special Notes:** Repeatable for credit as long as topics vary.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F471 Undergraduate Writers' Workshop** (h)
3 Credits
Offered Spring
Discussion of craft and techniques and student work. For advanced students who prepare a manuscript as a final project. May be repeated one time for credit.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F375, ENGL F376 or ENGL F377; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F472 History of the English Language** (h)
3 Credits
Offered Spring Odd-numbered Years
Origin and development of the English language from prehistoric times to the present.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Recommended:** ENGL F318 or a linguistics course is desirable, but not required.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F475 Practicum in Literary Publishing** (h)
3 Credits
Offered Spring
Practice in literary acquisition, editing and production. Study of editorial theory and career paths. Students will publish Ice Box, the annual undergraduate literary journal on campus.
**Prerequisites:** ENGL F270X; ENGL F375, ENGL F376, ENGL F377.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F482 Topics in Language and Literature** (h)
3 Credits
Offered Fall and Spring
Intensive study of variable topics in language and literature. May focus on themes, such as race, war, or the natural world; an aspect of language and linguistics; or an aspect of contemporary literary theory. Intensive readings and research in contemporary theory will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F485 Teaching Composition in the Schools**
3 Credits
Offered Spring Even-numbered Years
Theoretical background and workshop experience for teaching composition in middle and high schools with current pedagogy on teaching of writing stressed. Variety of teaching methods demonstrated, practiced and discussed.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F488 Dramatic Writing** (h)
3 Credits
Offered Fall Odd-numbered Years
Introduction to the craft of dramatic writing for theater and film, with an emphasis on dramatic storytelling. Course will focus on giving students a practical understanding of the uses of story structure, setting, character, plot and dialog, and how these elements work together to create compelling drama.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Cross-listed with** FLPA F488.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F601 Theory, Criticism and Methods**
3 Credits
Offered Spring
A study of the theoretical debates that inform contemporary criticism, and of the methods for conducting and evaluating research.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F603 Studies in British Literature: Old and Middle English**
3 Credits
Offered Fall Odd-numbered Years
Variable subject matter in significant topics in Anglo-Saxon and Middle English literature. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F604 Studies in British Literature: Renaissance and 17th-Century**
3 Credits
Offered Fall Even-numbered Years
Variable subject matter in significant topics in 16th- and 17th-century British literature. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F606 Studies in British Literature: Restoration and 18th Century**
3 Credits
Offered Fall Odd-numbered Years
Variable subject matter in significant topics in British literature of the Restoration period and the 18th century. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F607 Studies in British Literature: 19th Century**
3 Credits
Offered Fall Even-numbered Years
Variable subject matter in significant topics in British literature of the Romantic and Victorian periods. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F608 Studies in British Literature After 1900**
3 Credits
Offered Spring Odd-numbered Years
Variable subject matter in significant topics in modern British literature. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F609 Studies in American Literature to 1865**
3 Credits
Offered Fall Odd-numbered Years
Variable subject matter in significant topics of the colonial, national, and romantic periods of American literature.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F611 Studies in American Literature from 1865-1918**
3 Credits
Offered Fall Even-numbered Years
Variable subject matter in significant topics in American literature of the late 19th and early 20th centuries. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F612 Studies in American Literature after 1918**
3 Credits
Offered Spring Even-numbered Years
Variable subject matter in American Literature of the 20th-century. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F614 Studies in Comparative Literature**
3 Credits
Offered Spring Odd-numbered Years
Advanced study in literature on a transnational basis with varying emphases, including literature of particular locales, modes or themes. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F615 Contemporary Literature**
3 Credits
Offered Spring Even-numbered Years
Variable subject matter in significant topics in post-World War II literature. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F620 Images of the North**
3 Credits
Offered Spring Even-numbered Years
Interdisciplinary approaches to the variety of images created about and by the people and environment of the circumpolar North. The course will analyze conceptualizations of the North as expressed in a number of media, employing methodologies from many disciplines. Course may be repeated once for credit when content varies.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F620.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F661 Mentored Teaching in English**
1 Credit
Offered Fall and Spring
Mentored teaching provides consistent contact on course-related issues between teaching assistants and mentoring faculty. May be repeated up to six times, for one credit per semester.
**Prerequisites:** Acceptance into the MA, MFA in creative writing program, or MFA/MA combined degree program, and a teaching assistantship award.
**Special Notes:** Teaching assistants are required to be enrolled in a mentored teaching section while teaching.
**Lecture + Lab + Other:** 1 + 0 + 2

**ENGL F671 Writers' Workshop**
3 Credits
Offered Fall and Spring
The writing of verse, fiction, drama or nonfiction prose in accordance with the individual student's needs and the instructor's specialization. Depending on available staff, the workshop may be limited during any semester to work in a particular genre. Course may be repeated for credit when content varies.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F675 Internship in Scholarly Publishing**
3 Credits
Offered Fall, Spring and Summer
Training and practice in all aspects of scholarly publishing, including acquisitions, editing, design, and marketing. Informal instruction in historical and contemporary practices in scholarly publishing and the history of the University of Alaska Press.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 10-12

**ENGL F681 Forms of Poetry**
3 Credits
Offered Every Third Semester
Intensive study of the forms and techniques of poetry writing. Includes readings and poetry writing exercises.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F682 Forms of Fiction**
3 Credits
Offered Every Third Semester
Advanced study in narrative technique through analysis of selected fiction and the students' own writing. Variable content in terms of the writers to be studied and the kinds of narrative writing to be assigned.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F684 Forms of Nonfiction Prose**
3 Credits
Offered Every Third Semester
Intensive study of the forms and techniques of nonfiction. Includes readings and writing exercises.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F685 Teaching College Composition**
3 Credits
Offered Fall
An investigation into current practice and theory with demonstrations and reports on pedagogy. Required of all teaching assistants in English.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F686 Teaching Writing in a Cross-cultural Context**
3 Credits
Offered As Demand Warrants
Contemporary methods of teaching writing in middle school and high school classrooms, with special emphasis on cross-cultural issues and pedagogy and on contemporary rhetorical theory. Includes methodologies and theoretical underpinnings of teaching grammar and fiction writing.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F688 Writing for Film and Television**
3 Credits
Offered Spring Odd-numbered Years
Advanced training in dramatic writing for film and television, with a focus on cinematic story structure, visual imagery, dialogue, pacing, continuity and manuscript format.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENGL F692 Graduate Seminar**
1-6 Credits
Offered As Demand Warrants
Graduate Seminar Intensive study of selected topics in the discipline.
**Lecture + Lab + Other:** 0 + 0 + 1-6

**ENGL F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 1-9 + 0 + 0

# English as a Second Language (ESLG)

College of Liberal Arts (https://www.uaf.edu/cla/)
907-474-7231

**ESLG F051 Speaking English as a Second Language**
1-3 Credits
Offered As Demand Warrants
Engaging in English conversation. For students who do not speak English as their first language, but who can understand and follow simple instructions in English. The emphasis is on large quantities of comprehensible English, and building student confidence in understanding and speaking it. May be repeated up to nine credits.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ESLG F061 Reading English as a Second Language**
1-3 Credits
Offered As Demand Warrants
Language experience approach and other methods are used to increase students' abilities and to build their confidence in reading English as it is encountered everyday. For students whose first language is not English, this class provides an opportunity to develop the skills involved in reading simple passages in English. May be repeated up to nine credits.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ESLG F071 Writing English as a Second Language**
1-3 Credits
Offered As Demand Warrants
Developing skills at writing simple English compositions. For students whose first language is not English. The emphasis is on writing large quantities of English which is understandable to native English speakers, and on building students' confidence in communicating through written English. May be repeated up to nine credits.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**ESLG F121 Intermediate Academic Listening and Speaking I**
4 Credits
Offered Fall
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations.
**Prerequisites:** A minimum score of 50 on the TOEFL Internet-based test (iBT).
**Lecture + Lab + Other:** 4 + 0 + 0

**ESLG F131 Intermediate Academic Listening and Speaking II**
4 Credits
Offered Spring
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations.
**Prerequisites:** A minimum score of 50 on the TOEFL Internet-based test (iBT).
**Lecture + Lab + Other:** 4 + 0 + 0

**ESLG F141 Advanced Academic Listening and Speaking I**
4 Credits
Offered Fall
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations.
**Prerequisites:** A minimum score of 60 on the TOEFL Internet-based test (iBT).
**Lecture + Lab + Other:** 4 + 0 + 0

**ESLG F215 Applying English Grammar in Everyday Life**
2 Credits
Offered Fall
This course provides opportunities for international students to engage in classroom discussions on English grammar, vocabulary and pragmatics with native speakers of English. It is specifically designed for short-term exchange students or recently arrived international students who are developing their English proficiency.
**Prerequisites:** A minimum score of 46 on the TOEFL Internet based test (iBT).
**Lecture + Lab + Other:** 2 + 0 + 0

# Environmental Engineering (ENVE)

**College of Engineering and Mines**
Department of Civil, Geological, and Environmental Engineering (https://cem.uaf.edu/mingeo/)
907-474-7241

**ENVE F446 Biological Unit Processes**
3 Credits
Offered Spring Even-numbered Years
Theoretical and applied aspects of biological wastewater treatment, including waste-activated sludge processes, trickling filters, lagoons, sludge digestion and processing, nutrient removal, biology of polluted waters, state and federal regulations.
**Prerequisites:** MATH F302.
**Recommended:** CE F341.
**Stacked with** ENVE F646.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F641 Aquatic Chemistry**
3 Credits
Offered As Demand Warrants
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in aqueous systems. Emphasis is on the study of acid-base chemistry, complexation, precipitation-dissolution and reduction-oxidation reactions.
**Prerequisites:** Graduate standing.
**Cross-listed with** CHEM F605.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F642 Contaminant Hydrology**
3 Credits
Offered Spring Odd-numbered Years
Theoretical and applied aspects of the movement of contaminants through saturated and unsaturated soil.
**Recommended:** CE F663 or equivalent; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F643 Air Pollution Management**
3 Credits
Offered Fall
Major principles and problems associated with air quality, stationary and moving sources, air pollution effects; major air pollution legislation and compliance calculations; meteorology and modeling of pollutant concentrations near a source; greenhouse gas emissions and climate change; control equipment and design of control strategies for specific air pollution problems.
**Prerequisites:** CHEM F106X; graduate standing.
**Recommended:** MATH F252X.
**Stacked with** CE F443.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F644 Environmental Management and Permitting**
3 Credits
Offered Spring Odd-numbered Years
Topics of environmental impact statements, environmental law (local, state and federal), public involvement and environmental quality. Impact from projects of mining, highways, airports, pipelines, industrial development, water, wastewater and solid waste, and others--theoretical considerations and case studies.
**Recommended:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F645 Unit Processes: Chemical and Physical**
3 Credits
Offered Fall Odd-numbered Years
Theory and design of chemical and physical unit processes for water and wastewater. Sedimentation, coagulation, flocculation, filtration, ion exchange, adsorption/absorption, gas transfer and other special topics. Emphasis on Arctic applications and design.
**Recommended:** MATH F252X; CHEM F106X or equivalent; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F646 Biological Unit Processes**
3 Credits
Offered Spring Even-numbered Years
Theoretical and applied aspects of biological wastewater treatment, including waste-activated sludge processes, trickling filters, lagoons, sludge digestion and processing, nutrient removal, biology of polluted waters, state and federal regulations.
**Recommended:** Graduate standing.
**Stacked with** ENVE F446.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F647 Biotechnology**
3 Credits
Offered Fall Even-numbered Years
Theoretical and applied aspects of bioengineering. Issues studied include microbiology, metabolism, genetics, genetic engineering, enzymes and catalysis, stoichiometry and kinetics, biological reactor design and bioremediation.
**Recommended:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F649 Hazardous and Toxic Waste Management**
3 Credits
Offered Fall Odd-numbered Years
Course provides in-depth coverage of hazardous and toxic substance management including legal, economic and technical issues. Topics will include characterization of hazardous materials, economics of toxics minimization, hazardous materials use, storage and disposal, basics of municipal solid waste and technical aspects of landfill sitting, and selection and design of treatment technologies. Includes case studies of current waste management issues.
**Recommended:** Bachelor's degree in science or engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F651 Environmental Risk Assessment**
3 Credits
Offered Spring Odd-numbered Years
The characterization of population exposures and the evidence used to identify environmental substances that may pose a human health risk. The theory and methods for estimating risk: hazard identification, dose-response assessment, exposure assessment and risk characterization.
**Recommended:** Undergraduate degree in engineering or natural science.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F652 Introduction to Toxicology for Engineers and Scientists**
3 Credits
Offered Fall Even-numbered Years
Introduction to the science of toxicology for graduate students in fields that use information about hazardous chemicals for input into decisions. Topics include an overview of the effects of chemicals on cells, organs and organ systems, and the toxic effects of classes of chemicals such as pesticides, metals and solvents. Use of data from animal testing and common lists, factors and extrapolation are reviewed.
**Recommended:** Undergraduate degree in engineering or natural science.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVE F653 Environmental Measurements Laboratory**
1 Credit
Offered Spring
Introduction to analytical methods and measurement techniques used in environmental engineering and environmental quality science. Students will design, conduct and report on a laboratory experiment. Includes sample preparation techniques and analytical methods such as microscopy, atomic adsorption spectroscopy, gas chromatography, liquid chromatography and mass spectrometry.
**Recommended:** ENVE F641.
**Lecture + Lab + Other:** 0 + 3 + 0

**ENVE F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-9

**ENVE F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-12

# Environmental Studies (ENVI)

**College of Rural and Community Development**
Environmental Studies (https://www.uaf.edu/rural/)
907-474-7143

**ENVI F101 Introduction to Environmental Science**
3 Credits
Offered Spring
Introduces the interconnected topics that make up environmental science. By exploring Earth's systems, environmental questions are investigated such as how to sustainably use natural resources and the influence of population growth on ecosystems. The course takes a holistic approach to reinforce scientific principles. Key topics covered include ecosystem functions, energy, biodiversity, resource management, landscape alteration and climate change.
**Recommended:** F100-level biology, chemistry or geology class.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVI F110 Introduction to Water Quality I: Measurement**
1 Credit
Offered Spring
Introduces students to standard water quality methods used and applies them to rural Alaska. Students will become familiar with EPA water quality standards and programs that help preserve water quality in rural communities. Key topics covered include: stream ecology, wastewater management, storm water runoff and data analysis.
**Lecture + Lab + Other:** 0.5 + 0 + 1.5

**ENVI F111 Introduction to Water Quality II: Monitoring and Assessment**
1 Credit
Offered As Demand Warrants
Course builds upon methods learned in ENVI F110 with emphasis placed upon data quality objectives, electronic storage of data, and information analysis and reporting. Methods and equipment used for surface water monitoring will be introduced. Students start the process of developing an EPA approved Quality Assurance Project Plan for surface water quality monitoring.
**Prerequisites:** ENVI F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F112 Introduction to Water Quality III: Data Quality Assurance**
1 Credit
Offered As Demand Warrants
Students participating in this class will review proper use of surface water quality testing equipment and calibration and operation methods learned in ENVI F110 and ENVI F111. Emphasis in this class will be placed on conducting data quality assurance measures that meet data quality objectives, writing and following a data Quality Assurance Project Plan (QAPP), and data analysis and reporting. Students will continue to develop their own U.S. EPA approved QAPP for surface water quality monitoring.
**Prerequisites:** ENVI F111.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F115 Rural Solid and Hazardous Waste Management**
1 Credit
Offered as Demand Warrants
An overview of solid and hazardous waste management focusing on rural Alaskan communities. Topics covered include: workplace safety, worker roles, recycling facility operation, solid waste composting, hazardous material and waste inventorying, toxicology principles, risk assessment, hazardous site community open dumpsite assessment and the implications of the National Environmental Policy Act.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F116 Rural Alaska Landfill Operator**
1 Credit
Offered as Demand Warrants
Best practices in managing rural landfills in compliance with State of Alaska regulations with an emphasis on operator and public safety. Course is designed to train operators for rural Alaska Class II and Class III landfills; passing grade results in recognition by the Solid Waste Association of North America-Alaska.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F117 Community Spill Response**
1 Credit
Offered as Demand Warrants
Overview of petroleum and other community health-threatening spill responses with emphasis placed upon the issues, techniques and basic elements of Alaskan community spill response. Topics include: above/underground storage tanks, spill contamination site treatment, state/federal governmental regulations related to spills, spill reporting/incident action plans, and practical procedures in spill response.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F120 Home Energy Basics**
1 Credit
Offered Fall and Spring
Basics of space heating and electricity use and production for Alaskan homes. Main topics include fundamentals of physics related to home energy, lighting and appliances, energy bills, building science, retrofits, home renewable energy systems. Course emphasizes how to decrease fossil fuel consumption of homes.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F121 Building Ventilation and Energy**
1 Credit
Offered Spring
Basics of indoor air quality and its relationship to ventilation and energy use in buildings. Main topics include indoor air pollutant types; moisture, condensation and mold-related basic science; and heat recovery ventilation. Emphasis: practical ways of how homeowners can maintain healthy indoor air while keeping their energy bill low.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F122 Energy Efficient Building Design and Simulation**
1 Credit
Offered Spring
In this course, students gain basic practical knowledge related to the process of designing energy efficient buildings, as applied to both new construction and retrofits. Main topics covered include basic building science, principles and techniques of energy efficient construction, and building energy simulations.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F130 Introduction to the National Environmental Policy Act**
1 Credit
Offered Spring
Provides a brief introduction to the National Environmental Policy Act (NEPA). This course will explain what community members need to do to be heard in the NEPA process with special emphasis on public involvement and Environmental Impact Analysis (EIA). The course covers the roles and the content of scoping and Environmental Assessments in relation to key natural resource development projects in rural Alaska.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F150 Viewpoints in Environmental Studies**
1 Credit
Offered As Demand Warrants
Discussions and activities will focus on how scientists or research technicians evaluate environmental issues. The course is intended for first year college students and community members. Specific topics may include sustainability, resource development, ecosystem management, indigenous viewpoints, building technology, appropriate energy applications, and analysis of data.
**Special Notes:** Topics announced prior to each offering; course may be repeated for credit towards a certificate or degree program to a maximum of 3 credits.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F160 Internship in Environmental Studies**
1-2 Credits
Offered As Demand Warrants
Under the guidance of a UAF Bristol Bay Campus-approved agency or business (public or private that monitors, tests, analyzes or studies the environment), students gain supervised pre-professional experience in environmental studies. The intern will explore the interdisciplinary aspects of field or laboratory research, build practical expertise and make contacts.
**Prerequisites:** ENVI F101.
**Special Notes:** Internships make one to ten weeks of full-time commitment to the agency or business and when completed make public presentations on the experience.
**Lecture + Lab + Other:** 0 + 0 + 3.1-15.4

**ENVI F170 Solar Energy Basics**
1 Credit
Offered As Demand Warrants
Presents basics of utilization, design and installation of solar electric and hot water energy systems. Emphasis on residential-scale systems; principles apply to larger applications also. Introduces basic physics related to solar energy, harvesting solar energy, system components, design considerations, energy storage, installation and cost/benefit considerations, career opportunities, and safety.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F173 Basics of Small Wind Systems**
1 Credit
Offered As Demand Warrants
Presents basics of design, installation, and operation of wind energy systems with an emphasis on residential-scale systems. Introduces physics related to wind energy, methods to harvest wind energy, turbine and site selection, energy storage vs. grid-tie considerations, system components, installation techniques, cost/benefit considerations, and safety.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F174 Basics of Heat Pump Systems**
1 Credit
Offered As Demand Warrants
Presents basics of heat pump (geoexchange) systems and their use for space heating/cooling and domestic hot water production. Includes both ground-source and air-source heat pumps. Introduces physical concepts related to harvesting energy at Earth's surface, system components, common installation configurations, cost/benefit considerations, and safety.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F175 Introduction to Biomass Energy Systems**
1 Credit
Offered As Demand Warrants
Biomass is a rapidly growing portion of the sustainable energy sector. Innovation meets historic and contemporary organic fuel types such as wood, agricultural, waste and algae. Various technologies and fuel types are covered that contribute to practical biomass energy today, with a focus on wood thermal energy in Alaska.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F180 Alaska Utility Lecture Series**
1 Credit
Offered As Demand Warrants
Lecture series introduces students to operations, management and employment in Alaska's rural and urban electric utilities. Lecturers will share their expertise and various perspectives related to utility management (small and large utility, agency, project development and integration, training/education, utility customers, etc.). Discussion and reflection/synthesis will be encouraged.
**Lecture + Lab + Other:** 1 + 0 + 0

**ENVI F220 Introduction to Sustainable Energy**
3 Credits
Offered Fall
Introduction to societal problems and solutions related to its energy use and production. Problems discussed are mainly related to the extent of sustainability of current energy practices. Solutions discussed cover both energy efficiency and renewable energy.
**Prerequisites:** MATH F105 or CTT F106 or TTCH F131.
**Recommended:** ENVI F101; ENVI F120.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVI F250 Current Topics in Environmental Studies**
1-3 Credits
Offered As Demand Warrants
Using multiple scientific viewpoints, a specific environmental issue is explored through case studies and in-depth discussions with an emphasis on complex connections between ecosystems and society. Themes include sustainability, resource development, indigenous viewpoints, resource management, building technology, and energy applications.
**Prerequisites:** ENVI F101; WRTG F111X; 100-level science class.
**Special Notes:** Topics announced prior to each offering and course may be repeated for credit towards a certificate or degree program to a maximum of 3 credits.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVI F255 Climate Change and Alaska**
3 Credits
Offered Fall and Spring
This introductory climate science course focuses on climate change causes and subsequent influences on nature and society. Concepts will focus on broad geographical and ecological systems that drive how and why climate changes. The course also investigates many of the contemporary environmental issues Alaskans must face in a warming world.
**Lecture + Lab + Other:** 3 + 0 + 0

**ENVI F260 Field Techniques for Environmental Technicians**
2 Credits
Offered Summer
Provides hands-on instruction in interdisciplinary field and laboratory techniques used by environmental technicians. Basic methods for sampling and studying terrestrial or aquatic ecosystems will be introduced. Students will participate in data collection and analysis procedures as part of an independent research project.
**Prerequisites:** ENVI F101 or NRM F101; ENVI F110; 4 credit lab-based F100-science course.
**Recommended:** CIOS F100; CIOS F135.
**Lecture + Lab + Other:** 1 + 3 + 0

**ENVI F265 Introduction to Methods in Environmental Studies Reporting**
2 Credits
Offered Fall
Introduces basic data collection methods used in environmental studies then concentrates on research skills necessary to analyze, interpret, and document field and laboratory data and the technical reporting processes. The course is designed to integrate raw environmental data into a technical report covered include ecosystem functions, energy, biodiversity, that can be presented in scientific meeting format.
**Prerequisites:** ENVI F101 or NRM F101; ENVI F110; ENVI F260; a lab-based F100 level science course.
**Recommended:** ENGL F104 or WRTG F111X; ENVI F160.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

# Ethnobotany (EBOT)

**College of Rural and Community Development**
Ethnobotany (https://www.uaf.edu/rural/)
907-474-7143

**EBOT F100 Introduction to Ethnobotany** (an)
3 Credits
Offered Summer
This blended online and hands-on course surveys concepts of botany and ethnobotany in the context of Alaska Native cultures, including: plant biology and taxonomy, scientific and ethnobotanic plant collection methods, traditional plant uses (working with Alaska Native Elders), and how the resulting ethical awareness contributes to other fields of study.
**Cross-listed with** ANTH F102.
**Lecture + Lab + Other:** 2 + 3 + 0

**EBOT F200 Seminar in Ethnobotany**
2 Credits
Offered Spring
This course surveys basic concepts of the interdisciplinary academic field of ethnobotany. Through readings, integration of Indigenous/Alaska Native plant knowledge, interactive exploration, and discussions of case studies of human-plant relationships, students will learn and reflect on the role and importance of ethnobotany in light of contemporary societal and environmental issues.
**Prerequisites:** EBOT F100.
**Lecture + Lab + Other:** 2 + 0 + 0

**EBOT F210 Ethical Wildcrafting**
1 Credit
Offered Fall
Students will gain the knowledge and skills necessary to make informed and responsible decisions about ethical harvesting of plants in Alaska and beyond. Based on an interdisciplinary approach inclusive of Indigenous Knowledge, students will learn about the cultural and spiritual aspects, and the ecological, economic and legal dimensions of wildcrafting.
**Prerequisites:** EBOT F100.
**Lecture + Lab + Other:** 1 + 0 + 0

**EBOT F220 Ethnobotanical Techniques**
2 Credits
Offered Spring
Provides required skills for conducting field investigations into the human use of plants. Focuses on interviewing Elders about native plant use and methods for conducting structured and non-structured interviews, plant collection, participant observation and data analysis. Ethical issues in ethnobotany, e.g., intellectual property rights, benefit-sharing and conservation of native plants.
**Prerequisites:** EBOT F100; EBOT F200.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

**EBOT F230 Ethnobotanical Chemistry** (a)
3 Credits
Offered Fall
Basic understanding of chemical structure and function of medicinally active plant compounds. How and why plants produce primary and secondary compounds, how humans use these compounds and methods used to isolate and deliver plant-derived compounds. How drugs are derived from plants and the ethics of bioprospecting. Medicinal flora of Alaska from a chemical perspective.
**Prerequisites:** EBOT F100; CHEM F103X or CHEM F105X.
**Lecture + Lab + Other:** 3 + 0 + 0

**EBOT F250 Applied Ethnobotany Fall**
2 Credits
Offered Fall
This is the fall section of a year-round course cycle consisting of two non-sequential applied courses (fall and spring) that explore the seasonally-appropriate cultural uses of plants in a Native and non-native, mainly Alaskan, context. Emphasis will be placed on the underlying scientific aspects of harvesting and using plants.
**Prerequisites:** EBOT F100.
**Cross-listed with** ANTH F254.
**Lecture + Lab + Other:** 2 + 0 + 0

**EBOT F251 Applied Ethnobotany Spring**
2 Credits
Offered Spring
This is the spring section of a year-round course cycle consisting of two nonsequential courses that explore the seasonally appropriate cultural uses of plants. Students will deepen their understanding of human-plant relationships through individual hands-on projects which will guide them into further studies in ethnobotany and related disciplines.
**Prerequisites:** EBOT F100.
**Cross-listed with** ANTH F255.
**Lecture + Lab + Other:** 2 + 0 + 0

**EBOT F336 Ethnomycology** (s)
3 Credits
Offered Spring
An integrated perspective of humanities and social sciences on human-fungi relationships, with concentration on the role of mushrooms in food, medicine, art, commerce, spirituality, and recreation in societies around the world, past and present. Mushroom harvesting in communities around Alaska is one of the extensively covered topics.
**Prerequisites:** EBOT F100 or ANTH F100X.
**Cross-listed with** ANTH F336.
**Lecture + Lab + Other:** 3 + 0 + 0

# Film and Performing Arts (FLPA)

**College of Liberal Arts**
Film & Performing Arts (https://www.uaf.edu/cla/)

907-474-7231

**FLPA F101 Theatre Practicum** (h)
1-3 Credits
Offered Fall and Spring
Participation in drama workshop or lab production as performer or technical staff member. Credit in this course may not be applied to a FLPA major program.
**Lecture + Lab + Other:** 0 + 0 + 0

**FLPA F105X History of the Cinema** (h)
3 Credits
Offered Fall, Spring and Summer
History and development of the medium of film in the U.S. and abroad during the last 100 years. Content will vary each semester.
**Cross-listed with** COJO F105X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F121X Fundamentals of Acting** (h)
3 Credits
Offered Fall and Spring
The goal of this course is to introduce students to the basics of acting for stage and screen. Students will study acting theory and explore core elements of performance through exercises, improvisation, monologues, scene study, and script and character analysis.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F130L Square Dance**
1 Credit
Instruction and practice in square dance.
**Lecture + Lab + Other:** 0 + 3 + 0

**FLPA F130M Round Dance**
1 Credit
Instruction and practice in round dances.
**Lecture + Lab + Other:** 0 + 3 + 0

**FLPA F161X Introduction to Alaska Native Performance** (an, h)
3 Credits
Offered Fall
For Native and non-Native students with no prior acting or theatre experience. Includes both academic and practical components to examine traditional Alaska Native theatre, mythology, ritual, ceremony and performance methods. Application of exercises and developmental scenes drawn from Alaska Native heritage.
**Cross-listed with** ANS F161X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F190 Audition or Portfolio Review Participation**
0 Credit
Offered Fall
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "town" meetings.
**Lecture + Lab + Other:** 0 + 0 + 0

**FLPA F191 Audition or Portfolio Review Participation**
0 Credit
Offered Spring
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "town" meetings.
**Lecture + Lab + Other:** 0 + 0 + 0

**FLPA F200X Discovering Stage & Screen** (h)
3 Credits
Offered Fall
Understanding and appreciation of dramatic performance in theatre and film. This course informs students about the basics of theatre and film production, stimulates an interest in these storytelling art forms by exploring the journey of source material from page to stage to the digital age. This course guides students to critical thinking about production approaches preparing them to be more informed and critical audience members.
**Prerequisites:** Placement in WRTG F111X.
**Attributes:** UAF Core Aesthetic Appreciatio, UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F201 Theatre Practicum** (h)
1-3 Credits
Offered Fall and Spring
Participation in drama workshop or lab production as a performer or technical staff member. Credit in this course may not be applied to a FLPA major program.
**Lecture + Lab + Other:** 0 + 0 + 0

**FLPA F215X Dramatic Literature and History** (h)
3 Credits
Offered Spring
Reading, analyzing, and categorizing plays as maps for theatrical production. Students will be exposed to a broad range of plays from major periods in theatre history including the classical and contemporary Western canon.
**Prerequisites:** WRTG F111X (may be taken concurrently).
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F217X Introduction to the Study of Film** (h)
3 Credits
Offered Fall and Spring
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects.
**Prerequisites:** WRTG F111X.
**Cross-listed with** ENGL F217X; COJO F217X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 2 + 2 + 0

**FLPA F231 Previsualization and Preproduction** (h)
3 Credits
Offered Fall
Previsualization is a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment. It enables filmmakers to visually explore creative ideas, plan technical solutions and communicate a shared vision for efficient production, laying a foundation for cinema production.
**Cross-listed with** ART F231.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F241 Basic Stagecraft** (h)
4 Credits
Offered Spring Even-numbered Years
Materials of scene construction, painting, lighting design and their use, safe use of standard construction tools, fundamentals of theatre drafting. Theatre concentration FLPA majors are encouraged to fulfill this requirement by their junior year.
**Lecture + Lab + Other:** 2 + 5 + 0

**FLPA F247 Introduction to Production Design** (h)
3 Credits
Offered Spring Odd-numbered Years
Exploration and application of the elements of design as they relate to theatre, dance, film, video and other art forms.
**Recommended:** FLPA F215X or FLPA F241.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F251 Introduction to Video Production**
4 Credits
Offered Fall
An introduction to video production with an emphasis on television studio production.
**Cross-listed with** COJO F251.
**Lecture + Lab + Other:** 2 + 5 + 0

**FLPA F254 Costume Construction** (h)
3 Credits
Offered As Demand Warrants
Introduction to basic methods of construction used by professional shops and costume houses to create theatrical costumes. Students will complete several projects, covering hand and machine sewing, cutting, fabric identification, simple alterations and costume crafts. Class also includes lectures on shop organization, jobs and policies.
**Lecture + Lab + Other:** 2 + 3 + 0

**FLPA F258 Lights, Camera, Audio!** (h)
3 Credits
Offered Spring
Focusing on what actually makes a video, we will explore lighting and sound design techniques to improve the quality of video projects. Idealized and practical tactics will be investigated.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F260 Digital Video Editing: Adobe Suite**
3 Credits
Offered Fall
Introduction to the technical and aesthetic aspects of non-linear digital video editing. Students will go from little or no experience in non-linear editing to being comfortable with some of the advanced editing techniques. Address motion picture editing theories that are not bound to time or specific editing technology.
**Cross-listed with** COJO F290.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F271 Film Set Production I**
3 Credits
Offered Fall
Produce a short dramatic film including concept and script development, basic camera and shooting techniques, working with actors/directing fundamentals, location scouting, production schedule development, basic non-linear editing techniques, and post-production workflows. Students do not need previous experience in film making to take this class.
**Prerequisites:** FLPA F241 or FLPA F258.
**Recommended:** FLPA F121X; FLPA F231; FLPA F247.
**Lecture + Lab + Other:** 0.5 + 1 + 1.5

**FLPA F280 Video Storytelling: Content Creation** (h)
3 Credits
Offered Fall
Students will learn the basics of professional video production using resources commonly found in the home, such as a smartphone, some affordable audio equipment, and everyday objects. The course will address concepts related to composition, audio, lighting and editing. Students will conclude the course by producing their own short videos.
**Cross-listed with** COJO F280.
**Special Notes:** This course is presented as part of the IAC Content Creation Occupational Endorsement.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F281 Modern Dance** (h)
2 Credits
Introduction to dance combines elements of modern, jazz and improvisational styles. Includes warm-up, stretches, locomotor movements (walking, running and leaping), set dance combinations, and improvisational activities. Specific readings, individual journals and informal dance presentations required. Open to all experience levels.
**Lecture + Lab + Other:** 1.5 + 1.5 + 0

**FLPA F289 Reel Workshop/Review I**
0 Credit
Offered Spring
FLPA Film concentration majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will create and present a film reel and resume. FLPA majors are expected to attend department "Town Hall" meetings.
**Lecture + Lab + Other:** 0.5 + 0.5 + 0

**FLPA F290 Audition or Portfolio Review Participation II**
0 Credit
Offered Fall
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "town" meetings.
**Lecture + Lab + Other:** 0 + 0 + 0

**FLPA F291 Audition or Portfolio Review Participation II**
0 Credit
Offered Spring
FLPA Theatre concentration majors are required to participate in auditions and/or portfolio reviews every semester. FLPA Theatre concentration majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all Theatre & Film Department "town" meetings.
**Lecture + Lab + Other:** 0 + 0 + 0

**FLPA F298 Undergraduate Research**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-3

**FLPA F308 Film Criticism** (h)
3 Credits
Offered As Demand Warrants
Theoretical approaches to viewing, analyzing and evaluating film and television program content.
**Cross-listed with** COJO F308.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F310 Acting for the Camera** (h)
3 Credits
Offered Spring
Students will apply skills introduced in Fundamentals of Acting, to acting for the camera. By acting in numerous on-camera exercises, television and film scenes, the class will expand each performer's expressiveness for the camera. May be repeated twice for credit.
**Prerequisites:** FLPA F121X.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F320 Acting II: Voice and Speech**
3 Credits
Offered Fall Even-numbered Years
Vocal training for actors through introduction to Fitzmaurice and Linklater techniques. Course will include basic vocal anatomy, introduction to the International Phonetic Alphabet, monologue performance and scene study.
**Prerequisites:** FLPA F121X.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F321 Acting III: Movement** (h)
3 Credits
Offered Spring Odd-numbered Years
This course introduces the principles of stage movement and period acting. The class will include introduction to movement dynamics, contact improvisation, stage combat, physical character development, and period scene study.
**Prerequisites:** FLPA F121X; FLPA F320.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F331 Directing Film/Video** (h)
3 Credits
Offered Spring
Introduction to the history, theory and basic concepts of film direction. Includes interpretative script analysis, creative visualization, conceptualization, use of space, working with actors and designers, and direction of short scenes and videos.
**Prerequisites:** FLPA F121X; FLPA F231; FLPA F271; FLPA F260 or COJO F290.
**Recommended:** FLPA F217X or ENGL F217X; FLPA F215X.
**Lecture + Lab + Other:** 1 + 4 + 0

**FLPA F332 Stage Directing I** (h)
3 Credits
Offered Spring Odd-numbered Years
History, theory and basic concepts of stage direction. Interpretive script analysis, creative visualization, conceptualization, use of space, and focus, working with actors and designers and possible direction of short scenes.
**Prerequisites:** FLPA F121X; FLPA F215X.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F334 Movies and Films: Watching and Analyzing** (h)
3 Credits
Offered Spring
Rotating thematic topics in the art of classic cinema (films) and the popular mass media (movies). Comparative analysis of classics and recent motion pictures is used to present elements of film language, analysis and criticism.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F341 Intermediate Stagecraft** (h)
3 Credits
Offered As Demand Warrants
An examination of the less common scenic materials with methods and techniques for their use. Students will spend approximately $40 for materials.
**Prerequisites:** FLPA F241.
**Lecture + Lab + Other:** 2 + 2 + 0

**FLPA F347 Lighting Design** (h)
3 Credits
Offered As Demand Warrants
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained. Student will spend approximately $40 for materials for this class.
**Prerequisites:** COJO F131X or COJO F141X.
**Recommended:** FLPA F241.
**Cross-listed with** ART F347.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F348 Sound Design for the Entertainment Industry** (h)
3 Credits
Offered As Demand Warrants
Exploration and application of the elements of design as they relate to sound for theatre, dance, film, video, and other art forms, and life in American and other cultures. Production work is required.
**Recommended:** FLPA F241.
**Lecture + Lab + Other:** 2 + 2 + 0

**FLPA F351 Makeup for Theatre** (h)
3 Credits
Offered As Demand Warrants
Theatrical makeup for actors, teachers, directors and other theatre workers; makeup materials and use, age and character makeup, injuries and horror, Kabuki, cross-gender, animal, illusory and plastic relief, crepe hair beards, and influence of lighting. Students will spend approximately $85 for materials and book.
**Lecture + Lab + Other:** 1 + 4 + 0

**FLPA F361 Advanced Alaska Native Performance** (an)
3 Credits
Offered As Demand Warrants
In-depth study of Alaska Native theatre techniques and tradition, including traditional dance, song and drumming techniques, mask characterizations and performance application and presentation of a workshop production developed by the students during the semester.
**Prerequisites:** ANS F161X, FLPA F161X.
**Cross-listed with** ANS F361.
**Lecture + Lab + Other:** 2 + 3 + 0

**FLPA F368 Topics in American Film History** (s)
3 Credits
Offered As Demand Warrants
American film and how it shapes and warps popular perceptions of America's past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, or the Great Depression.
**Prerequisites:** HIST F131 or HIST F132X; COJO F217X or COJO F308.
**Cross-listed with** HIST F368; COJO F368.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F371 Digital Imaging** (h)
3 Credits
Offered As Demand Warrants
This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills and knowledge useful for digital photography, digital video compositing and digital painting will be covered.
**Prerequisites:** ART F161 or ART F271 or ART F284 or COJO F204 or FLPA F260 or COJO F290.
**Cross-listed with** ART F371; COJO F371.
**Lecture + Lab + Other:** 1 + 4 + 0

**FLPA F381 Indigenous World in Film** (an, h)
3 Credits
Offered Spring Even-numbered Years
The history and appreciation of Indigenous films, with emphasis on Alaska Native contributions through select films, readings and guest speakers. Analysis of social impacts of portrayals and treatment of Indigenous peoples while learning to critically analyze films through understanding film techniques and terminology. Preview of film industry business and opportunities.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** ART F200X, MUS F200X, or FLPA F200X.
**Cross-listed with** ANS F381.
**Lecture + Lab + Other:** 1.5 + 2-4 + 0

**FLPA F389 Reel Workshop/Review II**
0 Credit
Offered Spring
FLPA Film concentration majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will create and present a film reel and resume. FLPA majors are expected to attend department "Town Hall" meetings.
**Prerequisites:** FLPA F289.
**Lecture + Lab + Other:** 0.5 + 0.5 + 0

**FLPA F401 Theatre Practicum: Performance** (h)
1-3 Credits
Offered Fall and Spring
Participation in drama workshop or lab production as a performer. Up to 3 credits of performance practicum may be applied to a FLPA major program. Course may be repeated for credit.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**FLPA F402 Theatre Practicum: Technical** (h)
1-3 Credits
Offered Fall and Spring
Participation in drama workshop or lab production as a technical staff member. Up to 8 credits of technical practicum may be applied to a FLPA major program. Course may be repeated for credit.
**Prerequisites:** FLPA F241.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**FLPA F403 Practicum in Film Production: FRAME**
3-6 Credits
Offered Fall and Spring
The Film Reel Alaska Mentorship Experience (FRAME) manages a film service company for the University of Alaska Fairbanks. Students will work with program mentors, clients and researchers to develop a variety of content for academic, industrial and creative research activities. May be repeated for credit.
**Prerequisites:** FLPA F271; FLPA F231; FLPA F260.
**Lecture + Lab + Other:** 1-2 + 0 + 4-10

**FLPA F413 Analyzing Global Performance** (h)
3 Credits
Offered As Demand Warrants
Investigation of the structure of screenplays, playscripts and various performance modes from around the world designed to develop skills in analysis and interpretation for performance in theater and film.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F416 Performance Studies Abroad** (h)
6 Credits
Offered As Demand Warrants
Intensive course for actors, directors, designers, technicians and playwrights interested in script development/training with the participation of international theatre professionals. Develop new scripts and performances in a multicultural environment under the supervision of a theatre faculty member. Previous faculty and student work abroad includes: Russia, Zambia, South Africa and Scandinavia. Course requirements vary according to the project.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 9 + 0

**FLPA F417 Internship in Theatre Practice**
1-6 Credits
Offered Fall and Spring
Supervised practical work experience to provide application of course work in a professional, semi-professional or community theatre environment. Internships can be in direction, acting, design, management and technical theatre. Internships have included Perseverance Theatre, Fairbanks Shakespeare Theatre, Fairbanks Drama Association, and Out North Theatre. Course may be repeated twice for a maximum of 12 credits.
**Prerequisites:** Completed at least 18 FLPA credits; upper-division standing.
**Recommended:** Previous FLPA credits should be in the student's concentration area: direction, design, etc.
**Special Notes:** Internship must be arranged in coordination with advisor, student and host institution.
**Lecture + Lab + Other:** 0 + 0 + 0

**FLPA F418 Internship in Film Production** (h)
1-6 Credits
Offered Fall and Spring
This course offers students unique opportunities to work in the professional film industry. Professional internships require a faculty advisor as well as professional evaluation for the supervised work. Course can be repeated twice for a maximum of 12 credits. Variable Credit, 40 hours of internship is equal to 1 credit.
**Prerequisites:** 18 credits in upper division film classes.
**Recommended:** FLPA F271.
**Lecture + Lab + Other:** 0 + 0 + 1-6

**FLPA F423 Acting IV: Scene Study** (h)
3 Credits
Offered Fall Odd-numbered Years
This course will focus on the refinement of physical, vocal, emotional, and imaginative awareness. This is a scene study class which will include audition technique, acting for the camera skills, and preparation for the professional world of acting.
**Prerequisites:** FLPA F121X; FLPA F320; FLPA F321.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F427 Topics in Film Studies** (h)
3 Credits
Offered Spring
Intensive study of variable topics in film studies. May focus on themes in film; a specific period of cinematic history; particular genres; an important director; or an aspect of contemporary film theory. Course may be repeated two times for credit when content varies.
**Prerequisites:** ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F427.
**Lecture + Lab + Other:** 2 + 2 + 0

**FLPA F431 Film Set Production II**
3 Credits
Offered Fall
In depth practice of film production supported by investigation into the history and theory of cinema. Script preparation, storyboarding and animatics, blocking actors and staging the camera, sound design, special effects, and editing techniques will be explored. Students will produce a capstone film project while serving as a department key.
**Prerequisites:** FLPA F231 or ART F231; FLPA F271; FLPA F260 or COJO F290; FLPA F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F433 Studies in French and European Cinema** (h)
3 Credits
Offered As Demand Warrants
The course discusses the evolution of French and European cinema in historical and artistic contents.
**Prerequisites:** ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F301 or FREN F302.
**Cross-listed with** FREN F433, FL F433.
**Lecture + Lab + Other:** 2 + 2 + 0

**FLPA F447 Lighting Design II** (h)
3 Credits
Offered As Demand Warrants
Further exploration and application of elements of design (color, texture, intensity, line, composition) as they relate to lighting for theatre, dance, other art forms and life. Production work required.
**Prerequisites:** FLPA F347.
**Lecture + Lab + Other:** 2 + 2 + 0

**FLPA F458 SFX Up Your Video** (h)
3 Credits
Offered As Demand Warrants
An exploration into adding special effects to your video projects. Will include "green screen," titles, animation, color grading, DVD menu design and more.
**Prerequisites:** FLPA F260 or COJO F290; FLPA F271 or FLPA F280 or COJO F280; video editing experience.
**Cross-listed with** COJO F458.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F460 Cross-cultural Filmmaking** (h)
3 Credits
Offered As Demand Warrants
Explore filmmaking through cultural knowledge, decolonized methodologies, and documentary filmmaking techniques to create content reflective of cultural and/or scientific knowledge. Develop film work with a theoretical base for cultural understanding, scientific communications, and educational potentials. Basic pre-production, production, and post-production processes will be explored within a multi-cultural communications framework.
**Prerequisites:** Junior, senior or graduate standing.
**Cross-listed with** ANTH F460; ART F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F470 Advanced Film and Video Directing** (h)
3 Credits
Offered As Demand Warrants
In depth investigation into the history, theory and basic concepts of film and video direction. Script preparation, story board, blocking actors and staging the camera, sound and editing. Projects include directing and shooting short videos.
**Recommended:** FLPA F331.
**Lecture + Lab + Other:** 1 + 6 + 0

**FLPA F472 3D Animation** (h)
3 Credits
Offered Fall
Concept and technique of 3D computer generated animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals.
**Prerequisites:** ART F231 or FLPA F231 or ART F271; COJO F131X or COJO F141X.
**Cross-listed with** ART F472; COJO F472.
**Special Notes:** May be repeated for credit.
**Lecture + Lab + Other:** 1 + 4 + 0

**FLPA F473 Politics and Film** (s)
3 Credits
Offered As Demand Warrants
Engage film with a critical political perspective. Concepts related to political power, society, and nature are surveyed through political science literature and politics-themed films. Quests for political power, difficulties of governance, politics of campaigns and elections, privacy and government surveillance, and political violence are concepts explored in this course.
**Prerequisites:** PS F101X.
**Cross-listed with** PS F473.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F475 Digital Video Compositing** (h)
3 Credits
Offered As Demand Warrants
Digital compositing techniques for creating moving imagery. The course covers video manipulation, layering images, synthesizing realistic video imagery, integration of live action and computer generated animation. Course can be repeated for a total of nine credits with permission of instructor.
**Prerequisites:** ART F472 or COJO F472 or FLPA F472.
**Cross-listed with** ART F475.
**Lecture + Lab + Other:** 1 + 4 + 0

**FLPA F480 Documentary Filmmaking** (h)
3 Credits
Offered Spring Odd-numbered Years
Basics of hands-on documentary filmmaking techniques, including preproduction, production and postproduction. Different documentary filmmaking directing styles and the process of distributing a documentary. Each student will produce a short documentary as the capstone of the course.
**Prerequisites:** Basic experience in shooting and editing video.
**Cross-listed with** COJO F480.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F481 Advanced Topics in Film or Stage Production**
3 Credits
Offered As Demand Warrants
This course offers advanced students unique opportunities for deeper study in areas of film or stage production. Advanced topics may include cinematography, special effects, audio mixing, costume design, etc.
**Prerequisites:** Junior or senior standing; FLPA F271.
**Recommended:** FLPA F260 or FLPA F121X.
**Lecture + Lab + Other:** 2 + 2 + 0

**FLPA F482 Dance Performance** (h)
2 Credits
Exploration and performance of expressive dance and movement. Includes development of an original choreography for public performance. Course is for advanced dance, acting and directing students with varying experience.
**Prerequisites:** FLPA F281; or movement performance experience.
**Lecture + Lab + Other:** 1.5 + 1.5 + 0

**FLPA F484 Russian and Soviet Cinema** (h)
3 Credits
Offered As Demand Warrants
Study of Russian culture and society through the medium of film, focusing on the history of Russian cinema and genres. Designed to familiarize students with topics in film theory, and Russian history and culture from 1900s to the present. Readings and topics reflect issues of current interest.
**Prerequisites:** Junior standing.
**Cross-listed with** RUSS F484.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F488 Dramatic Writing** (h)
3 Credits
Offered Fall Odd-numbered Years
Introduction to the craft of dramatic writing for theater and film, with an emphasis on dramatic storytelling. Course will focus on giving students a practical understanding of the uses of story structure, setting, character, plot and dialog, and how these elements work together to create compelling drama.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X, or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F488.
**Lecture + Lab + Other:** 3 + 0 + 0

**FLPA F489 Reel Workshop/Review III**
0 Credit
Offered Spring
FLPA Film concentration majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will create and present a film reel and resume. FLPA majors are expected to attend department "Town Hall" meetings.
**Prerequisites:** FLPA F389.
**Lecture + Lab + Other:** 0.5 + 0.5 + 0

**FLPA F498 Undergraduate Research**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-6

**FLPA F498P Undergraduate Research**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-6

**FLPA F499 Thesis Project**
1-3 Credits
Final step in film or stage training which involves creating a final film or stage creative project as a filmmaker, actor, director, designer, playwright or screenwriter. Projects can include producing a film project with the support of a faculty advisor, performing a leading role on a theatre/film UAF main-stage film or stage production or directing/designing/writing a project for the theatre/film UAF season.
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 0 + 0 + 1-3

# Fire Science (FIRE)

**Community and Technical College**
Fire Science (https://www.ctc.uaf.edu/programs/fire-science/)
907-455-2800

**FIRE F101 Principles of Emergency Services**
3 Credits
Offered Spring
Overview of fire protection, career opportunities, philosophy and history of fire protection/service. Fire loss analysis, organization and function of public/private protection services. Fire departments as part of local government, laws/regulations affecting fire services, fire service nomenclature, fire protection functions. Fire chemistry and physics, fire protection systems, fire strategy and tactics.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F105 Fire Prevention**
3 Credits
Offered Spring
The history and philosophy of fire prevention, organization and operation of a fire prevention bureau. Use of fire codes, identification and correction of fire hazards, and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F107 Strategy and Tactics**
3 Credits
Offered Spring
The principles of fire control through utilization of personnel, equipment and extinguishing agents on the fire ground.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F110 Introduction to Hazardous Waste Operations and Emergency Response**
3 Credits
Offered As Demand Warrants
Review of federal and state hazardous materials laws and regulations. Career opportunities related to the field of hazardous materials including transportation, emergency response, site clean up and Incident Command System (ICS).
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F115 Fire Apparatus and Equipment**
3 Credits
Offered As Demand Warrants
Fire apparatus design, specifications and performance capabilities, effective use of apparatus in fire emergencies.
**Prerequisites:** FIRE F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F117 Rescue Practices**
3 Credits
Offered Fall
Rescue situations and techniques including vehicle extrication, rescue carries, ventilation principles, structural rescue, use of portable hand and power tools, wildland/canine search and rescue, ice and water rescue and emergency life saving principles. All students are required to wear a complete set of fire department-approved protective clothing (turnout gear). Limited quantities are available for loan through the emergency services program coordinator. An eight-hour personal protective equipment and self-contained breathing apparatus safety orientation must be completed in order to participate in live fire exercises.
**Prerequisites:** EMS F170.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F121 Fire Behavior and Combustion**
3 Credits
Offered Fall and Spring
Theories and fundamentals of how and why fires start, spread, and how they are controlled.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F123 Fire Investigations I**
3 Credits
Offered As Demand Warrants
Fundamentals and technical knowledge needed for proper fire scene interpretations, including recognizing and conducting origin and cause, preservation of evidence and documentation, scene security, motives of the firesetter and types of fire causes.
**Prerequisites:** FIRE F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F127 Vessel Safety: Emergency Equipment, Procedures and Drills**
1 Credit
Offered As Demand Warrants
Introduction to safe boating practices and skills including boat handling, rules of navigation, proper safety equipment, weather, boat trailering, lines and knots, first aid and emergency procedures.
**Lecture + Lab + Other:** 1 + 0 + 0

**FIRE F131 Firefighter I, Series I**
3 Credits
Offered Fall and Summer
The initial phase in a four-phase process for achieving Alaska State Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of use. Successful completion of all four phases will qualify students for Alaska State Fire Fighter I certification. Limited quantities are available for loan through the Emergency Services Program coordinator.
**Prerequisites:** All students are required to wear a complete set of fire department approved protective clothing (turnout gear).
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F133 Firefighter I, Series II**
3 Credits
Offered Fall and Spring
The second phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Limited quantities are available for loan through the emergency services program coordinator. An 8 hour Personal Protective equipment (PPE) and Self-Contained Breathing Apparatus (SCBA) safety orientation offered each semester must be completed in order to participate in live fire exercises.
**Prerequisites:** All students are required to wear a complete set of fire department approved protective clothing (turnout gear).
**Lecture + Lab + Other:** 2 + 2 + 0

**FIRE F135 Firefighter I, Series III**
3 Credits
Offered Fall and Spring
The third phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Limited quantities are available for loan through the Emergency Services program coordinator. An 8 hour Personal Protective equipment (PPE) and Self-Contained Breathing Apparatus (SCBA) safety orientation is offered each semester and must be completed in order to participate in live fire exercises.
**Prerequisites:** All students are required to wear a complete set of fire department approved protective clothing (turnout gear).
**Lecture + Lab + Other:** 2 + 2 + 0

**FIRE F137 Firefighter I, Series IV**
3 Credits
Offered Fall and Spring
The final phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F143 Firefighter Internship, Series 1**
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
**Lecture + Lab + Other:** 0 + 2 + 0

**FIRE F145 Firefighter Internship, Series 2**
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
**Prerequisites:** FIRE F143.
**Lecture + Lab + Other:** 0 + 2 + 0

**FIRE F147 Firefighter Internship, Series 3**
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
**Prerequisites:** FIRE F145.
**Lecture + Lab + Other:** 0 + 2 + 0

**FIRE F151 Wildland Firefighter I**
3 Credits
Offered As Demand Warrants
Designed to provide entry-level wildland firefighters the skills and knowledge to safely function as a member of a firefighting crew. Includes fundamental knowledge of wildland fire organization, fire behavior, suppression methods, safety and the incident command system. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) courses. Successful course completion combined with national age and physical fitness requirements will qualify the student for an interagency fire qualification card (red card) with a rating of Firefighter (FFT2). NWCG courses for F151 include: S-130 Firefighter Training S-190 Introduction to Wildland Fire Behavior L-180 Human Factors in Wildland Fire Service L-200 Basic ICS, ICS for Single Resource and Initial Action Incidents.
**Cross-listed with** WFS F151.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F154 Basic Wildland Fire Safety**
1.5 Credits
Offered As Demand Warrants
Designed to meet the training needs of the Advanced Wildland Firefighter. The course includes development of a personal safety program and creating a list of performance standards based on the LCES mnemonic. This course is based on National Wildfire Coordinating Group (NWCG) courses.
**Prerequisites:** FIRE F151.
**Special Notes:** NWCG courses include: S-134 LCES.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**FIRE F155 Wildland Fire Behavior I**
2 Credits
Offered As Demand Warrants
This course is a classroom-based skills course designed to prepare the prospective fireline supervisor to undertake safe and effective fire management operations. It serves to develop fire behavior prediction knowledge and skills. Fire environment differences are discussed as necessary; instructor will stress local Alaskan conditions. This course is based on a National Wildfire Coordinating Group (NWCG) course.
**Prerequisites:** FIRE F151.
**Special Notes:** NWCG courses include: S-290 Intermediate Wildland Fire Behavior.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F159 Wildland Fire Urban Interface Operations**
2 Credits
Offered As Demand Warrants
Designed to assist both structural and wildland firefighters who will be making tactical decisions when confronting wildland fire that threatens life, property and improvements in the wildland/urban interface. Instructional units include interface awareness, size-up, initial strategy and incident action plan, structure triage, structure protection tactics, incident action plan assessment and update, follow up and public relations, and firefighter safety in the interface. This course is based on a National Wildland Coordinating Group (NWCG) course.
**Prerequisites:** FIRE F151 and WFS F153.
**Special Notes:** NWCG courses include: S-215 Fire Operations in the Wildland/Urban Interface.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F161 Incident Logistics Function**
2 Credits
Offered As Demand Warrants
Overview of the support and service branches of the logistics function within the incident command system. Emphasis on entry-level positions of ordering manager, receiving and distribution manager, base camp manager, equipment manager, incident communications manager, security manager and radio operator. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) job aids. NWCG courses include: J-252 Ordering Manager; J-253 Receiving and Distribution Manager; J-254 Base/Camp Manager; J-255 Equipment Manager; J-257 Incident Communications Manager; J-259 Security Manager; J-158 Radio Operator.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F163 Wildland Fire Dispatch I**
2 Credits
Offered As Demand Warrants
The purpose of this course is to provide students with the skills to perform as a dispatch recorder. Topics include the structure of the expanded dispatch organization, description of resource ordering processes, and the importance of effective communication skills and working relationships. Additionally, the course provides a solid foundation on the use of Resource Ordering Statusing System (ROSS), addressing the functions and capabilities of ROSS that will be used by most dispatchers. This is an interactive course that combines lecture and hands on practice in the application. This course is based on National Wildfire Coordinating Group (NWCG) courses: D-110 Expanded Dispatch Recorder; ROSS Dispatch -- Basic.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F165 ICS and the Incident Planning Function**
2 Credits
Offered As Demand Warrants
An overview of the Incident Command System principles and planning processes, organizational relationships with other functions, use of planning matrix board, resource management, documentation, demobilization, use of technical specialist and components of an incident action plan. This course is based on Federal Emergency Management Agency (FEMA) courses: I-200 Basic ICS: ICS for Single Resources and Initial Action Incidents; I-300 Intermediate ICS: ICS for Supervisors.
**Prerequisites:** FIRE F151.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F170 Incident Information**
2 Credits
Offered As Demand Warrants
This course provides students with the skills and knowledge needed to serve as an entry-level public information officer (PIOF) during an incident or event. Establishing and maintaining an incident information operation, internal and external audience communication, working with news media, handling special situations, and long-term planning and strategy.
**Prerequisites:** FIRE F151.
**Special Notes:** This course is based on National Wildfire Coordinating Group (NWCG) courses: S-203 Introduction to Incident Information.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F176 Wildland Fire Ignition Operations**
1 Credit
Offered As Demand Warrants
This course introduces the roles and responsibilities of a firing boss (FIRB), common firing devices, and general firing operations and techniques. The course provides students with important information concerning general tasks required to be successful. This course is based on a National Wildfire Coordinating Group (NWCG) course: S-234: Ignition Operations.
**Prerequisites:** FIRE F155.
**Lecture + Lab + Other:** 1 + 0 + 0

**FIRE F202 Fire Protection Hydraulics and Water Supply**
3 Credits
Offered As Demand Warrants
Provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and their application to analyze and solve water supply problems.
**Prerequisites:** MATH F055 or placement into MATH F105; FIRE F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F203 Hazardous Materials Chemistry I**
3 Credits
Offered As Demand Warrants
Basic fire chemistry relating to most categories of hazardous materials including problems of recognition, reactivity and health risks encountered by fire fighters.
**Prerequisites:** Satisfactory demonstration of basic chemistry knowledge (pretest).
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F206 Building Construction for Fire Protection**
3 Credits
Offered Spring
The components of building construction that relate to fire and life safety. Focuses on fire fighter safety. Includes elements of construction and design of structures shown to be key factors when inspecting buildings, preplanning fire operations and operating emergencies.
**Prerequisites:** FIRE F101 or employment or experience in related field, such as fire protection, insurance, construction architecture, or engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F207 Hazardous Materials Technician**
3 Credits
Offered As Demand Warrants
Advanced information for protection and safety of personnel engaged in response and field cleanup of hazardous materials and substances at the hazardous materials technician level (EPA course #165.15).
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F210 Fire Administration I**
3 Credits
Offered Fall
Organization and management of a fire department and the relationship of government agencies to the fire service. Emphasis on fire service leadership from the perspective of the company officer.
**Prerequisites:** FIRE F101.
**Lecture + Lab + Other:** 3 + 1 + 0

**FIRE F212 Building and Fire Codes**
3 Credits
Offered As Demand Warrants
Introduction to life safety aspects of the uniform building code. Emphasis on uniform fire code for fire inspections on existing buildings, flammable liquids, hazardous materials and special processes. Preparation for the uniform fire code exam administered by the International Conference of Building Officials.
**Prerequisites:** FIRE F101; FIRE F206.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F214 Fire Protection Systems**
3 Credits
Offered Fall
Features of design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection and portable fire extinguishers.
**Prerequisites:** FIRE F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F215 Advanced Hazardous Materials Technician**
3 Credits
Offered As Demand Warrants
Provides increased hands-on skills for personnel with a hazardous materials technician rating. Emphasis will be placed on task proficiency in spill containment, plugging, patching, diking and valve shut-offs on large commercial transporters. Stabilization of large and small chlorine leaks and decontamination will also be covered.
**Prerequisites:** FIRE F207.
**Lecture + Lab + Other:** 2 + 2 + 0

**FIRE F216 Methods of Instruction for Emergency Services Training**
3 Credits
Offered As Demand Warrants
Skills necessary to instruct emergency service courses including adult education techniques, classroom setup, use of audiovisual equipment, presentation, and evaluation methods of students and instruction.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F217 Hazardous Materials Technician Refresher**
1 Credit
Offered As Demand Warrants
Information and skills required for protection and safety of personnel engaged in response and field cleanup of hazardous materials and substances at the hazardous materials technician level.
**Prerequisites:** FIRE F206 or equivalent with certification that may not be expired for more than one calendar year.
**Lecture + Lab + Other:** 1 + 0 + 0

**FIRE F218 Advanced Rescue Practices**
3 Credits
Offered As Demand Warrants
Provides instruction in four of the most common rescue situations that fire departments encounter in an Interior Alaska rescue: vehicular extrication, rope rescue, confined space rescue and ice/water rescue. Class stresses basic knowledge and hands-on experience. All students are required to wear a complete set of fire department-approved protective clothing (turnout gear). Limited quantities are available for loan through the Emergency Services Program Coordinator.
**Prerequisites:** EMS F170; FIRE F117.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F219 Rapid Intervention Company Operations**
3 Credits
Offered As Demand Warrants
Provides firefighters with the knowledge and skills necessary to work safely and respond appropriately to life-threatening situations. Includes rapid intervention team building skills, self rescue techniques and the knowledge to handle a mayday or high risk/threat situation. Completion of course will qualify students for the state of Alaska certification testing process. All students are required to wear full firefighter personal protective equipment. Limited quantities of PPE are available for loan through the program coordinator.
**Prerequisites:** FIRE F117, FIRE F131, FIRE F133, FIRE F135 and FIRE F137; or department head approval.
**Lecture + Lab + Other:** 2.5 + 1 + 0

**FIRE F220 Emergency Services Safety, Health and Survival**
3 Credits
Offered Fall
Introduces basic principles and history related to national firefighter life safety initiatives, focusing on needed cultural and behavior changes throughout the emergency services. Course examines current and future issues in emergency services including close calls, near misses, line of duty deaths, risk management, mitigation and personal and organizational accountability.
**Prerequisites:** FIRE F101, FIRE F131, FIRE F133, FIRE F135 and FIRE F137.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F232 Firefighter II**
3 Credits
Offered Spring
Advanced technical study of fire alarms, communications, fire behavior, self-contained breathing apparatus, rescue, safety, ladders, fire hose, nozzles and appliances, fire streams, water supplies, sprinklers, overhaul and inspections. All students are required to wear a complete set of fire department approved protective clothing (turnout gear). Limited quantities are available for loan through the emergency services program coordinator.
**Prerequisites:** FIRE F131; FIRE F133; FIRE F135; FIRE F137.
**Special Notes:** An eight-hour personal protective equipment and self-contained breathing apparatus safety orientation must be completed in order to participate in live fire exercises.
**Lecture + Lab + Other:** 2 + 2 + 0

**FIRE F244 Firefighter Internship, Series 4**
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
**Prerequisites:** FIRE F145 or FIRE F147.
**Lecture + Lab + Other:** 0 + 2 + 0

**FIRE F246 Firefighter Internship, Series 5**
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
**Prerequisites:** FIRE F244.
**Lecture + Lab + Other:** 0 + 2 + 0

**FIRE F248 Firefighter Internship, Series 6**
1 Credit
Offered As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments.
**Prerequisites:** FIRE F246.
**Lecture + Lab + Other:** 0 + 2 + 0

**FIRE F251 Wildland Firefighter IV**
3 Credits
Offered As Demand Warrants
This course is intended to meet the training needs of the first line leadership positions in wildland fire suppression. Lessons are designed to produce student proficiency in the performance of duties from initial dispatch through demobilization back to the home unit. Topics include operational leadership, preparation and mobilization, assignment preparation, size up, developing a plan of action, risk management, entrapment avoidance, safety and tactics, offline duties, demobilization, and post incident responsibilities. Portions of the course will be blended learning with some lessons online. This course is based on National Wildlife Coordinating Group (NWCG) courses: S-200 Initial Attack Incident Commander; S-230 Crew Boss (Single Resource).
**Prerequisites:** FIRE F151; WFS F153 and FIRE F155.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F252 Wildland Fire Prevention I**
3 Credits
Offered As Demand Warrants
Designed to enhance basic skills and knowledge of personnel assigned responsibilities for wildfire prevention. This course teaches sound wildland fire observations and scene of origin protection practices that enable first responders to identify and preserve fire cause evidence. Introduction to Alaskan wildland fire prevention statutes, regulations and enforcement procedures.
**Prerequisites:** FIRE F151.
**Special Notes:** This course is based on National Wildfire Coordinating Group (NWCG) courses: P-101 Fire Prevention Education I; FI-110 Wildland Fire Observation and Origin Protection.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F253 Wildland Fire Investigation I**
3 Credits
Offered As Demand Warrants
Consistent fundamentals and technical knowledge base needed for the wildland fire origin and cause determination investigator (INVF). The concepts taught will include recognizing and conducting origin and cause determination, preservation of evidence and documentation, which will aid an investigator to perform at a professional level on a national basis. This course is based on a National Wildlife Coordinating Group (NWCG) course: FI-210 Wildland Fire Origin and Cause Determination.
**Prerequisites:** FIRE F151; FIRE F155 and FIRE F252.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F254 Incident Finance and Administration**
1.5 Credits
Offered As Demand Warrants
Incident business management objectives, including duties and responsibilities of the Incident Command System (ICS) finance/administration section relating to management practices and programs. Parts of this course are presented in a blended learning format. This course is based on a National Wildfire Coordinating Group (NWCG) course: S-260 Interagency Incident Business Management.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**FIRE F255 Wildland Fire Behavior II**
2 Credits
Offered As Demand Warrants
This course will give students an understanding of the determinants of fire behavior through studying input datum for fire (weather, slope, fuels and fuel moisture). Operation of fire behavior prediction tools, assessing and selecting proper inputs, interpreting the results in terms of rate of spread, fire line intensity, potential for extreme fire behavior; and documentation processes. This course is based on a National Wildlife Coordinating Group (NWCG) course: S-390 Introduction to Wildland Fire Behavior Calculations.
**Prerequisites:** FIRE F155.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F256 Wildland Fire Planning and Multiple Use Management**
3 Credits
Offered As Demand Warrants
Fire management and its role in a multiple use resource program. Includes prescribed and wildfire practices, environmental concerns, management goals and objectives, and pre-fire planning.
**Prerequisites:** FIRE F151; WFS F153; FIRE F155.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F257 Wildland Fire Helicopter Management**
2 Credits
Offered As Demand Warrants
A comprehensive examination of interagency government helicopter operations to prepare the student to perform the job of Helicopter Manager. Topics covered include: agency policy, flight manuals, helicopter capabilities and communications, flight following, fueling procedures, contract administration and pay documents, pre and post-use inspections, risk management and required safety procedures, general and specialized helicopter operations such as qualifying landing areas, transportation of passengers and cargo, initial attack operations, and sustained support to incidents. This course is based on a National Wildlife Coordinating Group (NWCG) course: S-372 Helicopter Management.
**Prerequisites:** WFS F157.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F258 Wildland Fuels Management**
3 Credits
Offered As Demand Warrants
Use of fire as a resource management tool. Natural and prescribed fire planning. Development and procedures to meet management objectives, components for conducting safe, prescribed burning.
**Prerequisites:** FIRE F151; FIRE F155; FIRE F262; WFS F153.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F262 Wildland Fire Tactical Operations**
2 Credits
Offered As Demand Warrants
This course is intended to produce proficiency in the selection and implementation of wildland fire suppression tactics necessary at the strike team/task force leader level. Topics include fire line construction, use of hand tools, heavy equipment, water and engines, firing operations and using combinations of resources. This is an advanced level course for trained and experienced wildland firefighters. This course is based on a National Wildland Coordinating Group (NWCG) course: S-336 Tactical Decision Making in Wildland Fire.
**Prerequisites:** FIRE F155 and FIRE F251.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F264 Incident Business Practices**
1.5 Credits
Offered As Demand Warrants
Incident business procedures required in entry level staff positions including financial management of a large complex incident. This course is based on a National Wildlife Coordinating Group (NWCG) course: S-261 Applied Interagency Incident Business Management.
**Prerequisites:** FIRE F254.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**FIRE F270 Wildland Fire Command Function**
3 Credits
Offered As Demand Warrants
An overview of the command function including use of single and unified command, roles and responsibilities of the incident commander and staff, development and implementation of strategic decisions, providing information to the media, and managing the incident from initial attack of small, non-complex fires to larger, more complex initial attack suppression organizations dealing with escape attack situations.
**Prerequisites:** FIRE F151; FIRE F155; FIRE F252; WFS F153.
**Lecture + Lab + Other:** 3 + 0 + 0

**FIRE F276 Prescribed Fire I**
2 Credits
Offered As Demand Warrants
Provide a thorough familiarization with the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide. Students will develop the knowledge and skills needed to prepare a prescribed fire plan, in accordance with the guide, ready for technical review and approval. This course is based on a National Wildlife Coordinating Group (NWCG) course: RX-341 Prescribed Fire Burn Plan Preparation.
**Prerequisites:** FIRE F255.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F277 Prescribed Fire II**
2 Credits
Offered As Demand Warrants
This course is designed to introduce students to the tools and techniques used to perform in the role of a prescribed fire burn boss. It leads the students through the duties and responsibilities associated with the position including evaluation and implementation of a prescribed fire plan. This course is based on a National Wildlife Coordinating Group (NWCG) course: RX-301 Prescribed Fire Implementation.
**Prerequisites:** FIRE F251; FIRE F255.
**Lecture + Lab + Other:** 2 + 0 + 0

**FIRE F278 Prescribed Fire III**
2 Credits
Offered As Demand Warrants
This course is designed to provide students with the knowledge and skills necessary to recognize and communicate the relationships between basic fire regimes and first order fire effects, the effects of fire treatments on first order fire effects, and to maintain fire treatments to achieve desired first order fire effects. This course is based on a National Wildlife Coordinating Group (NWCG) course: RX-310 Introduction to Fire Effects.
**Prerequisites:** FIRE F255.
**Lecture + Lab + Other:** 2 + 0 + 0

# First Year Experience (FYE)

**Undergraduate Interdisciplinary Studies**
Interdisciplinary Studies (http://www.uaf.edu/inds/)
907-474-1849

**FYE F100 First Year Seminar**
1 Credit
Offered Fall and Spring
An introduction, intended for first-year college students, to a current area of scholarly pursuit by faculty. Learn how faculty pursue scholarship in their discipline. An opportunity for first-year students to connect to one another and a faculty member with similar interests in small group-discussion settings and learn about collegiate life. Topics will vary by instructor.
**Lecture + Lab + Other:** 1 + 0 + 0

# Fisheries (FISH)

**College of Fisheries and Ocean Sciences**
Fisheries Program (https://www.uaf.edu/cfos/academics/)
907-474-7289

**FISH F100 Skeleton Articulation as an Introduction to Marine Conservation Biology**
2 Credits
Offered As Demand Warrants
Course designed for high school students.
**Prerequisites:** GPA of 2.5 or higher; offered to high school juniors and seniors with at least 1 biology and 1 math class completed.
**Lecture + Lab + Other:** 1 + 3 + 0

**FISH F102 Fact or Fishin': Case Studies in Fisheries and Marine Sciences**
1 Credit
Offered Fall
This seminar will promote active learning, critical thinking, and problem solving through a series of case studies involving current issues in fisheries and marine sciences conservation and management. Students enrolled in this course will also receive instruction on fundamental skills required to successfully complete a four-year degree at UAF.
**Crosslisted with** MSL F102.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**FISH F103 The Harvest of the Sea**
2 Credits
Offered Spring
This course will explore the scientific and popular literature related to the exploitation of global marine fisheries resources. Specific topics of the course will be based on three core themes: (1) early exploitation of marine resources, leading to the need for fisheries management; (2) overexploitation of fish and marine mammal stocks driven largely by technological advancements culminating from the Industrial Revolution; and (3) the current status and future sustainability of marine fisheries resources. This course is largely discussion based; as a result, weekly attendance and preparation is a critical component of the course.
**Prerequisites:** FISH F102; FISH F110; placement in WRTG F111X.
**Lecture + Lab + Other:** 2 + 0 + 0

**FISH F110 Fish and Fisheries in a Changing World**
3 Credits
Offered Fall
This course is an exploration of the patterns of fish diversity, and the resilience and sustainability that results. The topics that we will cover are intended to act as foundational principles that fisheries resource professionals will use throughout their careers. Together we will examine the complexity of what constitutes a "fishery" and better understand the factors that have led some fisheries to collapse and others to persist. In addition to lectures, students will read, discuss and write extensively and by doing so, can expect to gain better understanding of the "science of sustainability" with regards to 21st century fisheries in Alaska and beyond.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F192 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**FISH F261 Introduction to Fisheries Utilization**
3 Credits
Offered Fall
Application of harvesting, processing, preservation and marketing of Alaska's rich fisheries resources. Core course requirement for all B.A. students completing a minor in fisheries and for B.S. fisheries students. Course is offered via videoconference.
**Prerequisites:** BIOL F103X or CHEM F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F288 Fish and Fisheries of Alaska**
3 Credits
Offered Spring
An introduction to finfish, shellfish and marine mammals of Alaska, including their biology, ecology, fisheries, uses, management, economics and conservation issues.
**Prerequisites:** FISH F110.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F290 Fisheries Internship**
1 Credit
Offered Fall, Spring and Summer
Under the supervision of a fisheries professional, students gain practical, professional experience through employment. Can be repeated up to four times, each for a different type of employment. The primary learning objectives for students are to gain professional experience in fisheries and refine career goals.
**Prerequisites:** Permission of the Fisheries Experiential Learning Coordinator/instructor; a student internship agreement form turned into the Experiential Learning Coordinator.
**Recommended:** STAT F200X.
**Lecture + Lab + Other:** 0 + 0 + 1-4

**FISH F292 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**FISH F315 Freshwater Fisheries Techniques**
3 Credits
Offered Summer Even-numbered Years
Introduction to laboratory and field sampling methods in aquaculture, limnology, and fisheries biology. Emphasis will be placed on the proper care and use of laboratory equipment and field sampling gears, as well as the development of sampling protocols for collecting representative, non-biased fisheries and aquatic sciences data.
**Prerequisites:** FISH F110; FISH F288; STAT F200X.
**Lecture + Lab + Other:** 2 + 3 + 0

**FISH F320 Salmon, People and Place**
3 Credits
Offered Spring
An examination of the deep ties between salmon and Indigenous peoples' food security, subsistence traditions and ways of life; contemporary Western society connections to salmon, including governance structures, recreational and commercial fishing, and global economies; case studies of pressing challenges facing salmon-dependent communities.
**Prerequisites:** ANTH F100X, FISH F110, WRTG F111X, or FISH F288.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F336 Introduction to Aquaculture**
3 Credits
Offered Spring Even-numbered Years
Introduction to the species, methodology, economics and environmental impacts of world aquaculture, with a focus on the contribution of Alaska's aquaculture industries including salmon ocean ranching, shellfish and kelp mariculture. Survey of worldwide production, including an introduction to production systems and familiarization with Alaska systems.
**Prerequisites:** BIOL F115X.
**Special Notes:** This course is taught in Juneau.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F340 Seafood Business**
3 Credits
Offered Fall
Development and management of a successful seafood business from inception to operation. Practical application of business planning, obtaining financing, accounting, permitting, feasibility analysis, marketing, human resource management, and operational aspects of seafood harvesting and processing using case studies and guest lecturers from seafood industry.
**Prerequisites:** FISH F261.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F411 Human Dimensions of Environmental Systems**
3 Credits
Offered Fall
Study of human-environment relationships and applications to resource management. Draws on a range of social scientific approaches to the study of environmental systems, including: environmental anthropology, environmental history, historical ecology, political ecology, ethnoecology, property theory, and environmental justice.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; F200-level course in cultural anthropology, human geography, sociology, or political science.
**Stacked with** FISH F611.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F412 Human-environment Research Methods**
3 Credits
Offered Fall Even-numbered Years
Basic overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, text analysis, surveys, scales, cognitive anthropology and ethnoecology, social networks, behavioral observation and visual methods.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; upper level standing.
**Cross-listed with** ANTH F412.
**Stacked with** FISH F613.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F414 Field Methods in Marine Ecology and Fisheries**
3 Credits
Offered Summer Odd-numbered Years
Hands-on introduction to ecological methods in fisheries and the marine environment. Class will consist of a series of group field exercises and sampling methods conducted in local marine habitats as well as instruction on experimental designs for testing hypotheses and statistical interpretation of results.
**Prerequisites:** BIOL F371, MSL F320.
**Lecture + Lab + Other:** 13.5 + 20 + 0

**FISH F421 Fisheries Population Dynamics**
4 Credits
Offered Fall Odd-numbered Years
This course introduces basic ecological and fisheries stock assessment models. Through lectures, assignments and weekly computer lab, it provides a conceptual understanding of population dynamics relevant to fisheries and practice manipulating equations.
**Prerequisites:** STAT F200X.
**Lecture + Lab + Other:** 4 + 0 + 0

**FISH F425 Fish Ecology**
3 Credits
Offered Fall Odd-numbered Years
An exploration of how fishes interact with and adapt to their physical and biological environments. Examples focus on individual and population level of biological organization. Human impacts to the ecology of major freshwater and marine habitats are examined.
**Prerequisites:** FISH F110; BIOL F371.
**Stacked with** FISH F650.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F426 Behavioral Ecology of Fishes**
3 Credits
Offered Spring Even-numbered Years
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It provides students an option to fulfill upper-level undergraduate and graduate required and elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes.
**Prerequisites:** BIOL F371 or FISH F427.
**Recommended:** FISH F425.
**Stacked with** FISH F626.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F427 Ichthyology** (n)
4 Credits
Offered Fall and Spring
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology and importance to man.
**Prerequisites:** BIOL F116X.
**Cross-listed with** BIOL F427.
**Lecture + Lab + Other:** 3 + 3 + 0

**FISH F428 Physiological Ecology of Fishes**
3 Credits
Offered Spring Odd-numbered Years
An advanced exploration of the physiological responses and adaptations of fishes in both freshwater and marine systems to natural and human-induced environmental changes.
**Prerequisites:** BIOL F310, FISH F427 or BIOL F427.
**Stacked with** FISH F628.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F433 Pacific Salmon Life Histories**
3 Credits
Offered Spring Even-numbered Years
This course provides an introduction to the life histories of Pacific salmon. We will explore variation in life history traits within and among species, as well as within and among populations, at each stage of the salmon life cycle. Life histories will be understood in evolutionary and ecological contexts. We will also discuss management and conservation of Pacific salmonid species throughout their range, but with focus on Alaska.
**Prerequisites:** BIOL F115X; BIOL F116X.
**Stacked with** FISH F633.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F435 Data Visualization in Fisheries**
2 Credits
Offered Spring
Fundamental methods for presenting fisheries data visually, including figures, tables and visual abstracts. Focus will be on effective design and the preparation of publication-ready figures and tables. Student activities will include critiquing figures and tables published in fisheries literature as well as creating their own from existing datasets.
**Prerequisites:** STAT F200X.
**Stacked with** FISH F635.
**Lecture + Lab + Other:** 2 + 0 + 0

**FISH F443 Fisheries Oceanography**
4 Credits
Offered Fall Odd-numbered Years
Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.
**Prerequisites:** FISH F110 or FISH F288; STAT F200X, MSL F111X, or CHEM F105X; PHYS F123X.
**Cross-listed with** MSL F443.
**Stacked with** MSL F643, FISH F643.
**Lecture + Lab + Other:** 4 + 0 + 0

**FISH F446 Freshwater Habitat Dynamics**
3 Credits
Offered Fall Even-numbered Years
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.
**Prerequisites:** FISH F110, BIOL F371.
**Cross-listed with** BIOL F446.
**Stacked with** FISH F646, BIOL F646.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F451 Aquatic Conservation and Management Genetics**
3 Credits
Offered Fall
Genetics is one of the most rapidly growing fields of science and is fundamental for ecology, conservation and natural resource management. This course will cover population genetics, molecular ecology, evolutionary theory and quantitative methods, with an emphasis on genomic applications to marine and freshwater resource management.
**Prerequisites:** BIOL F260; STAT F401 (STAT course may be taken concurrently).
**Stacked with** FISH F651.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F476 Aquatic Food Web Ecology**
3 Credits
Offered Fall Even-numbered Years
Examines theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
**Prerequisites:** Upper-level undergraduate standing.
**Cross-listed with** BIOL F470; MSL F476.
**Stacked with** BIOL F670; FISH F676; MSL F676.
**Lecture + Lab + Other:** 2 + 3 + 0

**FISH F487 Fisheries Management** (n)
3 Credits
Offered Spring
Theory and practice of fisheries management, including strategies utilized for the management of freshwater and marine fisheries. Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, fish populations and human resource users are considered, as is the setting of appropriate goals and objectives for science-based management.
**Prerequisites:** COJO F131X or COJO F141X; FISH F288; STAT F200X.
**Stacked with** FISH F687.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F490 Experiential Learning: Fisheries and Marine Sciences Internship**
1 Credit
Offered Fall, Spring and Summer
Under the supervision of a faculty member and a fisheries or marine sciences professional, upper-division students gain professional experience through employment. Requirements are decided prior to enrollment based on a 3-way agreement between the employer, student, and faculty member, which contains learning objectives that reflect upper-division credit. Can be repeated up to 4 times, each for a different type of employment.
**Prerequisites:** Junior or senior standing plus permission of Faculty Sponsor and the Fisheries Experiential Learning Coordinator/instructor (the Coordinator can be a sponsor as well); signing of a student internship agreement form that contains learning objectives for the internship that reflects upper-division internship credit.
**Recommended:** FISH F315; STAT F200X; STAT F401.
**Lecture + Lab + Other:** 0 + 0 + 1-4

**FISH F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**FISH F492P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**FISH F498 Senior Thesis Proposal**
1-3 Credits
Students will complete the first part of a year-long, self-designed scholarly project that is the capstone of a student's exemplary academic performance. For this component of senior thesis, the student will develop a proposal that will reflect a thorough understanding of the existing literature, study objectives and testable hypotheses, the methodology by which data will be collected through field and/or laboratory research, including data analyses, and a timeline by which the senior thesis will be completed. The student should also complete the collection of field and/or laboratory data and begin data analysis.
**Prerequisites:** Fisheries major with senior standing; a GPA of 3.2 or higher and permission of a Fisheries Division faculty mentor and the SFOS Internship Coordinator (the coordinator may also be a mentor); STAT F200X and ENGL F414.
**Recommended:** FISH F315; STAT F401 or STAT F402.
**Lecture + Lab + Other:** 0 + 0 + 0

**FISH F499 Fisheries Senior Thesis**
2-4 Credits
Students will complete the second part of a year-long, self-designed scholarly project that is the capstone of a student's exemplary academic performance. For this component of senior thesis, the student will complete analysis of field and/or laboratory data collected during FISH F498 and develop a research paper/manuscript that will interpret the study results and cast them within the context of the existing literature relevant to the study topic. Students will be expected to work with their senior thesis mentor to submit the manuscript for peer review to a scientific journal and will be required to present their study results as an oral or poster presentation.
**Prerequisites:** Fisheries major with senior standing; with a GPA of 3.2 or higher; and permission of a Fisheries Division faculty mentor and the SFOS Internship Coordinator (the coordinator may also be a mentor); FISH F498.
**Recommended:** FISH F315; STAT F401; STAT F402.
**Lecture + Lab + Other:** 0 + 0 + 2-4

**FISH F604 Modern Applied Statistics for Fisheries**
4 Credits
Offered Fall Odd-numbered Years
Covers general statistical approaches to quantitative problems in marine science and fisheries with guidance on how to collect and organize data, how to select appropriate statistical methods and how to communicate results. A variety of advanced statistical methods for analyzing environmental data sets will be illustrated in theory and practice.
**Prerequisites:** STAT F200X; STAT F401; proficiency in computing with R.
**Cross-listed with** MSL F604.
**Lecture + Lab + Other:** 3 + 3 + 0

**FISH F605 Communicating Science to the Public**
2 Credits
Offered Spring Odd-numbered Years
A focus on practical skills in communicating research to peers and public audiences. Short lectures, readings and discussion will focus on communication issues in environmental science and management and best practices for good oral and written communication.
**Prerequisites:** Graduate standing in the sciences.
**Lecture + Lab + Other:** 2 + 0 + 0

**FISH F611 Human Dimensions of Environmental Systems**
3 Credits
Offered Fall
Study of human-environment relationships and applications to resource management. Draws on a range of social scientific approaches to the study of environmental systems, including: environmental anthropology, environmental history, historical ecology, political ecology, ethnoecology, property theory, and environmental justice.
**Prerequisites:** Graduate standing.
**Stacked with** FISH F411.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F613 Human-environment Research Methods**
3 Credits
Offered Fall Even-numbered Years
Basic overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, text analysis, surveys, scales, cognitive anthropology and ethnoecology, social networks, behavioral observation and visual methods.
**Prerequisites:** Graduate standing.
**Stacked with** FISH F412 and ANTH F412.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F616 Indigenous Fisheries of Alaska**
3 Credits
Offered Fall
Introduces students to the breadth and depth of Indigenous knowledge, practice and governance of fisheries and environmental systems across Alaska. Explores and compares European ontological and epistemological positions that form the base of Western science. This course pairs weekly class meetings with an intensive in-person retreat.
**Prerequisites:** Permission by Department.
**Lecture + Lab + Other:** 2.64 + 0 + 1.64

**FISH F621 Estimation of Fish Abundance**
3 Credits
Offered Fall Even-numbered Years
Estimation of abundance of fish and other aquatic populations, using mark-recapture, line-transect, catch-effort and change-in-ratio techniques. Computer lab work and homework from actual and simulated populations.
**Prerequisites:** MATH F252X; STAT F401; familiarity with PCs including word processing and spreadsheets.
**Recommended:** FISH F421; MATH F302; MATH F314.
**Lecture + Lab + Other:** 2 + 2.5 + 0

**FISH F622 Quantitative Fish Population Dynamics**
3 Credits
Offered Spring Odd-numbered Years
Modeling fish population mortality, recruitment individual growth and fecundity. Models and assessment techniques for age- and length-structured populations. Biological reference points and management strategies derived from population and harvesting parameters. Computer lab work and homework with data from actual and simulated populations.
**Prerequisites:** MATH F252X; STAT F401; Familiarity with PCs including word processing and spreadsheets.
**Recommended:** FISH F421; MATH F302; MATH F314.
**Lecture + Lab + Other:** 2 + 2.5 + 0

**FISH F625 Population Dynamics of Vertebrates**
3 Credits
Offered Spring Odd-numbered Years
Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters and inference. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data.
**Prerequisites:** BIOL F371; STAT F401.
**Cross-listed with** WLF F625.
**Lecture + Lab + Other:** 2 + 3 + 0

**FISH F626 Behavioral Ecology of Fishes**
3 Credits
Offered Spring Even-numbered Years
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It provides students an option to fulfill upper-level undergraduate and graduate required and elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes.
**Prerequisites:** BIOL F371 or FISH F427.
**Recommended:** FISH F425.
**Stacked with** FISH F426.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F627 Statistical Computing with R**
2 Credits
Offered Fall
Using the free, open-source software R to teach computing, programming, and modeling concepts for the statistical computing of fisheries and biological data. Prepares students for other graduate-level, quantitative fisheries courses and covers exploratory statistical and graphical analyses, as well as computer-intensive methods such as bootstrapping and randomization tests.
**Prerequisites:** STAT F200X, STAT F401, and proficiency with Excel.
**Cross-listed with** MSL F627.
**Lecture + Lab + Other:** 1 + 3 + 0

**FISH F628 Physiological Ecology of Fishes**
3 Credits
Offered Spring Odd-numbered Years
An advanced exploration of the physiological responses and adaptations of fishes in both freshwater and marine systems to natural and human-induced environmental changes.
**Prerequisites:** BIOL F310, FISH F427 or BIOL F427; graduate standing.
**Stacked with** FISH F428.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F631 Data Analysis in Community Ecology**
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of statistical methods that have been specifically developed to aid our understanding and interpretation of the structure, abundance, and distribution of species and communities in relation to resources and the environment.
**Prerequisites:** STAT F200X; STAT F401; FISH F627 (Statistical Computing with R) or familiarity with R, general ecology, graduate standing in fisheries.
**Cross-listed with** MSL F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F633 Pacific Salmon Life Histories**
3 Credits
Offered Spring Even-numbered Years
This course provides an introduction to the life histories of Pacific salmon. We will explore variation in life history traits within and among species, as well as within and among populations, at each stage of the salmon life cycle. Life histories will be understood in evolutionary and ecological contexts. We will also discuss management and conservation of Pacific salmonid species throughout their range, but with focus on Alaska.
**Prerequisites:** BIOL F115X; BIOL F116X.
**Stacked with** FISH F433.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F635 Data Visualization in Fisheries**
2 Credits
Offered Spring
Fundamental methods for presenting fisheries data visually, including figures, tables and visual abstracts. Focus will be on effective design and the preparation of publication-ready figures and tables. Student activities will include critiquing figures and tables published in fisheries literature as well as creating their own from existing datasets.
**Prerequisites:** STAT F401.
**Stacked with** FISH F435.
**Lecture + Lab + Other:** 2 + 0 + 0

**FISH F641 Ecosystem-based Fisheries Management**
2 Credits
Offered Spring Odd-numbered Years
This course examines the theory and practice of ecosystem-based fisheries management (EBFM). Topics include legal frameworks, principles, governance, approaches, scientific basis, management implementation and outcomes of EBFM. Emphasis is placed on Alaska with other illustrative examples from around the world.
**Prerequisites:** FISH F487 or graduate standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**FISH F642 Bayesian Decision Theory for Resource Management**
4 Credits
Offered Spring Even-numbered Years
Application of decision theory to problems in natural resources management. Students will learn to perform Bayesian calculations and uncomplicated decision analysis themselves.
**Prerequisites:** FISH F621.
**Cross-listed with** STAT F642.
**Lecture + Lab + Other:** 2 + 2 + 0

**FISH F643 Fisheries Oceanography**
4 Credits
Offered Fall Odd-numbered Years
Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.
**Prerequisites:** Graduate standing.
**Cross-listed with** MSL F643.
**Stacked with** MSL F443, FISH F443.
**Lecture + Lab + Other:** 4 + 0 + 0

**FISH F645 Bioeconomic Modeling and Fisheries Management**
3 Credits
Offered Fall Odd-numbered Years
An introduction to analytic and computational models of discrete-time representations of bioeconomic systems, including comparative static and optimal control approaches to optimizing unitary and multiple criteria subject to deterministic and stochastic dynamic processes. Particular attention is given to bioeconomic models of optimal management of exploited populations of fish and shellfish.
**Prerequisites:** STAT F401; MATH F230X or MATH F251X; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F646 Freshwater Habitat Dynamics**
3 Credits
Offered Fall Even-numbered Years
Theoretical background of habitat dynamics in freshwaters with a focus on the response of biota and practical application of current sampling methods.
**Prerequisites:** Graduate standing.
**Cross-listed with** BIOL F646.
**Stacked with** FISH F446, BIOL F446.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F650 Fish Ecology**
3 Credits
Offered Fall Odd-numbered Years
An exploration of how fishes interact with and adapt to their physical and biological environments. Examples focus on individual and population level of biological organization. Human impacts to the ecology of major freshwater and marine habitats are examined.
**Prerequisites:** Graduate standing.
**Stacked with** FISH F425.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F651 Aquatic Conservation and Management Genetics**
3 Credits
Offered Fall
Genetics is one of the most rapidly growing fields of science and is fundamental for ecology, conservation and natural resource management. This course will cover population genetics, molecular ecology, evolutionary theory and quantitative methods, with an emphasis on genomic applications to marine and freshwater resource management.
**Stacked with** FISH F451.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F654 Benthic Ecology**
3 Credits
Offered Fall Even-numbered Years
Ecology of marine benthos, from subtidal to hadal zone. Methods of collecting, sorting, narcotizing, preserving and analyzing benthic assemblages, including video analytical techniques from submersibles and ROVs. Hydrothermal vent and cold seep assemblages. Physiology/energetics of benthic organisms, including animal-sediment relationships, feeding, reproduction and growth. Depth, spatial and latitudinal distribution patterns.
**Prerequisites:** Invertebrate zoology course, marine biology course.
**Cross-listed with** MSL F654.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F670 Quantitative Analysis for Marine Policy Decisions**
3 Credits
Offered Spring Odd-numbered Years
An introduction to the practical application of mathematical programming, operations research, simulation, cost-benefit analysis, cost effectiveness analysis, regional impact assessment, economic valuation, risk analysis, adaptive management and other decision theoretic tools in preparation of regulatory documents required for the management of living marine resources and for assessment of environmental damages.
**Prerequisites:** STAT F401; MATH F230X or MATH F251X; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F671 Foundations of Marine Policy and Ocean Governance**
3 Credits
Offered Fall
This course provides a foundation in developing, analyzing, and enforcing laws and policies that govern the marine environment and living marine resources. Subjects addressed include transportation, environmental protection, energy development, seabed mining, fisheries, mariculture, coastal zone development and hazard mitigation.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F672 Law and Fisheries**
2 Credits
Offered Fall Even-numbered Years
This course introduces students to the key Federal, State and International laws that govern fisheries in Alaska state waters and in the US Exclusive Economic Zone off Alaska. In addition, the course introduces students to seminal court rulings that have helped shape those laws.
**Prerequisites:** graduate standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**FISH F674 Economic Development for Fish-dependent Communities**
3 Credits
Offered Spring Even-numbered Years
An introduction to the economic organization of fishery-dependent communities in Alaska, tools for characterizing community-scale economies, principles of economic development, methods of measuring regional economic impacts of changes in access to fisheries, and a review of policies intended to support the continuity and development of these communities.
**Prerequisites:** STAT F401 or ECON F227.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F675 Political Ecology**
3 Credits
Offered As Demand Warrants
Introduction to the field of political ecology. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of enclosure and privatization, environmental values, conservation, environmental justice, and colonialism and economic development.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F675.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F676 Aquatic Food Web Ecology**
3 Credits
Offered Fall Even-numbered Years
Examines theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
**Cross-listed with** BIOL F670; MSL F676.
**Stacked with** BIOL F470; FISH F476; MSL F476.
**Lecture + Lab + Other:** 2 + 3 + 0

**FISH F677 Scientific Writing Techniques**
3 Credits
Students learn to write scientifically with skill and clarity by practicing using easy-to-follow writing techniques to write and rewrite a draft manuscript. Topics include writing approaches, storytelling, outlines, style, grammar, punctuation, and editorial review. Most beneficial for graduate students writing theses, but provides excellent writing experience for new students.
**Prerequisites:** Graduate Standing.
**Cross-listed with** MSL F677.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F681 The North Pacific Fishery Management Council**
2 Credits
Offered Summer
This course immerses students into the scientific and policy basis for federal fisheries management in Alaska. Lectures introduce the laws that underlie federal fisheries management of Alaska and issues scheduled for the upcoming NPFMC meeting. Experiential learning will occur through participation in the meeting and discussions with fishery stakeholders.
**Lecture + Lab + Other:** 12 + 0 + 26

**FISH F682 Field Course in Salmon Management**
4 Credits
Offered Summer Odd-numbered Years
A hands-on study of salmon management, with participation of harvesters, processors, managers and scientists. Students will track the return of salmon to Bristol Bay and estimate the total return as the runs develop. Consists of a combination of lectures, computer laboratories and field experience in data collection.
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 3 + 3 + 0

**FISH F683 The Alaska Board of Fisheries**
2 Credits
Offered Spring Odd-numbered Years
An experiential immersion into Alaska's state fisheries management. Classroom sessions explore state and federal laws and fishery management strategies that underpin the management of sport, commercial and subsistence fisheries in Alaska and preview current fishery management issues. Students will experience the decision-making process by observing a BOF meeting.
**Prerequisites:** Graduate standing.
**Special Notes:** Students are responsible for their own travel costs.
**Lecture + Lab + Other:** 1.5 + 0 + 2

**FISH F687 Fisheries Management** (n)
3 Credits
Offered Spring
Theory and practice of fisheries management, including strategies utilized for the management of freshwater and marine fisheries. Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, fish populations and human resource users are considered, as is the setting of appropriate goals and objectives for science-based management.
**Prerequisites:** graduate standing.
**Stacked with** FISH F487.
**Lecture + Lab + Other:** 3 + 0 + 0

**FISH F690 Marine Policy Internship**
2-6 Credits
Offered Fall, Spring and Summer
Students of the MMP program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships require 42 hours of directed professional activity per course credit hour.
**Special Notes:** Internships must be pre-approved by the MMP program coordinator and require a student internship agreement form signed by the student, the instructor, the MMP program coordinator, and the internship host.
**Lecture + Lab + Other:** 0 + 0 + 84-252

**FISH F692 Seminar**
0.5-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**FISH F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**FISH F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**FISH F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Foreign Languages (FL)

**College of Liberal Arts**
Department of Foreign Languages and Literatures (https://www.uaf.edu/language/)
907-474-7396

**FL F200X World Literature** (h)
3 Credits
Offered Fall, Spring and Summer
Introduction to a wide variety of literary texts from different world cultures. Includes a range of approaches to genres that may include myth, poetry, storytelling, drama and essays. Students will gain an understanding of cross-cultural differences and similarities. Course may be repeated for credit when content varies.
**Cross-listed with** ENGL F200X.
**Attributes:** UAF Core World Literatures, UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**FL F433 Studies in French and European Cinema** (h)
3 Credits
Offered As Demand Warrants
The course discusses the evolution of French and European cinema in historical and artistic contents.
**Prerequisites:** ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F301 or FREN F302.
**Cross-listed with** FREN F433, FLPA F433.
**Lecture + Lab + Other:** 2 + 2 + 0

**FL F451 Foreign Language Teaching Practicum**
3 Credits
Offered As Demand Warrants
Methodology workshop for the advanced second language student. Includes language acquisition and pedagogy and employment of these techniques in a lower level language classroom under the supervision of a classroom teacher. Enrollment subject to available classroom placement.
**Prerequisites:** Completion of FREN F302 or SPAN F302 or RUSS F302 language course.
**Lecture + Lab + Other:** 2 + 0 + 3-5

# French (FREN)

**College of Liberal Arts**
Department of Foreign Languages and Literatures (https://www.uaf.edu/language/)
907-474-7396

**FREN F101X Elementary French I** (h)
4 Credits
Offered Fall and Spring
Introduction to the French language and culture. Development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 4 + 0 + 0

**FREN F102X Elementary French II** (h)
3 Credits
Offered Spring
Introduction to French language and culture. Development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.
**Prerequisites:** FREN F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F201 Revision/Early Intermediate French** (h)
3 Credits
Offered Fall
Revision of fundamental French skills via French-language films. Designed for students with previous exposure to French.
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F202 Intermediate French II** (h)
3 Credits
Offered Spring
Increasing emphasis on reading ability and cultural material. Conducted in French.
**Prerequisites:** FREN F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F203 Conversational French II** (h)
3 Credits
Offered As Demand Warrants
Oral skills improvement. Includes group work, presentations, skits, discussions and vocabulary to improve speaking on specific topics. Does not satisfy core curriculum or foreign language major requirements.
**Prerequisites:** FREN F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F301 Advanced French**
3 Credits
Offered Fall
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in French.
**Prerequisites:** FREN F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F302 Advanced French II** (h)
3 Credits
Offered Spring
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in French. Continuation of FREN F301.
**Prerequisites:** FREN F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F431 Studies in the Culture of the French Speaking World** (h)
3 Credits
Offered Fall
Intensive study of selected aspects of the culture of the French-speaking world. Course may be repeated for credit if topic varies.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F302; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F432 Studies of French Literature** (h)
3 Credits
Offered As Demand Warrants
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Course may be repeated for credit if topic varies.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F302; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**FREN F433 Studies in French and European Cinema** (h)
3 Credits
Offered As Demand Warrants
The course discusses the evolution of French and European cinema in historical and artistic contents.
**Prerequisites:** ENGL F217X or FLPA F217X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; FREN F301 or FREN F302.
**Cross-listed with** FLPA F433, FL F433.
**Lecture + Lab + Other:** 2 + 2 + 0

# General Studies (GENR)

**General Studies**
Academic Advising Center
907-474-6396

**GENR F201 Academic Recovery**
3 Credits
This course helps students who are facing academic challenges to identify strengths, weaknesses and goals through self-exploration and the creation of a project that involves building campus relationships and the development of research and presentation skills. Enrollment is highly encouraged for students placed on academic probation or disqualification.
**Lecture + Lab + Other:** 3 + 0 + 0

**GENR F340 Peer Advisor Training**
1 Credit
Offered Spring
Emphasis on developing skills needed to assist exploratory/undecided students with their academic planning and decision making. Topics include resource referral, communication/active listening, academic and career planning, time and stress management, group dynamics, and values clarification.
**Prerequisites:** Sophomore standing; application.
**Lecture + Lab + Other:** 1 + 0 + 0

**GENR F342 Peer Advising Practicum**
1-3 Credits
Supervised peer advising experience (both individually and paired with faculty member) in the Academic Advising Center or appropriate department, allowing for application of theory and skills gained in GENR F340. Course may be repeated once for credit.
**Prerequisites:** GENR F340.
**Lecture + Lab + Other:** 0 + 0 + 0

**GENR F400 Interdisciplinary Capstone**
0 Credit
Offered Fall, Spring and Summer
Students identify their values, strengths, and post-graduation goals. They will prepare a resume and writing sample. Students will also be expected to develop and research an action plan to reach their stated goals. These materials have practical applications and facilitate self-reflection on the learning outcomes of their interdisciplinary degree.
**Prerequisites:** admittance to an interdisciplinary major; senior standing.
**Cross-listed with** INDS F400.
**Lecture + Lab + Other:** 0 + 0 + 0

# Geography (GEOG)

**College of Natural Science and Mathematics**
Department of Geosciences (https://www.uaf.edu/geology/academics/geography/)
907-474-7565

**GEOG F338 Introduction to Geographic Information Systems**
3 Credits
Offered Fall
Geographic data concepts including mapping systems, data sources, editing data, GIS analysis and computer mapping. Introduction to global positioning systems. GIS applications in natural resources management.
**Prerequisites:** Knowledge of PCs or Unix workstations desirable.
**Cross-listed with** NRM F338.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOG F429 Geography of the Arctic and Circumpolar North** (s)
3 Credits
Offered Fall
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.
**Prerequisites:** GEOS F111X.
**Cross-listed with** ACNS F429; GEOS F429.
**Stacked with** ACNS F629; GEOG F629.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOG F430 Google Earth and Neogeography**
3 Credits
Offered Spring
Neogeography describes a new generation of primarily web-based mapping techniques and technologies. This course teaches advanced use of some of the latest neogeography tools, such as Google Earth, Maps Engine and Earth Engine. The skills and techniques learned will be applicable in academic, government and industry settings as a way to produce dynamic visualizations from any dataset with a geospatial component, for purposes of data presentation, analysis and research.
**Prerequisites:** junior standing with completed course work in geographic methods (GEOG F310; GEOG F339; GEOS F304; GEOS F422; GEOS F458; NRM F338; NRM F435).
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOG F435 GIS Analysis**
4 Credits
Offered Spring
GIS analysis of natural resources including spatial query, attribute query, vector, grid, image, topographic and network analysis techniques.
**Cross-listed with** NRM F435.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOG F458 Applications of GPS and GIS in Geophysics** (n)
3 Credits
Offered As Demand Warrants
Application of Geographic Information Systems (GIS) to geospatial problems in volcanology, glaciology, environmental mapping and other geophysical disciplines. Landscape classification, linear regression modeling, and manipulation of geodatabases using ESRI's ArcGIS software. Use of model builder and Python scripting to automate geospatial processing. Hands-on experience with recreational, mapping and survey-grade GPS receivers. Differential correction of GPS solutions using real-time and post-processing methods. Course is not available for audit.
**Prerequisites:** GEOG F338 or NRM F338.
**Cross-listed with** GEOS F458.
**Stacked with** GEOS F658.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOG F629 Geography of the Arctic and Circumpolar North**
3 Credits
Offered Fall
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F629.
**Stacked with** ACNS F429; GEOG F429; GEOS F429.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOG F692 Graduate Seminar**
1-3 Credits
Topics in natural resources management and geography explored through readings, student presentations, group discussions and guest speakers.
**Prerequisites:** Graduate standing.
**Cross-listed with** NRM F692.
**Lecture + Lab + Other:** 1-3 + 0 + 0

# Geological Engineering (GE)

**College of Engineering and Mines**
Department of Civil, Geological, and Environmental Engineering (http://cem.uaf.edu/cee.aspx)
907-474-7241

**GE F101 Introduction to Geological Engineering**
1 Credit
Offered Fall
Multiple aspects of geological engineering as a profession; the area and scope of the field.
**Lecture + Lab + Other:** 1 + 0 + 0

**GE F261 General Geology for Engineers**
3 Credits
Offered Spring
Study of common rocks and minerals, landforms and erosion. Geologic materials and engineering application of geology.
**Prerequisites:** MATH F151X; MATH F152X; Geology, science or engineering majors.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F322 Erosion Mechanics and Conservation**
3 Credits
Offered As Demand Warrants
Engineering mechanics of water and wind erosion processes, types of geologic or anthropogenic induced erosion, application of engineering principles for design, management and control of erosion and engineering analysis of conservation structures.
**Prerequisites:** ES F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F326 Introduction to Geotechnical Engineering and Foundations**
4 Credits
Offered Fall
Identification and classification of soils; physical and mechanical properties of soil; subsurface exploration; movement of water through soil; soil deformation. Bearing capacity of shallow foundations and piles, and stability of retaining walls. Laboratory testing techniques, and introduction to soil issues related to cold regions.
**Prerequisites:** ES F331 (may be taken concurrently); GE F261.
**Crosslisted with** CE F326.
**Lecture + Lab + Other:** 3 + 3 + 0

**GE F365 Geological Materials Engineering**
3 Credits
Offered Fall
Identification and classification of soils, physical and mechanical properties of soil, interaction of soils with subsurface water, subsurface exploration and case studies with an emphasis on permafrost.
**Prerequisites:** ES F208; GE F261.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F375 Terrain Analysis and GIS**
3 Credits
Offered Spring
Evaluation of terrain characteristics and their geomorphic processes, using GIS techniques in combination with remotely sensed data for engineering and environmental applications. Alaska applications are considered.
**Prerequisites:** GE F261.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F376 GIS Applications in Geological and Environmental Engineering**
3 Credits
Offered Spring Odd-numbered Years
Fundamentals, concepts and components of geographic information systems (GIS) in engineering design. Introduction to acquiring, manipulating and analyzing digital terrain data for geological engineering and environmental applications, and the assessment of mineral resources. NRM F338 Recommended.
**Prerequisites:** GE F261; GE F375.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F381 Field Methods and Applied Design I**
2 Credits
Offered Summer
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GE F261; GEOS F213; GEOS F214; GEOS F322; GEOS F314.
**Lecture + Lab + Other:** 1 + 0 + 40

**GE F382 Field Methods and Applied Design II**
2 Credits
Offered Summer
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GE F261; GEOS F213; GEOS F214; GEOS F322; GEOS F314.
**Lecture + Lab + Other:** 1 + 0 + 40

**GE F400 Geological Engineering Internship**
1-3 Credits
Offered Summer
Supervised work experience in engineering organizations. Assignments will be individually arranged with cooperating organizations from the private and public sectors. A report of activities must be completed and reviewed by the sponsoring organization. The report may be held in confidence at the request of the sponsoring organization.
**Prerequisites:** Upper-division standing.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**GE F405 Engineering and Environmental Geophysics**
3 Credits
Offered Fall
Theory and application of seismic, electrical, gravity, magnetic, and electromagnetic methods for delineating near-surface features and structures as applied to engineering, environmental, and resource exploration problems. Overview of instrumentation, and the data acquisition, analysis, and interpretation process through hands-on practice.
**Prerequisites:** GE F375; PHYS F212X.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F420 Groundwater Engineering**
3 Credits
Offered Fall
Fundamentals of groundwater occurrence, hydrology, resource development, water quality, monitoring and remediation. Field methods and modeling.
**Prerequisites:** CE F326, GE F326; ES F341.
**Cross-listed with** CE F420.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F430 Geomechanical Instrumentation**
3 Credits
Offered As Demand Warrants
Measurement of groundwater pressure, ground deformation, stress and temperature as well as the planning of monitoring programs, instrument calibration, maintenance and installation, data collection, interpretation, and reporting. Case histories are used.
**Prerequisites:** ES F331; GE F261 or GEOS F101X.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F435 Exploration Design**
3 Credits
Offered As Demand Warrants
Geologic, engineering and economic considerations applied to the design and development of mineral exploration programs.
**Prerequisites:** GEOS F314.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F440 Slope Stability**
3 Credits
Offered Fall Odd-numbered Years
Slope design for open pit mining and other excavations. Stability analysis by various methods and on-site measuring and monitoring techniques.
**Prerequisites:** ES F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F441 Geohazard Analysis**
3 Credits
Offered Fall Even-numbered Years
Procedures and techniques to evaluate geological factors for geohazards, such as landslides, earthquakes, volcanoes, flooding, coastal hazards and permafrost-related problems.
**Prerequisites:** GE F326.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F445 Design of Earth Dams and Embankments**
3 Credits
Offered Fall Odd-numbered Years
Preliminary planning for design and construction of dams, site selection, reservoir assessment, foundation and other building materials, procedure for design of earth dams, design of abutment and spillway, estimation of volume of earthworks and storage capacities, site preparation for construction, excavation, slope stability issues and other geological engineering assessments.
**Prerequisites:** senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F480 Senior Design**
3 Credits
Offered Spring
Design factors and procedures for the solution of geological engineering problems. A design project is the focus of the course.
**Prerequisites:** Senior standing in the geological engineering program with completion of GE F381; GE F382; GE F405; GE F420.
**Lecture + Lab + Other:** 1 + 6 + 0

**GE F620 Advanced Groundwater Hydrology**
3 Credits
Offered As Demand Warrants
Study of groundwater hydrology with emphasis on solute and contaminant transport, chemical reaction and ion exchange, advection and diffusion and computer modeling.
**Prerequisites:** GE F610; graduate standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F622 Advanced Soil Physics**
3 Credits
Offered As Demand Warrants
Fundamentals of soil physical processes, multiphase flow, heat transfer and transport in unsaturated porous media such as soils. Application of principles of unsaturated flow to geo-environmental and geotechnical problems. Characterization of hydraulic properties in relation to soil physical parameters in the context of geoengineering problems of flow, transport and stability.
**Prerequisites:** GE F610 and Graduate standing in Engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F624 Stochastic Hydrology and Geohydrology**
3 Credits
Offered As Demand Warrants
Overview of the stochastic methods used to study and analyze hydrolic and geohydrolic processes. Emphasis on modeling hydrolic processes using statistical methods and stochastic interplay of processes between surface and subsurface hydrology.
**Prerequisites:** GE F620 and graduate standing in Engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F626 Thermal Geotechnics**
3 Credits
Offered As Demand Warrants
Fundamentals of thermal regimes of soils and rocks. Thermal impact of structures on soils. Thawing of permafrost beneath roads, buildings and around pipelines. Natural and artificial freezing of soils. Engineering means to maintain thermal regime of soils. Thermal design considerations.
**Prerequisites:** CE F326; CE F422.
**Cross-listed with** CE F626.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F635 Advanced Geostatistical Applications**
3 Credits
Offered As Demand Warrants
Introduction to the theory and application of geostatistics. Review of classical statistics, continuous and discrete distributions, hypothesis testing and global estimation. Presentation of fundamental geostatistical concepts including: variogram, estimation variance, block variance, kriging, geostatistical simulation. Emphasis on the practical application of geostatistical techniques.
**Prerequisites:** MIN F408; graduate standing.
**Cross-listed with** MIN F635.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F663 Groundwater Hydrology**
3 Credits
Offered Fall Even-numbered Years
Fundamentals of groundwater aquifer formations, groundwater flow, resource development, management and protection.
**Cross-listed with** CE F663.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F665 Advanced Geological Materials Engineering**
3 Credits
Offered As Demand Warrants
In-depth study of geological materials (aggregates--sand, gravel and crushed rock for construction purposes) exploration, evaluation, testing and production. Emphasis placed on geological materials used for construction in Arctic and sub-Arctic environments, economic analysis of pit and quarry operations and availability of materials in Alaska.
**Prerequisites:** GE F365.
**Recommended:** MIN F408.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F666 Advanced Engineering Geology**
3 Credits
Offered As Demand Warrants
The interaction between geology and engineering case histories.
**Prerequisites:** GE F365; graduate standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**GE F668 Tunneling Geotechniques**
3 Credits
Offered As Demand Warrants
Tunnel design, case histories, student report.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GE F692 Graduate Seminar**
1 Credit
Topics in geological engineering explored through talks, group discussions and guest speakers with a high level of student participation.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**GE F692P Graduate Seminar**
1 Credit
Offered As Demand Warrants
Topics in geological engineering explored through talks, group discussions and guest speakers with a high level of student participation.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**GE F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GE F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Geology and Geophysics (GEOS)

**College of Natural Science & Mathematics**
Geology & Geophysics
907-474-7565

**GEOS F101L GEOS F101X Laboratory**
0 Credit
**Co-requisites:** GEOS F101X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F101X The Dynamic Earth** (n)
4 Credits
Offered Fall and Spring
An introduction to how the Earth works and the geophysical and geochemical basis for our understanding of the Earth, emphasizing Alaskan examples. A course theme is that the Earth is changing around us, at a variety of scales. In all laboratory exercises students collect, analyze and interpret data, including that generated by a variety of geochemical and geophysical tools. Includes at least one field exercise in the Fairbanks area and an opportunity to observe freshly-poured lava.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** GEOS F101L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F102X Wicked maps for wicked problems: Geographic Information Systems Across Disciplines**
4 Credits
Offered Spring
Today's digital maps give us instant information about pretty much anything in the world. They help us find where we want to go, also make change possible. You will learn how to create digital maps that convey all types of information about any place around the globe.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F106X Life in the Age of Dinosaurs** (n)
4 Credits
Offered Spring Even-numbered Years
Promote a broader understanding of deep time through an examination of life and environments during the Mesozoic, or "Age of Dinosaurs." Discussions and exercises will focus on major events and processes that shaped the physical environments of the Mesozoic, such as the formation and break up of continents, global climate, and changing sea levels. Building on this foundation, the course will examine the fossil record to learn what it reveals about the major patterns in the diversity of terrestrial and marine life. Special emphasis will be placed on the origin, extinction, and paleobiology of dinosaurs. Important groups of contemporary vertebrates and invertebrates, including marine reptiles, mammals, flying reptiles, and ammonites will also be examined. The rise of flowering plants and the importance of fossil floras in understanding Mesozoic climates will be explored. Labs will provide opportunities to examine and identify fossils and use them to reconstruct ancient environments.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F111X Earth and Environment: Elements of Physical Geography** (n)
4 Credits
Offered Fall
This asynchronous online course focuses on the processes that shape the physical environment, especially in relation to Alaska. Climate change will serve as the capstone topic, which integrates course concepts with current challenges facing society. Labs will build research and skillsets through field and computer-based activities. Special fees will apply.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F112L GEOS F112X Laboratory** (n)
0 Credit
**Co-requisites:** GEOS F112X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F112X The History of Earth and Life** (n)
4 Credits
Offered Spring
Historical geologic interpretation, geologic time scale, stratigraphic record and interpretation. Sedimentation and plate tectonics, fossil record and utilization, biostratigraphy, and geologic evolution of the North American continent. Lab examination of fossils, interpretation of geologic maps and stratigraphic columns.
**Prerequisites:** GEOS F101X; placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** GEOS F112L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F119 Glaciers, Earthquakes and Volcanoes: Past, Present and Future**
3 Credits
Offered Fall and Spring
This course provides a basic overview of the science and societal relevance of earthquakes, glaciers and volcanoes, with an emphasis on Alaska.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F120L GEOS F120X Laboratory**
0 Credit
**Co-requisites:** GEOS F120X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F120X Glaciers, Earthquakes and Volcanoes: Past, Present and Future** (n)
4 Credits
Offered Fall and Spring
This course provides a basic overview of the science and societal relevance of earthquakes, glaciers and volcanoes, with an emphasis on Alaska.
**Co-requisites:** GEOS F120L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F190 The Geology of Wine**
2 Credits
Offered Spring Even-numbered Years
This course explores the relationship between geology, climate, and viticulture. Aspects of geology that influence landscape, soil development and climate are evaluated in reference to their effects on wine-growing regions. The geology, tectonic setting, soil and climate of individual wine-growing areas will be explored through lectures, discussions, class projects/presentations, and lab wine tastings.
**Prerequisites:** Student must be 21 years of age to enroll.
**Lecture + Lab + Other:** 1.5 + 0.5 + 0

**GEOS F192 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F213 Mineralogy** (n)
4 Credits
Offered Fall
Mineral chemistry, atomic structure, elementary crystallography, optical crystallography and descriptive and determinative mineralogy. Instrumental determinative techniques (x-ray diffraction, petrographic microscope).
**Prerequisites:** MATH F151X, MATH F230X, MATH F251X, MATH F252X, MATH F253X (may be taken concurrently); CHEM F105X; GE F261, GEOS F101X.
**Lecture + Lab + Other:** 2 + 6 + 0

**GEOS F214 Petrology and Petrography** (n)
4 Credits
Offered Spring
Origin, occurrence and classification of igneous and metamorphic rocks. Laboratory work involves hand lens identification and thin section examination of representative rocks.
**Prerequisites:** GEOS F213.
**Lecture + Lab + Other:** 2 + 6 + 0

**GEOS F221 Introduction to Field Geology**
2 Credits
Offered Spring
This course gives students the opportunity to apply 100-level geologic concepts at field sites with excellent exposures and straightforward stratigraphy. Participants use tools and technology, including a jacob staff, geologic compass, GPS receivers and mapping apps, to measure stratigraphic sections and create a geologic map on a topographic base map.
**Prerequisites:** GEOS F101X; GEOS F112X.
**Lecture + Lab + Other:** 8 + 33 + 24

**GEOS F225 Field and Computer Methods in Geology** (n)
2 Credits
Offered Spring
We discuss and practice basic geologic field methods, including taking notes, topographic maps, measurement of structural elements, field mapping, and field safety, both with traditional analogue and modern digital tools. Computers are used for collecting data in the field, processing field and analytical data and producing maps and reports.
**Prerequisites:** GEOS F214 (may be taken concurrently).
**Lecture + Lab + Other:** 1 + 3 + 0

**GEOS F258 Unmanned Aircraft Systems (UAS) Operations**
3 Credits
Offered As Demand Warrants
Covers the use of unmanned aircraft systems (UAS), sensors, and support infrastructure required to conduct a selected mission set. Emphasis is on mission analysis, planning, and conduct, including definition of requirements/constraints, identification of appropriate assets, flight planning considerations, and data analysis requirements. Teams coordinate resources for mission and report results.
**Cross-listed with** AERO F258; CS F258; and ME F258.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F262 Rocks and Minerals**
3 Credits
Offered Fall Even-numbered Years
Physical properties of minerals and rocks, classification, mode of occurrence and economic applications. Labs on recognition and measurement of physical properties. Course may not be used to satisfy degree requirements in geology or geological engineering.
**Prerequisites:** GE F261, GEOS F101X.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F292 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**GEOS F292P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**GEOS F304 Geomorphology** (n)
3 Credits
Offered Fall Even-numbered Years
Surface features of the Earth and the processes which create or modify them. Application to Quaternary history, environmental science and related fields. Laboratory examination of topographic maps and aerial photographs, introduction to geomorphic measurements.
**Prerequisites:** GEOS F101X, GEOS F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F309 Tectonics**
3 Credits
Offered Fall
In-depth exploration of Plate Tectonics theory including plate boundary interactions- which trigger volcanoes and earthquakes, form mountain belts and oceans- via geochemistry, sedimentology, geophysics and structure. Understanding creation and evolution of lithosphere and mantle, how we detect tectonic processes and how present tectonic environments help reconstruct ancient crustal events.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GEOS F112X; GEOS F214 or GEOS F262 (either may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F314 Structural Geology** (n)
4 Credits
Offered Spring
Introductory overview of how rocks are deformed, types of geological structures including folds, faults and penetrative fabrics, and the associations of structures characteristic of different tectonic settings. Provides background in structural geology. Emphasis in the laboratory on examples and techniques that are broadly applicable in geology, especially interpreting geologic maps.
**Prerequisites:** GEOS F320, GEOS F322 or GEOS F214 (GEOS F214 may be taken concurrently); MATH F152X; PHYS F123X or PHYS F211X.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F315 Paleobiology and Paleontology** (n)
4 Credits
Offered Fall
Survey of the history of life on Earth as represented in the fossil record. Contribution of paleontology to the study of evolution, past environments and paleogeography; biostratigraphically important invertebrate fossil groups and their temporal ranges; evolution of terrestrial flora and fauna; current issues in paleontology. Emphasis on recognition of major.
**Prerequisites:** BIOL F103X or BIOL F115X or GEOS F112X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F317 Paleontological Research and Laboratory Methods**
2 Credits
Offered Spring Even-numbered Years
This introductory course covers the fundamentals of paleontological research and laboratory methods including fossil preparation, curation and digital imaging techniques such as microphotography and photogrammetry. Emphasis is placed on oral presentation of research results for both scientific and public audiences.
**Prerequisites:** GEOS F101X and GEOS F112X.
**Lecture + Lab + Other:** 1 + 3 + 0

**GEOS F320 Sedimentology for Geological Engineers**
3 Credits
Offered Fall
Origin, classification, composition, transportation, deposition and diagenesis of sediments. Emphasis on sedimentary processes, sedimentary petrology and interpretation of ancient sedimentary rocks. Not intended for Geoscience majors and does not substitute for GEOS F322.
**Corequisites:** GEOS F213.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F322 Stratigraphy and Sedimentation** (n)
4 Credits
Offered Fall
Analysis and interpretation of sedimentary rocks in stratigraphic successions based on comparison with features found in modern depositional environments. Application of the principles of facies analysis and litho-, bio-, sequence, and chronostratigraphy in surface and subsurface examples. Emphasis in the laboratory on interpretation of depositional environments based on lithofacies, biofacies and sedimentary structures and correlation of stratigraphic sequences using surface and subsurface data.
**Prerequisites:** GEOS F101X or GE F261; GEOS F112X.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F332 Ore Deposits and Structure**
3 Credits
Offered Spring
Distribution and characteristics (especially mineralogy, morphology, and structure) of major mineral deposit types with background on structural techniques. Emphasis on application to mineral exploration and development. Laboratory exercises stress recognition of major mineral deposit types, zoning and grade patterns; and use of structural techniques in mineral deposit exploration/development.
**Prerequisites:** GEOS F262 or GEOS F213 and GEOS F214.
**Lecture + Lab + Other:** 1 + 6 + 0

**GEOS F370 Sedimentology and Structural Geology for Petroleum Engineers** (n)
4 Credits
Offered Fall
Origin and distribution of sedimentary rocks including depositional environments, stratigraphic relationships and structures. Emphasis on the relationship to petroleum occurrences and petroleum exploration. Laboratory exercises on mapping, structural problems and facies relationships in petroleum exploration.
**Prerequisites:** GEOS F101X or GE F261.
**Cross-listed with** PETE F370.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F375 Oral Communication Skills for Geoscientists**
1 Credit
Offered As Demand Warrants
This course will give you skills and practice in oral communication, especially as applied to professional geology. The course will provide a comfortable environment for students to develop and improve their skills both in creating and delivering oral presentations. The specific focus will vary with the instructor.
**Prerequisites:** COJO F131X or COJO F141X; GEOS F225; junior standing.
**Lecture + Lab + Other:** 0.5 + 0 + 1.5

**GEOS F380 Geological Hazards**
3 Credits
Offered Spring
Survey of natural hazards and the disasters they cause, with emphasis on geological hazards in Alaska. Investigation of hazardous phenomena, prediction and mitigation. Topics to include: earthquakes, volcanoes, tsunamis, weather/climate, and asteroid impacts. Provides a foundation in basic geological hazards related to science, suitable for use in teaching, communications, policy and emergency management careers.
**Prerequisites:** GEOS F101X or GEOS F120X or GEOS F106X.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F392 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F392P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 6 + 0

**GEOS F398 Research**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F406 Volcanology**
3 Credits
Offered Spring Odd-numbered Years
Physical processes of volcanism. Topics include physical properties of magmas, eruption mechanisms, deposition mechanism and volcanic hazards. Emphasis on explosive volcanism and its products, pyroclastic rocks. Geochemistry and petrology will not be emphasized in this course.
**Prerequisites:** GEOS F101X or GEOS F120X; MATH F251X; PHYS F123X or PHYS F211X.
**Stacked with** GEOS F606.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F413 Geology of Alaska**
2 Credits
Offered Fall Odd-numbered Years
An overview of the geological provinces of Alaska, followed by in-depth exploration of the geologic history and tectonic evolution of those regions.
**Prerequisites:** GEOS F309 and GEOS F314.
**Stacked with** GEOS F612.
**Lecture + Lab + Other:** 2 + 0 + 0

**GEOS F416 Applied Geophysics** (n)
3 Credits
Offered Spring Even-numbered Years
Introduction to the theory and practice of geophysical techniques and the interpretation and modeling of geophysical data. Topics include: gravity, GPS, magnetic seismic, and electrical methods and their application to regional and local geophysical exploration in Alaska.
**Prerequisites:** GEOS F419.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F417 Introduction to Geochemistry** (n)
3 Credits
Offered Fall
Application of chemical principles and elemental/isotopic behavior to the study of the Earth. Topics include: aqueous geochemistry, high-temperature mineral-elemental chemistry, isotopic chemistry, kinetics and thermochemistry.
**Prerequisites:** CHEM F106X; GEOS F322 or CHEM F202.
**Stacked with** GEOS F618.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F419 Solid Earth Geophysics**
3 Credits
Offered Fall Odd-numbered Years
Concepts and techniques of geophysics including origin of the Earth, its structure and large scale dynamic processes responsible for its surface features. Geophysical techniques including seismology, gravity and magnetic methods are discussed along with measurements of the Earth's thermal structure, rotation rates, and tidal effects.
**Prerequisites:** MATH F251X; PHYS F124X.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F422 Geoscience Applications of Remote Sensing** (n)
3 Credits
Offered As Demand Warrants
Remote sensing and its applications to geologic, environmental and physical sciences. Includes physical principles, digital image processing and hands-on project experience using satellite images for mapping and change detection. Course is not available for audit.
**Prerequisites:** PHYS F124X or PHYS F212X; junior standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F424 International Volcanological Field School**
3 Credits
Offered Summer
A field-based course that takes students to designated volcanoes and provides an opportunity to learn about volcanic processes through direct examination of volcanic products. Specific location to be announced at registration. Course may be repeated for credit when location varies. Students registering for the class must complete the course application and provide a reference letter.
**Prerequisites:** application required, permission of instructor, appropriate background in Geology, Chemistry and Physics.
**Stacked with** GEOS F624.
**Special Notes:** Students must be in good health, capable of hiking for at least 20 km per day carrying heavy backpacks, and be willing to camp under primitive, remote and possibly uncomfortable conditions.
**Lecture + Lab + Other:** 2 + 1 + 0

**GEOS F426 Applied Seismology**
4 Credits
Offered Spring Odd-numbered Years
Presentation of modeling techniques for analyzing earthquakes and Earth structure using wave propagation algorithms and real seismic data. Topics include the seismic wavefield (body waves and surface waves), earthquake moment tensors, earthquake location, and seismic tomography.
**Prerequisites:** MATH F253X; MATH F314.
**Stacked with** GEOS F626.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F427 Inverse Problems and Parameter Estimation**
3 Credits
Offered Spring Even-numbered Years
An inverse problem uses observations to infer properties of an unknown physical model. This course covers methods for solving inverse problems, including numerous examples arising in the natural sciences. Topics include linear regression, method of least squares, estimation of uncertainties, iterative optimization, and probabilistic (Bayesian) and sampling approaches.
**Prerequisites:** MATH F253X; MATH F314.
**Cross-listed with** PHYS F625.
**Stacked with** GEOS F627.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F428 Elementary Scanning Electron Microscopy**
1 Credit
Offered Spring
Basic theory and operating procedures for scanning electron microscopy. Includes sample preparation, imaging and qualitative elemental analysis. Biological and nonbiological applications are covered.
**Prerequisites:** Junior standing.
**Stacked with** GEOS F628.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**GEOS F429 Geography of the Arctic and Circumpolar North** (s)
3 Credits
Offered Fall
An in-depth examination of the physical, cultural, social, political and economic geographies of the Circumpolar North. Special emphasis on the patterns and processes of contemporary environmental change, human adaptations to high latitude environments, Arctic geopolitics and security, and the spatial patterns of northern economic development.
**Prerequisites:** GEOS F111X.
**Cross-listed with** ACNS F429; GEOG F429.
**Stacked with** ACNS F629; GEOG F629.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F430 Statistics and Data Analysis in Geology** (n)
3 Credits
Offered Spring
Computer-supported geologic applications of elementary statistics, Markov chains, time-series analysis, trend-surface analysis, factor analysis, cluster analysis, discriminant analysis, and multiple regression.
**Prerequisites:** GEOS F225; STAT F200X.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F431 Foundations of Geophysics**
4 Credits
Offered Fall
Applications of continuum mechanics, heat flow theory, and potential theory to geophysical, geologic and glaciological problems. Topics such as postglacial rebound, non-Newtonian fluid flow, thermal convection, stress-relaxation, rheology of earth materials, gravity, and magnetics will be discussed. Emphasis will be placed on methods and tools for solving a variety of problems in global and regional geophysics and the geophysical interpretation of solutions.
**Prerequisites:** GEOS F419, MATH F302, and MATH F314.
**Stacked with** GEOS F631.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F436 Programming and Automation for Geoscientists**
2 Credits
Offered Fall
Basic concepts of computer programming and effective task automation for computers, with an emphasis on tools and problems common to the geosciences and other physical sciences. Use of Python, Jupyter Notebooks, shell scripting and command line tools, making scientific figures, maps and visualizations. Provided asynchronously remotely.
**Prerequisites:** Senior standing.
**Stacked with** GEOS F636.
**Lecture + Lab + Other:** 1 + 3 + 0

**GEOS F438 Basin Analysis**
3 Credits
Offered As Demand Warrants
Examines sedimentary basins as a record of subsidence. Review and discuss techniques used to image basin stratigraphy as well as the quantitative techniques which can be used to recover basin history.
**Prerequisites:** GEOS F322 or GEOS F370.
**Recommended:** GEOS F314; GEOS F419.
**Stacked with** GEOS F638.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F452 Quaternary Seminar**
3 Credits
Offered As Demand Warrants
Discussion of the Quaternary Period (relatively recent past -- spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.
**Prerequisites:** GEOS F304; GEOS F315; GEOS F322.
**Cross-listed with** ANTH F451.
**Stacked with** GEOS F651; ANTH F651.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F453 Palynology and Paleopalynology** (n)
4 Credits
Offered Fall Even-numbered Years
Survey of the evolutionary record of palynomorphs and their uses in biostratigraphy and paleoclimatology. Focus on evolution of palynomorphs from Precambrian to the present and concurrent evolutionary developments of producing plants. Use of Quaternary palynofloras in reconstructing global climates. Labs involve collection of herbarium specimens, processing of fossil palynomorphs, study of type slides and a survey of palynofloras from each geologic period.
**Prerequisites:** BIOL F115X or GEOS F315; senior standing.
**Stacked with** GEOS F653.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F454 Field Geology** (n)
6 Credits
Offered Summer Odd-numbered Years
Mapping sedimentary and crystalline rocks in different tectonic settings in central Alaska using analog and digital tools. Collecting structural and lithological data, compiling geologic maps, and drafting written reports. Mapping challenges increase from intensive guidance by "geo buddies" during the initial project to independent mapping during the final capstone project.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; GEOS F214; GEOS F225; GEOS F309; GEOS F314; GEOS F315; GEOS F322; junior standing.
**Lecture + Lab + Other:** 6 + 0 + 0

**GEOS F456 Paleopedology**
3 Credits
Offered As Demand Warrants
Origin, classification, composition, transportation, deposition and diagenesis of sediments. Emphasis on sedimentary processes, sedimentary petrology and interpretation of ancient sedimentary rocks. Not intended for Geoscience majors and does not substitute for Geos 322.
**Prerequisites:** GEOS F322 or NRM F380.
**Stacked with** GEOS F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F458 Applications of GPS and GIS in Geophysics** (n)
3 Credits
Offered As Demand Warrants
Application of Geographic Information Systems (GIS) to geospatial problems in volcanology, glaciology, environmental mapping and other geophysical disciplines. Landscape classification, linear regression modeling, and manipulation of geodatabases using ESRI's ArcGIS software. Use of model builder and Python scripting to automate geospatial processing. Hands-on experience with recreational, mapping and survey-grade GPS receivers. Differential correction of GPS solutions using real-time and post-processing methods. Course is not available for audit.
**Prerequisites:** GEOG F338 or NRM F338.
**Cross-listed with** GEOG F458.
**Stacked with** GEOS F658.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F459 Visible and Infrared Remote Sensing**
3 Credits
Offered Spring Even-numbered Years
The course covers the principles and practice of remote sensing in the visible and infrared region, including spectral signatures, radiative transfer, image analysis, and information extraction. The laboratory part provides hands-on experience with multispectral, thermal, hyperspectral, and LiDAR data sets. Practical examples are drawn from geology, hydrology, and forestry.
**Prerequisites:** GEOS F422.
**Stacked with** GEOS F659.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F460 The Dynamic Alaska Coastline**
3 Credits
Offered Spring Even-numbered Years
This course will provide the knowledge base for understanding Alaska's dynamic coastlines with an emphasis on climate and tectonic, driven changes. The class includes a multiday field trip to Homer offering field-based learning activities. Special fees apply.
**Prerequisites:** Junior standing; GEOS F111X or GEOS F101X; CHEM F105X or PHYS F123X; NRM F338 or equivalent GIS coursework.
**Stacked with** GEOS F660.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F465 Geoarchaeology**
3 Credits
Offered As Demand Warrants
Geological context of archaeological sites and the geologic factors that affect their preservation, with emphasis on Alaska. Includes a one or two-day weekend field trip in late April or early May.
**Prerequisites:** GEOS F101X, an introductory course in archaeology.
**Cross-listed with** ANTH F465.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F469 Geodetic Methods and Modeling**
3 Credits
Offered Fall Odd-numbered Years
Theory and application of modern geodetic tools to measure Earth's surface deformation with emphasis on GPS and InSAR. Basics of data processing. Evaluation of signals and modeling of their sources. Applications include magma systems, earthquake cycle, and hydro- and cryosphere. Labs in Python require programming experience (GEOS F636/F436).
**Prerequisites:** MATH F410; MATH F314; MATH F432.
**Stacked with** GEOS F669.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F477 Ice in the Climate System** (n)
3 Credits
Offered As Demand Warrants
Earth's cryosphere includes seasonal snow, permafrost, sea ice, mountain glaciers and ice sheets. This course will cover the formation of each of these forms of snow and ice and their response to changing environmental conditions. Interdisciplinary perspectives allow study of the role snow and ice plays within the Arctic system.
**Prerequisites:** PHYS F123X or PHYS F211X; MATH F251X.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F480 Climate Change Processes: Past, Present, Future**
4 Credits
Offered Fall Odd-numbered Years
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth's climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.
**Prerequisites:** Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.
**Cross-listed with** ATM F480.
**Stacked with** ATM F680 and GEOS F680.
**Lecture + Lab + Other:** 4 + 0 + 0

**GEOS F481 Snow in the Environment**
3 Credits
Offered Fall Odd-numbered Years
Snow is a critical buffer between cold air temperatures and warming permafrost, between harsh winds and vegetation, and between herbivores and their food source. This course focuses on snow properties, metamorphism and redistribution by wind. We will examine the snows interactions with permafrost, glaciers, sea ice, vegetation, wildlife and humans.
**Stacked with** GEOS F681.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F482 Geoscience Seminar**
1 Credit
Offered Fall and Spring
A weekly seminar, given by guest speakers, on a topic in geosciences. Students are expected to prepare for the seminars and to participate in discussion following the seminars.
**Stacked with** GEOS F682.
**Lecture + Lab + Other:** 1 + 0 + 0

**GEOS F483 Research Design, Writing and Presentation Methods** (n)
3 Credits
Offered Fall
This is a capstone professional development class where students write a research proposal, participate in engagement activities, and produce professional documents that prepare students for graduate and professional careers. It is writing and oral intensive and will focus on the oral and written presentation of your work.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F485 Mass Extinctions, Neocatastrophism and the History of Life**
3 Credits
Offered Spring Odd-numbered Years
In-depth analysis of the literature regarding mass extinction, focusing on evidence for catastrophes and impact on the uniformitarian paradigm. Effects of mass extinctions on the evolutionary history of extant and fossil animals and plants will be explored through readings from classic and current literature in paleontology. The course will emphasize critical reading and application of scientific methods to reconstruction of geologically rapid events in deep time.
**Prerequisites:** GEOS F322 and GEOS F315.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F486 Vertebrate Paleontology** (n)
3 Credits
Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.
**Prerequisites:** BIOL F310 or GEOS F315.
**Cross-listed with** BIOL F486.
**Stacked with** GEOS F686; BIOL F686.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F488 Undergraduate Research**
1-3 Credits
Offered As Demand Warrants
Advanced research topics from outside the usual undergraduate requirements.
**Prerequisites:** Permission of instructor.
**Recommended:** A substantial level of technical/scientific background.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**GEOS F488P Undergraduate Research**
1-3 Credits
Offered As Demand Warrants
Advanced research topics from outside the usual undergraduate requirements.
**Prerequisites:** Permission of instructor.
**Recommended:** A substantial level of technical/scientific background.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**GEOS F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F492P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F499 Geology and Geophysics Senior Thesis**
3 Credits
This course is intended for talented students to explore geology or geophysics more deeply through research under the mentorship of a faculty member in the department.
**Prerequisites:** Geology and Geophysics major with senior standing and a GPA of 3.2 or higher, completion of a minimum of 2 credits of GEOS F488 on a project approved by faculty mentor and department chair, and submission of a proposal approved by faculty mentor and department chair.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F602 Geophysical Fields**
3 Credits
Offered Spring Odd-numbered Years
Introduction to the application of potential theory and its associated mathematical tools to fields of geophysical interest, namely gravity, magnetics, and heat flow. Emphasis will be placed on methods and tools for solving a variety of problems in global and regional geophysics, and the geophysical interpretation of solutions.
**Prerequisites:** MATH F410 and MATH F432; or graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F604 Seismology**
3 Credits
Offered Spring Odd-numbered Years
Sources of ground motion including focal mechanisms, magnitude and propagation of waves within the earth. Measurement of seismic data by analog and digital techniques and subsequent treatment of seismic data by various techniques including inversion.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F605 Geochronology**
3 Credits
Offered Fall Odd-numbered Years
Application of the most commonly used radiometric dating methods to geologic problems. Fundamentals of the K-Ar, Rb-Sr, fission-track, U-Th-Pb and C methods. Laboratory training in K-Ar and fission-track dating techniques.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F606 Volcanology**
3 Credits
Offered Spring Odd-numbered Years
Physical processes of volcanism. Topics include physical properties of magmas, eruption mechanisms, deposition mechanism and volcanic hazards. Emphasis on explosive volcanism and its products, pyroclastic rocks. Geochemistry and petrology will not be emphasized in this course.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F406.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F611 Advanced Structural Geology and Tectonics**
3 Credits
Offered As Demand Warrants
This advanced course in structural geology and tectonics offers in-depth treatment of topics that may vary with each offering. Examples are tectonics and sedimentation, mountain belts of the world, structural analysis, structural geology of specific tectonic settings, active tectonics and topography, structural interpretation of seismic reflection data, and other topics.
**Prerequisites:** GEOS F314; graduate standing.
**Special Notes:** Course may be repeated for different topics up to three times for credit.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F612 Geology of Alaska**
2 Credits
Offered Fall Odd-numbered Years
An overview of the geological provinces of Alaska, followed by in-depth exploration of the geologic history and tectonic evolution of those regions.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F413.
**Lecture + Lab + Other:** 2 + 0 + 0

**GEOS F614 Ice Physics**
3 Credits
Offered Spring Even-numbered Years
A survey of the physics of ice. Topics will include the crystal structure and properties of ice, high pressure phases, hydrogen bonding, mechanical, thermal, electrical and acoustic properties, nucleation and growth, and optical and surface properties (adhesion, friction).
**Prerequisites:** Graduate standing.
**Cross-listed with** PHYS F614.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F615 Sea Ice**
3 Credits
Offered As Demand Warrants
A study of sea ice in the natural environment including sea ice properties and processes on the micro-scale and the macro-scale, freezing processes and sea ice growth, ice decay and ice dynamics.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F616 Permafrost**
3 Credits
Offered Spring Odd-numbered Years
Study of the occurrence, thickness, environmental problems, and mass and energy transport of permafrost, including soil and ice interaction, freezing and thawing processes, and mechanical and electrical properties and processes.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F617 Glaciers**
3 Credits
Offered Fall Odd-numbered Years
The mechanisms responsible for the existence, motion and variations of present-day glaciers and ice sheets, the paleoclimate information they contain and their role in engineering hydrology.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F618 Introduction to Geochemistry**
3 Credits
Offered Fall
Application of chemical principles and elemental/isotopic behavior to study of the Earth. Topics include: aqueous geochemistry, high-temperature mineral-elemental chemistry, isotopic chemistry, kinetics and thermochemistry.
**Prerequisites:** CHEM F106X; GEOS F322 OR CHEM F331 and CHEM F332; graduate standing.
**Stacked with** GEOS F417.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F621 Advanced Petrology**
4 Credits
Offered Spring
A detailed treatment of various aspects of petrology. Specific topics to be considered in different semesters include metamorphic petrology, igneous petrology, and igneous and metamorphic petrography. Each time the course is offered, only one topic will be presented.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F621B Adv Petrology: Igneous Petrology**
3-4 Credits
Offered Fall
**Lecture + Lab + Other:** 2-3 + 3-6 + 0

**GEOS F621C Advanced Petrology**
3-4 Credits
An advanced course providing a detailed treatment of various aspects of petrology. Specific topics to be considered in different semesters include: (A) metamorphic petrology, (B) igneous petrology, and (C) igneous and metamorphic petrography. Each time the course is offered, only one topic will be presented.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 2-3 + 3-6 + 0

**GEOS F622 Digital Image Processing in the Geosciences**
3 Credits
Offered Spring Odd-numbered Years
Image processing and analysis techniques to monitor and understand the Earth system. Geoscience applications to be addressed include thin-section analysis, remote sensing of geohazards and geomorphometry. Apart from lectures and demonstrations, the advantages and drawbacks of image processing techniques will be evaluated through exercises and a course project.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F624 International Volcanological Field School**
3 Credits
Offered Summer
A field-based course that takes students to designated volcanoes and provides an opportunity to learn about volcanic processes through direct examination of volcanic products. Specific location to be announced at registration. Course may be repeated for credit when location varies. Students registering for the class must complete the course application and provide a reference letter.
**Prerequisites:** graduate standing in volcanology.
**Stacked with** GEOS F424.
**Special Notes:** Students must be in good health, capable of hiking for at least 20 km per day carrying heavy backpacks, and be willing to camp under primitive, remote and possibly uncomfortable conditions.
**Lecture + Lab + Other:** 2 + 1 + 0

**GEOS F626 Applied Seismology**
4 Credits
Offered Spring Odd-numbered Years
Presentation of modeling techniques for analyzing earthquakes and Earth structure using wave propagation algorithms and real seismic data. Topics include the seismic wavefield (body waves and surface waves), earthquake moment tensors, earthquake location, and seismic tomography.
**Prerequisites:** MATH F253X; MATH F314.
**Stacked with** GEOS F426.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F627 Inverse Problems and Parameter Estimation**
3 Credits
Offered Spring Even-numbered Years
An inverse problem uses observations to infer properties of an unknown physical model. This course covers methods for solving inverse problems, including numerous examples arising in the natural sciences. Topics include linear regression, method of least squares, estimation of uncertainties, iterative optimization, and probabilistic (Bayesian) and sampling approaches.
**Prerequisites:** MATH F253X; MATH F314.
**Cross-listed with** PHYS F625.
**Stacked with** GEOS F427.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F628 Elementary Scanning Electron Microscopy**
1 Credit
Offered Spring
Basic theory and operating procedures for scanning electron microscopy. Includes sample preparation, imaging and qualitative elemental analysis. Biological and nonbiological applications are covered.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F428.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**GEOS F629 Geologic Hazards and Natural Disasters**
3 Credits
Offered Spring Odd-numbered Years
Examination of hazardous geologic processes which produce natural disasters, including volcanism, tectonism, flooding, etc. Includes scientific approaches to evaluating the magnitude and probability of risk from future hazardous events.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F631 Foundations of Geophysics**
4 Credits
Offered Fall
Applications of continuum mechanics, heat flow theory, and potential theory to geophysical, geologic and glaciological problems. Topics such as postglacial rebound, non-Newtonian fluid flow, thermal convection, stress-relaxation, rheology of earth materials, gravity, and magnetics will be discussed. Emphasis will be placed on methods and tools for solving a variety of problems in global and regional geophysics and the geophysical interpretation of solutions.
**Prerequisites:** Graduate standing.
**Recommended:** GEOS F419; MATH F302; MATH F314.
**Stacked with** GEOS F431.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F633 Aqueous and Environmental Geochemistry**
3 Credits
Offered Spring Odd-numbered Years
Chemistry of aquatic and terrestrial environments, including thermodynamic, kinetic and structural principles applied to aqueous geochemical systems. Emphasis on aqueous speciation and heterogeneous interactions (e.g., dissolution/precipitation and sorption) involved in the partitioning, transformation and transport of chemical species in the environment.
**Prerequisites:** CHEM F331 or Graduate standing.
**Cross-listed with** CHEM F609.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F636 Programming and Automation for Geoscientists**
2 Credits
Offered Fall
Basic concepts of computer programming and effective task automation for computers, with an emphasis on tools and problems common to the geosciences and other physical sciences. Use of Python, Jupyter Notebooks, shell scripting and command line tools, making scientific figures, maps and visualizations. Provided asynchronously remotely.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F436.
**Lecture + Lab + Other:** 1 + 3 + 0

**GEOS F638 Basin Analysis**
3 Credits
Offered As Demand Warrants
Examines sedimentary basins as a record of subsidence. Review and discuss techniques used to image basin stratigraphy as well as the quantitative techniques which can be used to recover basin history.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F438.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F639 InSar and Its Applications**
3 Credits
Offered As Demand Warrants
Introduction to the concepts of repeat-pass spaceborne SAR interferometry. Practical use of the technique to derive displacements of the solid earth, glaciers and ice sheets to a precision of a few centimeters and accurate digital elevation models of the Earth's surface.
**Prerequisites:** Basic remote sensing course.
**Cross-listed with** PHYS F639.
**Lecture + Lab + Other:** 2 + 2 + 0

**GEOS F640 Petrology of Carbonate Rocks**
4 Credits
Offered Spring Odd-numbered Years
Origin, depositional environments, diagenesis and classification of limestones, dolostones and related rocks.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F643 Sandstone Depositional Environments**
3 Credits
Offered As Demand Warrants
Sedimentary depositional environments treating the hydrodynamics, sediment dispersal patterns and preservation potential of modern terrigenous clastic depositional environments and criteria for recognizing their ancient counterparts in the geologic record.
**Prerequisites:** GEOS F320 and GEOS F322; or graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F647 Advanced Sedimentology and Stratigraphy**
3 Credits
Offered Spring Even-numbered Years
Various topics in sedimentology and stratigraphy. Specific offerings to be presented at various times include sequence stratigraphy and sea-level analysis, paleoclimatic and paleoceanographic analyses, sandstone petrology, thermal maturation and geohistory analysis of sediments.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F651 Quaternary Seminar**
3 Credits
Offered As Demand Warrants
Discussion of the Quaternary Period (relatively recent past -- spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F651.
**Stacked with** ANTH F451; GEOS F452.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F653 Palynology and Paleopalynology**
4 Credits
Offered Fall Even-numbered Years
Survey of the evolutionary record of palynomorphs and their uses in biostratigraphy and paleoclimatology. Focus on evolution of palynomorphs from Precambrian to the present and concurrent evolutionary developments of producing plants. Use of Quaternary palynofloras in reconstructing global climates. Labs involve collection of herbarium specimens, processing of fossil palynomorphs, study of type slides and a survey of palynofloras from each geologic period.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F453.
**Lecture + Lab + Other:** 3 + 3 + 0

**GEOS F654 Visible and Infrared Remote Sensing**
3 Credits
Offered Spring Even-numbered Years
In-depth coverage of the principles, physics, sensor technology, processing and applications of remote sensing in the visible and infrared region, including but not limited to electromagnetic spectrum, radiation laws, spectral signatures, atmospheric interactions, temperature emissivity estimation, analysis and feature extraction from data sets. The laboratory part of the course will provide hands-on experience on special processing techniques, and the possibility of using these techniques for a student-defined term project in areas of geology, volcanology, glaciology, hydrology, environmental sciences, etc.
**Prerequisites:** GEOS F422.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F656 Paleopedology**
3 Credits
Offered As Demand Warrants
Origin, classification, composition, transportation, deposition and diagenesis of sediments. Emphasis on sedimentary processes, sedimentary petrology and interpretation of ancient sedimentary rocks. Not intended for Geoscience majors and does not substitute for Geos 322.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F657 Microwave Remote Sensing**
3 Credits
Offered Spring Odd-numbered Years
The principles and applications of active and passive microwave remote sensing with emphasis on spaceborne remote sensing of the Earth's atmosphere, land and oceans. The laboratory section will provide hands-on experience on special processing techniques, and the possibility of using these techniques for a student-defined term project in areas of geology, volcanology, glaciology, hydrology, environmental sciences, etc.
**Prerequisites:** GEOS F422.
**Lecture + Lab + Other:** 2 + 2 + 0

**GEOS F658 Applications of GPS and GIS in Geophysics**
3 Credits
Offered As Demand Warrants
Application of Geographic Information Systems (GIS) to geospatial problems in volcanology, glaciology, environmental mapping and other geophysical disciplines. Landscape classification, linear regression modeling, and manipulation of geodatabases using ESRI's ArcGIS software. Use of model builder and Python scripting to automate geospatial processing. Hands-on experience with recreational, mapping and survey-grade GPS receivers. Differential correction of GPS solutions using real-time and post-processing methods. Course is not available for audit.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F458; GEOG F458.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F659 Visible and Infrared Remote Sensing**
3 Credits
Offered Spring Even-numbered Years
The course covers the principles and practice of remote sensing in the visible and infrared region, including spectral signatures, radiative transfer, image analysis, and information extraction. The laboratory part provides hands-on experience with multispectral, thermal, hyperspectral, and LiDAR data sets. Practical examples are drawn from geology, hydrology, and forestry.
**Stacked with** GEOS F459.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F660 The Dynamic Alaska Coastline**
3 Credits
Offered Spring Even-numbered Years
This course will provide the knowledge base for understanding Alaska's dynamic coastlines with an emphasis on climate and tectonic, driven changes. The class includes a multiday field trip to Homer offering field-based learning activities. Special fees apply.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F666 Scientific Teaching**
2 Credits
Offered Spring Even-numbered Years
This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in improving their teaching skills. The course format will be a mixture of discussion, workshops and seminars. If the course is over-enrolled, priority will be given to teaching assistants who are assigned to teach large, introductory level (100 or 200 level) courses during the semester they are taking this course.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**GEOS F669 Geodetic Methods and Modeling**
3 Credits
Offered Fall Odd-numbered Years
Theory and application of modern geodetic tools to measure Earth's surface deformation with emphasis on GPS and InSAR. Basics of data processing. Evaluation of signals and modeling of their sources. Applications include magma systems, earthquake cycle, and hydro- and cryosphere. Labs in Python require programming experience (GEOS F636/F436).
**Prerequisites:** MATH F314; GEOS F436 or GEOS F636; graduate standing.
**Stacked with** GEOS F469.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F670 Selected Topics in Volcanology**
2 Credits
Offered Fall
Survey course in subjects relating to volcanology. Possible subjects include, but are not limited to, eruption dynamics, geophysics of eruptions, volatiles in volcanic systems, modeling volcanic systems. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**GEOS F671 Volcano Seismology**
3 Credits
Offered Spring Odd-numbered Years
Survey of seismic behavior of volcanoes. Topics include instrumentation, terminology, swarms and their attributes, high-frequency events, volcanic explosions, volcanic tremor, attenuation and velocity structure, cycles of activity, eruption forecasting, detection of magma chambers, case studies and selected topics. Oral and written student presentations will be required.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F676 Remote Sensing of Volcanic Eruptions**
3 Credits
Offered As Demand Warrants
Focuses on the use of satellite images to detect, monitor and mitigate volcanic hazards, and to understand eruption processes. Thermal anomalies, volcanic clouds and surface morphological features will be discussed in the lecture and test cases analyzed in the laboratory. Satellite data include GOES, AVHRR, MODIS, ASTER, Landsat and SAR. Course may be repeated twice for credit.
**Recommended:** GEOS F422 or equivalent remote sensing class.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F680 Climate Change Processes: Past, Present, Future**
4 Credits
Offered Fall Odd-numbered Years
This 'synthesis' course for Geography, NRM, or Natural Sciences undergraduates provides literacy in the rapidly developing field of climate-change science. Students will gain an understanding of climate dynamics and Earth's climate history and will be trained to critically evaluate the validity of paleoclimatic reconstructions and climate-model predictions.
**Prerequisites:** Junior or senior standing in major; ATM F401, GEOS F315, MSL F419 or MSL F481.
**Cross-listed with** ATM F680.
**Stacked with** ATM F480, GEOS F480.
**Lecture + Lab + Other:** 4 + 0 + 0

**GEOS F681 Snow in the Environment**
3 Credits
Offered Fall Odd-numbered Years
Snow is a critical buffer between cold air temperatures and warming permafrost, between harsh winds and vegetation, and between herbivores and their food source. This course focuses on snow properties, metamorphism and redistribution by wind. We will examine the snows interactions with permafrost, glaciers, sea ice, vegetation, wildlife and humans.
**Prerequisites:** Graduate student standing.
**Stacked with** GEOS F481.
**Lecture + Lab + Other:** 3 + 0 + 0

**GEOS F682 Geoscience Seminar**
1 Credit
Offered Fall and Spring
A weekly seminar, given by guest speakers, on a topic in geosciences. Students are expected to prepare for the seminars and to participate in discussion following the seminars.
**Prerequisites:** Graduate standing.
**Stacked with** GEOS F482.
**Lecture + Lab + Other:** 1 + 0 + 0

**GEOS F686 Vertebrate Paleontology**
3 Credits
Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups.
**Prerequisites:** Graduate standing.
**Cross-listed with** BIOL F686.
**Stacked with** BIOL F486; GEOS F486.
**Lecture + Lab + Other:** 2 + 3 + 0

**GEOS F692 Geol/Geophys Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**GEOS F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# German (GER)

College of Liberal Arts
Department of Foreign Languages & Literatures (https://www.uaf.edu/language/languages/german.php)
907-474-7231

**GER F101X Elementary German I** (h)
4 Credits
Offered Fall
Introduction to the German language and culture: development of proficiency in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 500 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 4 + 0 + 0

**GER F102X Elementary German II** (h)
3 Credits
Offered Spring
Introduction to the German language and culture: development of proficiency in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.
**Prerequisites:** GER F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**GER F103 Elementary German I Part I** (h)
2 Credits
Offered Summer
This is a 2 credit, 6-week online course in German language and culture, divided into 3 chapters. Essential parts are beginning communicative competence and performance, vocabulary and grammar, a high level of proficiency in listening, speaking, reading and writing as well as cultural competence.
**Lecture + Lab + Other:** 2 + 0 + 0

**GER F104 Elementary German I Part II**
2 Credits
Offered Summer
This is a 6-week online course in German language and culture. Essential components are beginning communicative competency and performance, vocabulary and grammar, a high level of proficiency in listening, speaking, reading and writing as well as cultural competence.
**Prerequisites:** GER F103.
**Lecture + Lab + Other:** 2 + 0 + 0

**GER F105 Elementary German II Part I**
2 Credits
Offered Summer
This is a 6-week online course in German language and culture. Essential components are communicative competence and performance, vocabulary and grammar, a high level of proficiency in listening, speaking, reading and writing as well as cultural competence.
**Prerequisites:** GER F104.
**Lecture + Lab + Other:** 2 + 0 + 0

**GER F106 Elementary German II, Part II**
2 Credits
Offered Summer
This is the continuation of Elementary German II, Part I, a 2 credit, 6-week online course in German language and culture. Essential components are some communicative competence and performance, vocabulary and grammar, a high level of proficiency in listening, speaking, reading and writing as well as cultural competence.
**Prerequisites:** GER F105.
**Lecture + Lab + Other:** 2 + 0 + 0

**GER F201 Intermediate German I** (h)
3 Credits
Offered Fall
Continuation of GER F102X. Increasing emphasis on reading ability and cultural material. Conducted in German.
**Prerequisites:** GER F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**GER F202 Intermediate German II** (h)
3 Credits
Offered Spring
Continuation of GER F201. Increasing emphasis on reading ability and cultural material. Conducted in German.
**Prerequisites:** GER F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**GER F301 Advanced German I** (h)
3 Credits
Offered Fall
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in German.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**GER F302 Advanced German II** (h)
3 Credits
Offered Spring
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in German.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**GER F431 Studies in the Culture of the German Speaking World** (h)
3 Credits
Offered As Demand Warrants
Study of the cultures of the German-speaking world. Students may repeat course for credit if topic varies.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F301; junior standing.
**Special Notes:** Course may be repeated for credit if topic varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**GER F432 Studies of German Literature** (h)
3 Credits
Offered As Demand Warrants
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Student may repeat course for credit when topics vary.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; GER F302; junior standing.
**Special Notes:** Course may be repeated for credit if topic varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**GER F460 History of German Film** (h)
3 Credits
Offered As Demand Warrants
In-depth study of a representative selection of films from the 1920s to the present, taught in English and German (films will be in German with English subtitles). Students of German will have a special discussion session in German and will do reading and writing in German.
**Prerequisites:** Junior standing.
**Cross-listed with** COJO F460.
**Lecture + Lab + Other:** 3 + 0 + 0

# Health (HLTH)

**Community and Technical College**
Allied Health (https://www.ctc.uaf.edu/academics/allied-health/)
907-455-2800

**HLTH F100 Medical Terminology**
3 Credits
Offered Fall, Spring and Summer
Study of medical terminology, including analysis and origin of word roots, prefixes and suffixes. Understanding the word components, students will be able to build, spell and define medical words. Content will be presented by body systems focusing on terms for anatomy, diagnostic, laboratory and medical specialties. Includes use of medical dictionary, word pronunciation and abbreviations. Designed for health care professionals.
**Cross-listed with** MA F100.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F105 Introduction to Health Careers**
2 Credits
Offered As Demand Warrants
Introduction to health careers and the psychology of patient care. Roles and responsibilities of different members/functional units of the health care team; information on related job and educational opportunities; needs and roles of health providers in rural and urban Alaska settings.
**Prerequisites:** High school graduation or GED or permission of program coordinator.
**Lecture + Lab + Other:** 2 + 0 + 0

**HLTH F106 Human Behavior in Health Care** (s)
3 Credits
Offered Fall and Spring
Discussion of general concepts in human behavior and the specialized psychological issues when dealing with patients and loved ones in health care settings. Students perform self-evaluation and survey other cultures to allow examination of perceptions, individual biases, beliefs and their impacts on behavior.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F107 Nurse Aide Training**
9 Credits
Offered Fall, Spring and Summer
Teaches basic nursing skills necessary to assist the nurse as an efficient health care team member. Includes positive communication skills, along with a strong emphasis on personal care of residents' physical and emotional needs in a variety of health care settings. Students are prepared for the National Nurse Aide Examination. Student must be in good physical condition and have documentation of the following immunizations: two varicella, hepatitis B series, two MMRs, two-step PPDs within previous 12 months of the clinical component of class. Students are encouraged to have a titer drawn to prove immunity to the diseases listed above. Other specific immunizations as required by clinical sites.
**Prerequisites:** High school graduation or GED; placement into MATH F055; placement into WRTG F090.
**Lecture + Lab + Other:** 5 + 8 + 0

**HLTH F110 Professional Skills for the Workplace**
2 Credits
Offered Fall and Spring
Presents skills to ensure success for the professional administrative assistant, receptionist, medical worker and others. Includes interview skills, business manners, customer service and dressing for success.
**Lecture + Lab + Other:** 2 + 0 + 0

**HLTH F111 Personal Care Attendant Training**
4 Credits
Offered As Demand Warrants
Designed to train personal care attendants in basic care necessary to assist nurses and to be efficient health care team members. Course qualifies students for state certificate of completion as personal care attendants. Eighty-eight (88) hours of class, lab and clinical practice are included. Requires criminal background check.
**Prerequisites:** Documentation of the following vaccines: Hepatitis B series, two MMRs, two chickenpox and a two-step PPD testing within previous 12 months of the clinical component of the class, Students are encouraged to have a titer drawn to prove immunity for the chickenpox, MMR and hepatitis B; Other immunizations as required by the clinical site; High school graduation or GED; Placement into or completion of DEVM F055; Placement into or completion of WRTG F090; Students must be in good physical condition.
**Corequisites:** AHA BLS provider or healthcare provider CPR card and first aid card.
**Lecture + Lab + Other:** 2.5 + 3 + 0

**HLTH F113 Personal Care Attendant to Nursing Assistant Bridge**
5 Credits
Offered As Demand Warrants
Trains personal care attendants to become nurse assistants. Students build upon basic PCA skills and experience. Provides the additional classroom, laboratory and clinical hours required by the Alaska Board of Nursing for state program approval. Prepares students to sit for the National Nurse Aide Examination.
**Prerequisites:** HLTH F111; Students must provide documentation of current HLTH F122 card or AHA BLS for healthcare provider CPR card and First Aid card.
**Lecture + Lab + Other:** 3 + 4 + 0

**HLTH F114 Fundamentals of Anatomy and Physiology**
4 Credits
Offered Fall and Spring
Provides a basic understanding of human anatomy and physiology. Recommended for individuals interested in health careers or students desiring an introduction to anatomy and physiology prior to taking in-depth course work in this field.
**Recommended:** HLTH F100 or MA F100; high school biology and chemistry.
**Cross-listed with** MA F114.
**Special Notes:** Students should take HLTH F114 if they took HLTH F100, and MA F114 if they took MA F100.
**Lecture + Lab + Other:** 4 + 0 + 0

**HLTH F116 Mathematics in Health Care**
3 Credits
Offered Fall, Spring and Summer
Practical application of mathematics in health care, including arithmetic review, percentages, interest, ratio, proportion, dimensional analysis, metric system, medication calculation, graphs, charts and measurement instruments.
**Prerequisites:** MATH F054; or placement in MATH F055.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F118 Medical Law and Ethics**
2 Credits
Offered Fall and Spring
In-depth coverage of legal and ethical issues encountered in health care settings. Students will gain a practical knowledge of legal and ethical principles and application of these principles in health care settings.
**Lecture + Lab + Other:** 2 + 0 + 0

**HLTH F122 First Aid and CPR for the Health Care Provider**
0 Credit
Offered Fall, Spring and Summer
This course meets the needs of the students entering healthcare professions. The course includes AHA First Aid and BLS CPR for the Healthcare Provider. Instructors follow the American Heart Association's curriculum. Successful completion of the course leads to certification in first aid and basic life support for healthcare providers.
**Lecture + Lab + Other:** 0 + 0 + 0

**HLTH F124 Introduction to Medical Scribe Specialist**
2 Credits
Offered Fall
Introduction to duties and responsibilities included in the scope of practice of the Medical Scribe in a variety of healthcare settings. Students will learn the expectations of providers when working with patients in "real time". Practice communication and interactions with providers, patients and families. Students will practice scribing using scenarios.
**Prerequisites:** Accuplacer: Placement into WRTG F110; ALEKS: Placement into or completion of MATH F055 or HLTH F116.
**Special Notes:** Recommended HLTH F100.
**Lecture + Lab + Other:** 2 + 0 + 0

**HLTH F126 Administrative Procedures for the Healthcare Worker**
3 Credits
Offered Fall, Spring and Summer
Introduction to the responsibilities and duties required of medical office assistants and scribes in a variety of healthcare settings. Focus is on reception, scheduling of appointments, insurance, billing and coding, ethical and legal responsibilities, electronic health records, public relations, professionalism and working with the healthcare team.
**Prerequisites:** Placement into WRTG F110; Placement into MATH F055 or HLTH F116.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F130 Medical Office Technology**
3 Credits
Offered Fall and Spring
Introduces current and potential health care workers to computers in the medical office. Will study medical office management software and electronic health record systems. Includes discussion of computer hardware and software, working with operating systems, keyboarding, word processing, spreadsheets, presentation creation and formatting, and database concepts.
**Special Notes:** Special fees may apply.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F132 Administrative Procedures I**
2 Credits
Offered As Demand Warrants
Administrative responsibilities performed by medical/dental assistants and other health care providers in outpatient facilities. Includes duties of the office assistant, receptionist or secretary. Focus on reception, telephone procedures, public relations and professionalism.
**Prerequisites:** High school graduation or GED.
**Lecture + Lab + Other:** 2 + 0 + 0

**HLTH F135 ICD-10-CM Coding**
3 Credits
Offered As Demand Warrants
In-depth study of the International Classification of Diseases (ICD), designed for classification of patient morbidity and mortality information for statistical purposes and for the indexing of health records for the health care profession.
**Recommended:** HLTH F100.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F203 Science of Nutrition**
3 Credits
Offered Fall, Spring and Summer
Introduction to the principles of nutrition and its relationship to the life cycle. Focus on the importance nutrition plays in personal health and how to objectively evaluate nutritional intake using scientifically sound resources.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F207 Certified Nurse Medication Aide**
6 Credits
Offered As Demand Warrants
Basic pharmacology and medication administration for certified nurse aides and personal care attendants. Includes drug delivery routes, classifications, effects and side effects. Communication principles, ethics, nursing process, and body structure and function will be reviewed. Course prepares students to assist the nurse to pass medications in health care settings. Other vaccines may be required by the clinical site. Must have a current AHA BLS healthcare provider CPR and first aid card. Must be physically capable of performing "hands on" care to residents such as, repositioning, lifting, transferring, dressing, all of which require repetitive motion throughout a work day.
**Prerequisites:** Current license as a CNA or PCA by the State of Alaska, have at least one full year of experience as a CNA/PCA, supply three letters of reference from healthcare professionals; Placement into MATH F055; Placement into WRTG F110; be 18 years of age or older; Documentation of vaccines or titer for the following: Hepatitis B series, two MMRs, two chickenpox and a 2-step PPD test within previous 12 months of the clinical component of the class.
**Lecture + Lab + Other:** 4 + 4 + 0

**HLTH F208 Human Diseases**
3 Credits
Offered Fall, Spring and Summer
Introduction to the study of human diseases. Pathogenesis, etiology and predisposing factors will be examined. Common diseases and disorders of each body system are presented along with a review of the pertinent anatomy and physiology. Includes the effects of aging on the systems and the relation of aging to disease.
**Prerequisites:** HLTH F100 with a C or higher.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F234 Administrative Procedures II**
4 Credits
Offered As Demand Warrants
Office management and financial procedures used in medical offices. Includes medical financial recordkeeping systems and computerized office management systems. Includes ICD-9, CPT coding system, patient insurance billing/reimbursement procedures, the demonstration of computational skills in accounts payable/accounts receivable, and office management in the health care setting.
**Prerequisites:** CIOS F150; HLTH F100; HLTH F132; placement in WRTG F111X.
**Lecture + Lab + Other:** 3 + 2 + 0

**HLTH F235 Medical Coding**
4 Credits
Offered As Demand Warrants
The current procedural terminology (CPT) and the international classification of diseases (ICD) systems used in the medical setting. Examines the medical and legal uses of the CPT and ICT code systems in inpatient and outpatient medical settings, urgent care settings, billing departments and ancillary medical professions. Prepares students to take national certification exams.
**Recommended:** HLTH F100; HLTH F132; HLTH F208; HLTH F234.
**Lecture + Lab + Other:** 4 + 0 + 0

**HLTH F236 Outpatient Health Care Reimbursement**
3 Credits
Offered Fall, Spring and Summer
Outpatient reimbursement issues including documentation, insurance carriers, schedules and payment profiles. Collection strategies and legal issues, and the importance of educating the patient to the financial policies of the practice.
**Prerequisites:** HLTH F126 or MA F144.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F237 Inpatient Health Care Reimbursement**
3 Credits
Offered As Demand Warrants
Rules and regulations governing the reimbursement of inpatient and hospital coding. Includes HIPAA regulations, Medicare, Medicaid, third party billing, and the legal and ethical guidelines of inpatient billing.
**Prerequisites:** HLTH F132; HLTH F135; HLTH F234.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F238 Medical Coding I**
3 Credits
Offered Fall
Introduction to clinical classification systems including Current Procedural Terminology (CPT) and International Classification of Diseases (ICD) including interpretation of guidelines and official resources, and correct application, in the inpatient, outpatient, and professional fee coding settings. Combined with Medical Coding II, this course prepares students to take national certification examinations.
**Prerequisites:** HLTH F100; HLTH F114.
**Recommended:** HLTH F126; HLTH F208.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F239 Medical Coding II**
3 Credits
Offered Spring
Indepth examination of correct application of clinical classification systems including Current Procedural Terminology (CPT) and International Classification of Diseases (ICD), including principles of confidentiality, coding ethics, and electronic systems for accurate code assignment. Combined with Medical Coding I, this course prepares student to take national certification examinations.
**Prerequisites:** HLTH F238.
**Lecture + Lab + Other:** 3 + 0 + 0

**HLTH F255 Phlebotomy Principles, Methods and Externship**
5 Credits
Offered Fall and Spring
This comprehensive lecture, lab and 100-hour externship course provides information covering phlebotomy technique, anatomy and physiology, venipuncture and lab testing. Specimen collection and proper handling are essential to completing this course. This course prepares students to take a national phlebotomy certification examination by the American Society of Clinical Pathologists.
**Prerequisites:** HLTH F122 or AHA BLS for healthcare provider CPR card and First Aid card; Placement into MATH F055; Placement into WRTG F090; Documentation of positive antibody titer for hepatitis B, current immunizations or titers to measles, mumps, rubella, varicella, flu shot and a 2-step PPD within the past year; Other specific immunizations as required by the externship sites.
**Lecture + Lab + Other:** 2 + 1 + 7

**HLTH F260 Medical Scribe Specialist Practicum**
2 Credits
Offered As Demand Warrants
Course provides 80 hours of hands on experiences as a Medical Scribe in a Healthcare facility. Students will be working side by side with an employee of the practicum site. Additional time is required for weekly meetings with the faculty practicum coordinators. This is the last course in the Medical Scribe Specialist Occupational Endorsement.
**Prerequisites:** HLTH F100; HLTH F114; HLTH F124; HLTH F126; HLTH F130; HLTH F235; MA F247; Enrollment is by special permission only; Immunizations as outlined in the MS packet: Hepatitis B series of three, MMR X's 2, Varicella X's 2, two step PPD; Documentation of current BLS Healthcare Provider/First Aid cards.
**Lecture + Lab + Other:** 0 + 0 + 6

**HLTH F261 Medical/Dental Office Reception Practicum**
2 Credits
Offered As Demand Warrants
Provides students with 80 practicum hours in a medical or dental front office. With additional time required for meeting with the campus practicum coordinator. Students will be expected to perform any and all duties of a receptionist in a medical/dental care setting. Recommended Students taking MA F261 should have passed MA F144, and students taking HLTH F261 should have passed HLTH F132 and HLTH F234.
**Prerequisites:** HLTH F122; enrollment by special permission only.
**Cross-listed with** MA F261.
**Special Notes:** Students part of the Medical Assisting program should take the HLTH F261 section of this course.
**Lecture + Lab + Other:** 0 + 0 + 6

# High Latitude Range Management (HLRM)

**College of Rural and Community Development**
High Latitude Range Management (https://www.uaf.edu/academics/programs/certifcates/high-latitude-range-management.php)
907-474-7143

**HLRM F120 History of Domesticated Alaskan Ungulates**
1 Credit
Offered Spring
Review the history of domesticated ungulate populations, free-ranging and fenced systems, in Alaska beginning from the 1890s to present. Emphasis will be placed on traditional activities on the Seward Peninsula.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 1 + 0 + 0

**HLRM F130 Research Field Logistics**
2 Credits
Offered Summer
Learn the skills, techniques, and equipment used in remote scientific fieldwork in Alaska. Course includes methods for processing and storing animal/plant tissue samples, orienteering, navigation, GPS, wilderness first aid, Arctic survival, bear safety, boat safety, as well as ATV, boat, and snowmachine operation, maintenance and repair.
**Lecture + Lab + Other:** 1 + 3 + 0

**HLRM F140 High Latitude Range Management**
2 Credits
Offered Fall
Policies and terminology of range and range management specific to Alaska and the Arctic. Review current vegetation inventory techniques used by federal and state agencies. Identify and sample Alaska forage plants. Examine range production systems and species in Alaska; domesticated and wild. Development of a high latitude range management plan.
**Prerequisites:** BIOL F104X; NRM F101.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

**HLRM F150 Alaskan Ungulate Husbandry**
2 Credits
Offered Summer
Introduction to management skills, facilities design and nutritional needs for domesticated Alaskan ungulates. Provides exposure and examines traditional knowledge combined with contemporary research in herding and husbandry for open range and fenced systems. Field trips to reindeer, elk, bison, and/or cattle operations will demonstrate husbandry techniques and data collection procedures.
**Prerequisites:** HLRM F140.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

**HLRM F160 Meat Production**
2 Credits
Offered Spring
A study of the meat animal processing sequence. The production of meat-type domesticated ungulates in Alaska and the science and technology of their conversion to food, value-added products and by-products. A review of the current state regulations and methods on proper field slaughtering, and the preparation, handling and storage of meat will be introduced.
**Prerequisites:** HLRM F140.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

**HLRM F170 Health Issues in Domesticated Ungulates**
2 Credits
Offered Fall
Ruminant anatomy and physiology specific to high latitude ungulates. Overall health issues and problem solving techniques for domesticated ungulates, including a review of indicators for disease or parasitic infections. Vaccinations and Rx treatments; including use in food animals. Field necropsy techniques and blood and tissue collection procedures. State monitoring and identification policies.
**Prerequisites:** HLRM F150.
**Lecture + Lab + Other:** 1.5 + 0 + 1.5

**HLRM F201 Field Techniques for Range Management**
2 Credits
Offered Summer
Provides hands-on instruction in field and laboratory techniques in range evaluation for domesticated ungulates. Basic methods for sampling and studying grazing systems at the high latitudes will be introduced. Students will participate in data collection and analysis procedures as part of an independent research project.
**Prerequisites:** ABUS F155 or MATH F113X; HLRM F130; HLRM F140.
**Lecture + Lab + Other:** 1 + 3 + 0

**HLRM F205 Report Writing in Range Management**
2 Credits
Offered Fall
Provides the basic technical reporting methods, writing, and research skills necessary to analyze, interpret, and document field and laboratory data. Incorporating field data collected in HLRM F201 and the skills, knowledge, and techniques learned in other required courses, the student will produce a written technical report and make a presentation.
**Prerequisites:** WRTG F111X; HLRM F201.
**Lecture + Lab + Other:** 2 + 0 + 0

# History (HIST)

**College of Liberal Arts**
History Department (https://www.uaf.edu/history/)
907-474-7126

**HIST F100X Modern World History** (s)
3 Credits
Offered Fall, Spring and Summer
Significant aspects of modern world history, using either a chronological or an issues approach to be announced when offered. The chronological approach will examine major global developments in the twentieth century, while the issues approach will deal with such aspects of the modern world as revolutionary change, the interaction of peoples, ideology and the historical background of significant contemporary events.
**Prerequisites:** Placement in WRTG F111X.
**Attributes:** UAF Core Modern World History, UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F101 Western Civilization Before 1500** (s)
3 Credits
Offered Fall
Origins and major political, economic, social and intellectual developments of western civilization to 1500.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F102X Western Civilization Since 1500** (s)
3 Credits
Offered Spring
This course examines the origins and development of key social, political, economic and cultural trends in Western civilization from 1500 to the present. Topics to be examined include the Reformation, the scientific revolution, the Enlightenment, the French and Industrial revolutions, nationalism, imperialism, communism, fascism, World Wars I and II, and the Cold War. Students will learn how to read and interpret historical documents, how the interplay of historical factors conditions subsequent events and different approaches and perspectives for understanding the past.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F105 Introduction to the History and Culture of the Seward Peninsula**
1 Credit
Offered As Demand Warrants
Cultural history of the Seward Peninsula peoples for the last 10,000 years using physical anthropology, ethnography, ethnohistory, linguistics, archaeology, social anthropology, ecology and climatology. Eskimo and Euro-American cultures which have existed in western Alaska.
**Cross-listed with** ANTH F105.
**Lecture + Lab + Other:** 1 + 0 + 0

**HIST F110X History of Alaska Natives from Contact to the Present** (an, s)
3 Credits
Offered Fall
Surveys Alaska Native history from contact to the present. Provides awareness of how Europeans constructed narratives of the Native past and their continuing influence; a broad overview of complex historical experiences; an understanding of the cultural diversity; overviews of ethnohistorical methods and post-colonial theory; and opportunities to cultivate critical thinking.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F115 Alaska, Land and Its People** (s)
3 Credits
Offered As Demand Warrants
A survey of Alaska from earliest days to present, its peoples, problems and prospects.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F121 East Asian Civilization** (s)
3 Credits
Offered Fall Even-numbered Years
Origin and development of the civilizations of China, Japan and Korea from the beginning to 1800, with emphasis on traditional social, political and cultural institutions.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F122X East Asian Civilization** (s)
3 Credits
Offered Spring
This is a survey course on the history of East Asian civilizations from 1800 to the present. Multiple approaches to history such as political and economic history will be employed, but the main focus of the course will be intellectual history. Students will be asked to identify broad historical and ideological trends in modern East Asian history based on the analysis of primary source data from the writings of governmental officials, leaders of political movements, and influential intellectuals in society. Current relations among East Asia countries will also be examined.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F131 History of the U.S.** (s)
3 Credits
Offered Fall and Summer
The discovery of America to 1865. Colonial period, revolution, formation of the constitution, western expansion, Civil War.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F132X History of the U.S.** (s)
3 Credits
Offered Spring and Summer
Surveys U.S. history from post-Civil War Reconstruction to the present. It examines challenges faced by the nation as it grappled with transformations and international crises that resulted from industrialization, urbanization, immigration, expanded globalization, economic crisis and two world wars. The U.S. emerged from World War II as a super power, but found itself locked in a Cold War struggle against communism that provided the backdrop to the second half of the 20th century. It influenced cultural, social, political and economic changes that continue to shape American life and foreign policy today. This course develops critical thinking and writing skills: introduces the methods, theories and approaches that inform historical interpretations of this era; and provides opportunities to use qualitative and quantitative data-- the primary source materials-- that historians use to defend their interpretations and arguments.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F202 History of Women in America** (s)
3 Credits
Offered As Demand Warrants
A chronological approach to the history of women in America. Introduction to major issues of concern to historians of women, as well as different approaches used in analysis of women's past. Consideration of multiracial backgrounds of American women.
**Cross-listed with** WGS F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F244 Movies: Mirror of the World** (s)
3 Credits
Offered As Demand Warrants
World history using the medium of film to highlight cultural, economic and political conditions of each country. Films will be from the USA, Mexico, Central America, South America, England, France, Russia, Turkey, India, China, Japan, Australia, Africa and the Arctic.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F275 Perspectives on History**
3 Credits
Offered As Demand Warrants
An introduction to the variety of historical approaches and to the "uses" of history. (Course is required for history majors and should be taken soon after declaring a History major as possible; non-majors are strongly discouraged from taking this course.)
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F305 Europe: 1789--1850** (s)
3 Credits
Offered As Demand Warrants
The French Revolution, Napoleon, the Industrial Revolution, the Revolutions of 1848, their impact on political, economic, social and intellectual history.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F306 Europe: 1850--1900** (s)
3 Credits
Offered As Demand Warrants
The European Imperium: industrialization, nationalism, imperialism and their impact on political, economic, social and intellectual history.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F315 Europe: 1900--1945** (s)
3 Credits
Offered As Demand Warrants
Europe through two world wars, the Russian Revolutions the depression, the development of fascism, the evolution of Russian communism.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F316 Europe Since 1945** (s)
3 Credits
Offered As Demand Warrants
Germany and problems of the peace, the Soviet Union and the satellites, the Cold War, economic problems and recovery, European integration and the common market, Europe and the world.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F325 The History of Sexuality** (s)
3 Credits
Offered As Demand Warrants
The history of sexuality from a worldwide comparative perspective. Theories and debates about the history of sexuality in selected times and places, with an emphasis on the modern period.
**Prerequisites:** HIST F100X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** WGS F325.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F330 Modern China** (s)
3 Credits
Offered Fall Odd-numbered Years
From 1800 to the present: resistance to change, rebellion, reform, revolution and the rise of the People's Republic.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F331 Modern Japan** (s)
3 Credits
Offered Spring Even-numbered Years
From 1600 to the present: change within tradition, rise to world power and the position of Japan in the modern world.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F333 Foundations of Japanese History** (s)
3 Credits
Offered Fall Even-numbered Years
The history of Japan from earliest times to 1600: the aristocratic culture of classical Japan, the rise of the samurai in medieval Japan, the "warring states" period and national unification. Myths, religion and philosophy, and culture, arts and literature will also be covered from a historical point of view.
**Prerequisites:** HIST F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F361 Early American History** (s)
3 Credits
Offered Fall Odd-numbered Years
An advanced survey that examines economic, political and social developments related to the establishment of European colonies, diplomacy and conflict, slavery, American Revolution, constitutional debate and the Early Republic through the War of 1812.
**Recommended:** HIST F131; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F362 History of the United States 1815-1877** (s)
3 Credits
Offered Spring Even-numbered Years
An advanced survey that examines economic, political and social developments related to Jacksonian America, western expansion, slavery and sectionalism, the Civil War and reconstruction to 1877.
**Recommended:** HIST F131; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F363 History of the United States 1877-1945** (s)
3 Credits
Offered Fall Even-numbered Years
An advanced survey that examines economic, political, and social developments related to Gilded Age America, progressive reform efforts, colonialism and the United States during two world wars.
**Recommended:** HIST F132X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F364 History of the United States 1945 to Present** (s)
3 Credits
Offered Spring Odd-numbered Years
An advanced survey course that examines economic, political and social developments related to the Cold War, Civil Rights movement, rise of a counter-culture, Vietnam war and its legacy, and America after the fall of Soviet Union.
**Recommended:** HIST F132X; sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F368 Topics in American Film History** (s)
3 Credits
Offered As Demand Warrants
American film and how it shapes and warps popular perceptions of America's past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, or the Great Depression.
**Prerequisites:** HIST F131 or HIST F132X; COJO F217X or COJO F308.
**Cross-listed with** FLPA F368; COJO F368.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F401 Renaissance and Reformation Europe** (s)
3 Credits
Offered As Demand Warrants
Political, economic and intellectual developments during the 15th and 16th centuries in Europe.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F402 Seventeenth- and Eighteenth-century Europe** (s)
3 Credits
Offered As Demand Warrants
Political, social, economic, and cultural developments during the 17th and 18th centuries in Europe.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F404 Modern Scandinavia** (s)
3 Credits
Offered Spring Odd-numbered Years
Examines geographical, political, economic, cultural and social forces, as well as the impact of individuals, on the transformation of Scandinavian states from autocratic monarchies to some of the most democratic and egalitarian states in the world.
**Stacked with** HIST/ACNS F604.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F405 Modern Germany** (s)
3 Credits
Offered As Demand Warrants
The history of Germany from 1848 to the present. Topics include German unification under Prussian leadership; the nature and problems of the Bismarckian Reich; the outbreak of World War I and the war's impact on Germany; the rise and fall of the Weimar Republic and the Third Reich; World War II and Germany's defeat; and the postwar division, reconstruction, and reunification of Germany. Special attention given to social developments in Germany.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F411 Environmental History** (s)
3 Credits
Offered As Demand Warrants
Discussion of significant works of environmental history. Cultural history of the landscape in world civilization with emphasis on Western Europe and North America. Discussion of interdisciplinary approaches to the history of environment and cooperative work across disciplines.
**Stacked with** ACNS F611.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F414 Women and Gender in East Asian History** (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on the history of East Asia, with a special emphasis on the experiences of women and on the issue of gender. This seminar will focus on the modern period, and on China and Japan especially, though other regions of East Asia may also be considered. Cross-listed with
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F100X.
**Recommended:** HIST F122X, HIST F275.
**Cross-listed with** HIST F414.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F424 Topics in Women's History** (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on a specific topic of current interest. Topics may change and may cover the history of European or American women from the 18th century to the present.
**Prerequisites:** Junior standing.
**Cross-listed with** WGS F424.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F429 History of the Modern Middle East** (s)
3 Credits
Offered As Demand Warrants
An advanced survey of the modern Middle East from the 19th century to the present. It will focus on the birth of the modern Middle Eastern states out of the collapse of the Ottoman Empire and the Oajar Dynasty, and the impact of the Western colonial powers on Middle Eastern societies and culture. Special attention will be given to the birth of modern secular Turkey, Egypt under military governments for the past half-century and the Iranian Revolution of 1979, the partition of Palestine. The origins of the Jewish state and the impact of the on-going Israeli-Palestinian conflict on the political dynamics of the entire Islamic world will also be carefully examined. The contestation between secular nationalisms and the religious nationalisms as well as trans-national Islamic movements will also be given special attention. The impact of radical Islam on the other non-Western countries will be discussed.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F434 Topics in History** (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on various topics in History. Approach will vary depending on the subject of the study, but will emphasize reading, critical analysis and writing on a major issue in history. Content will vary to take advantage of different directions in history, such as cultural, intellectual or economic history. Course may be repeated for credit when content varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F442 History of the American Military** (s)
3 Credits
Offered As Demand Warrants
The military's place in American life and society from the Colonial era to the present. Role of the military institution in shaping the nature of American society while reflecting the character of the society it serves.
**Prerequisites:** HIST F275.
**Cross-listed with** MILS F442.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F445 History of the American West** (s)
3 Credits
Offered As Demand Warrants
Seminar with emphasis on readings and analysis of primary and secondary sources dealing with the American West to present. Major themes include historiography, expansion, the Federal government, environment, ethnicity and economic development.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F446 American Indian History** (s)
3 Credits
Offered As Demand Warrants
Seminar with emphasis on readings and analysis of primary and secondary resources related to American Indians from the pre-contact era to present. Major themes include historiography, inter-cultural relations, subsistence and environment, federal policy and contemporary issues.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F453 Fire, Ice, and the Fate of Humanity: A History of Energy and Climate Change** (s)
3 Credits
Offered Spring
This course examines how energy regimes and climatic changes have structured the history of the world, with a focus on North America. From the Little Ice Age to the Atomic Age and the Anthropocene, energy and climate have contoured the fate of humanity.
**Crosslisted with** ACNS F453; HONR F453.
**Stacked with** ACNS F653.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F455 Military History** (s)
3 Credits
Offered As Demand Warrants
Warfare from classical times to the present: the interrelationships of warfare and society, the role of technology and the development of tactics and strategy.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F461 History of Alaska** (s)
3 Credits
Offered Fall
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Act of 1980.
**Stacked with** HIST F662; ACNS F661.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F463 Imperial Russia, 1700-1917** (s)
3 Credits
Offered As Demand Warrants
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia's complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multi-national state, and the emergence of revolutionary movement.
**Stacked with** HIST F663; ACNS F663.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F464 Soviet and Post-Soviet Russia** (s)
3 Credits
Offered As Demand Warrants
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social and cultural nature of the Soviet state.
**Stacked with** HIST F664; ACNS F664.
**Special Notes:** Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F466 The Russian Arctic**
3 Credits
Offered Spring Even-numbered Years
Through readings, discussion and writing this course will explore topics such as: the Russian Empire's and the Soviet Union's exploration and colonization of the Arctic, Indigenous peoples, and the ways in which the Arctic was imagined in Imperial, Soviet and post-Soviet Russian culture.
**Cross-listed with** ACNS F466.
**Stacked with** ACNS F666.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F467 Political Development in Latin America and the Caribbean** (s)
3 Credits
Offered As Demand Warrants
Exploration of major issues and concepts in development and governances of modern Latin America and the Caribbean region, including legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of region and cases drawn from the Caribbean, Mexico, Central and South America.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F275.
**Cross-listed with** PS F467.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F475 Historiography Capstone** (s)
3 Credits
Offered Fall
Seminar discussions and lectures introduce philosophical approaches to history. Examines various methodological approaches to historical inquiry. Includes the nature of historical evidence, questioning of the role of truth and objectivity in history, an examination of the role of the historian in interpreting historical evidence, and different interpretations of historical events and actions. Designed for history majors and minors, and graduate students seeking to conduct historical research.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F275; history major with senior standing.
**Stacked with** ACNS F675.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F476 Senior Thesis Capstone** (s)
3 Credits
Offered Spring
Preparation and writing of a senior thesis using primary research materials on a topic of the student's choosing.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F475.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F481 Polar Exploration and Its Literature** (s)
3 Credits
Offered Spring Even-numbered Years
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort.
**Stacked with** HIST F681; ACNS F681.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F483 20th-century Circumpolar History** (s)
3 Credits
Offered As Demand Warrants
A comparative history of the circumpolar North, including Alaska, Siberia, Scandinavia, Greenland and Canada. Focus on social, economic, political and environmental issues of the 20th century, such as exploration, aboriginal land claims, subsistence, military strategy, transportation, oil development, Arctic haze and scientific research in the Arctic.
**Stacked with** HIST F683; ACNS F683.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F490 Researching and Writing Northern History**
3 Credits
Offered Spring Odd-numbered Years
Exploration of the craft and methodology of historical research in the North. Course may be repeated for credit when content varies.
**Stacked with** ACNS F690.
**Lecture + Lab + Other:** 1 + 3 + 0

**HIST F600 Perspectives on the North**
3 Credits
Offered Fall
Explores topics of interest and concern throughout the circumpolar north, including social, historical, environmental, ethnocultural, economic, political and geographic issues in Alaska, Canada, Scandinavia and Russia. Readings represent a variety of perspectives on the topics, including Indigenous and non-Indigenous, as well as insider and outsider, geographic/national and gender.
**Cross-listed with** ACNS F600.
**Stacked with** ACNS F484.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F604 Modern Scandinavia**
3 Credits
Offered Spring Odd-numbered Years
Examines geographical, political, economic, cultural and social forces, as well as the impact of individuals, on the transformation of Scandinavian states from autocratic monarchies to some of the most democratic and egalitarian states in the world.
**Cross-listed with** ACNS F604.
**Stacked with** HIST F404.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F611 Environmental History**
3 Credits
Offered As Demand Warrants
Discussion of significant works of environmental history. Cultural history of the landscape in world civilization with emphasis on Western Europe and North America. Discussion of interdisciplinary approaches to the history of environment and cooperative work across disciplines.
**Cross-listed with** ACNS F611.
**Stacked with** HIST F411.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F662 History of Alaska**
3 Credits
Offered Fall
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Act of 1980.
**Cross-listed with** ACNS F661.
**Stacked with** HIST F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F663 Imperial Russia, 1700-1917**
3 Credits
Offered As Demand Warrants
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia's complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multi-national state, and the emergence of revolutionary movement.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F663.
**Stacked with** HIST F463.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F664 Soviet and Post-Soviet Russia**
3 Credits
Offered As Demand Warrants
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social and cultural nature of the Soviet state.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F664.
**Stacked with** HIST F464.
**Special Notes:** Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F681 Polar Exploration and Its Literature**
3 Credits
Offered Spring Even-numbered Years
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of the historical sources of this effort.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F681.
**Stacked with** HIST F481.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F683 20th-century Circumpolar History**
3 Credits
Offered As Demand Warrants
A comparative history of the circumpolar North, including Alaska, Siberia, Scandinavia, Greenland and Canada. Focus on social, economic, political and environmental issues of the 20th century, such as exploration, aboriginal land claims, subsistence, military strategy, transportation, oil development, Arctic haze and scientific research in the Arctic.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F683.
**Stacked with** HIST F483.
**Lecture + Lab + Other:** 3 + 0 + 0

**HIST F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Homeland Security and Emergency Management (HSEM)

**College of Business and Security Management**
Homeland Security & Emergency Management (https://www.uaf.edu/cbsm/programs/hsem/)
907-474-7461

**HSEM F110 Personal Preparedness** (s)
3 Credits
Offered As Demand Warrants
Students will gain the ability to recognize pending crises and the skills to successfully manage events, using preparedness theory. Students will be able to utilize practical applications should a disaster occur. They will then take all of the preparedness skills they have learned and develop a Personal Preparedness Plan.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F120 Introduction to Emergency Management**
3 Credits
Offered Fall and Spring
This course introduces students to vocabulary and core components of emergency management. Students examine the ever-growing and changing field, leadership and management roles and responsibilities, and the complexity of disruptive events such as emergencies and disasters.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F121 Introduction to Homeland Security**
3 Credits
Offered Fall and Spring
This course introduces students to the vocabulary and components of homeland security. Students examine the importance of the roles and responsibilities of agencies associated with the field, laws affecting homeland security, and the most critical threats within the field.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F223 Terrorism: A Global Threat**
3 Credits
Offered As Demand Warrants
This course will investigate the historical origins of global terrorism, the major contemporary terrorist organizations (foreign and domestic), their ideological motivations and their methodologies for employing terror. It will also explore the threats posed to the United States and the West in terms of national security and the economy. An in-depth examination and evaluation of several case studies of terrorist acts will be made. The primary focus of this course will be on terrorist organizations and their acts of terror.
**Prerequisites:** HSEM F120 or HSEM F121.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F225 Intelligence Analysis and Security Management**
3 Credits
Offered As Demand Warrants
This course will examine the history of intelligence gathering and espionage in the United States. A succinct study and comparative analysis of intelligence collection methods of other nations will also be made. An in-depth study of key U.S. intelligence agencies, their collection methodologies, and their effect upon national security will be examined.
**Prerequisites:** HSEM F120 or HSEM F121.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F227 Transportation and Border Security**
3 Credits
Offered As Demand Warrants
This course provides an overview of modern border and transportation security challenges, as well as different methods employed to address these challenges. The time period from post 9-11 to the present is covered. Topics explored include those associated with border and transportation infrastructure security; seaports, ships, aircraft, airports, trains, train stations, trucks, highways, bridges, rail lines, pipelines and buses. The course will include an exploration of technological solutions employed to enhance security of borders and transportation systems. Discussions will include such topics as the legal, economic, political and cultural concerns and impacts associated with transportation and border security.
**Prerequisites:** HSEM F120 or HSEM F121.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F231 The Threat of Weapons of Mass Destruction**
3 Credits
Offered As Demand Warrants
In a post 9/11 environment, concerns surrounding the potential use of weapons of mass destruction have been an ever increasing concern. This course is intended to serve as an introduction to the study and history of weapons of mass destruction as a tool of terrorism.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F233 Critical Infrastructure Protection**
3 Credits
Offered As Demand Warrants
This course provides tools and techniques to students who desire to increase their knowledge, skills and abilities in the protection of critical infrastructure elements. The course focuses on the predominant infrastructure sectors such as water, energy, SCADA, power, telecommunications, internet and cyberinfrastructure.
**Prerequisites:** HSEM F120 or HSEM F121.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F271 Fiscal Management for Emergency Management Operations**
3 Credits
Offered Fall, Spring and Summer
Students will learn about the basic accounting and financial requirements for public organizations such as fire, police and similar functions of local governments. The major topics covered include: understanding financial reports, budgeting preparation, and grants and contracts administration.
**Prerequisites:** Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.
**Cross-listed with** ACCT F271.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F301 Principles of Emergency Management and Homeland Security**
3 Credits
Offered Fall, Spring and Summer
The course provides a foundational perspective as to how our present federal emergency management and homeland security structure emerged with emphasis placed on the characteristics, functions, and resources of its integrated systems. This course additionally focuses on the principles and practices of homeland security and emergency management at the local, state and federal levels.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F320 Survey of Emergency Management in Rural Alaska**
3 Credits
Offered As Demand Warrants
This course explores the basic emergency and disaster management principles and policies that apply to rural communities in Alaska, including the history of emergency management and the disaster response and recovery relationships between rural Alaska communities, the State of Alaska, and the federal government.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F402 Incident Command for Emergency Medical Services**
3 Credits
Offered As Demand Warrants
Topics explored examine scenarios requiring responders to structure their EMS resources within the guidance of the National Incident Management System (NIMS) and Incident Command System (ICS). Students will practice utilizing the ICS with public safety responders and demonstrate the implementation of EMS components in an ICS system at incidents.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F403 Public Health in Emergencies**
3 Credits
Offered As Demand Warrants
Students will focus on the role public health plays in disaster and emergency management. Topics include public health's role in fostering community resilience, medical intelligence and disease monitoring, behavioral health recovery, ethical considerations, and planning for vulnerable and special needs populations.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F404 Public Safety Instruction**
3 Credits
Offered As Demand Warrants
This course provides the student with the tools to help foster public education in their community based on the different resources available to citizens. These resources often include programs at the federal, state, and local governments. Planning for the public safety community, including diverse learning populations, will be also discussed.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F405 Introduction to Emergency Management Exercise Design**
3 Credits
Offered Fall
This course examines exercise design, evaluation, and development. The course will focus on developing the knowledge and skills that are imperative to implementing a Homeland Security Exercise Evaluation Program (HSEEP) compliant exercise. The class will also design and develop a tabletop exercise to be executed as a class project at the end of the semester. Lastly, the course will emphasize the importance of incorporating emergency exercise planning to effectively prepare and respond to disasters of all types and magnitudes.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F406 Comparative Homeland Security**
3 Credits
Offered Spring
This course aids students in developing an understanding of the homeland security and counterterrorism methods utilized by other countries. The course examines different countries and compares the policies and strategies they have developed.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F407 Comparative Emergency Management**
3 Credits
Offered Spring
This course will focus on examining regional and global responses to various types of disasters. Topics covered will include the importance of regional collaboration between nations in disaster preparedness, mitigation, response, and recovery. Additionally, the roles that regional partnerships play in disaster mitigation will be examined, as well as issues concerning the requirements to sustain collaborative efforts between nations in the 21st century.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F408 Homeland Defense and Security**
3 Credits
Offered Fall
The purpose of this course is to provide students with an overview of the categories of military operations (other than war) that require homeland defense and security. A comparative approach will be utilized to compare the U.S. with other countries which use their respective militaries for smaller scale contingencies both internal and external to their borders.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F412 Emergency Planning and Preparedness**
3 Credits
Offered Fall and Spring
This course will examine the concepts of developing and writing an emergency operations plan and the elements necessary for inclusion in the plan (all-hazards risk analysis). Students will transition through the process of identifying hazards, creating plans and developing a program which specifically addresses planning and preparedness objectives.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F415 Cybersecurity in the 21st Century: Technology and Ethics**
3 Credits
Offered As Demand Warrants
This course will provide a theoretical and practical overview of the ethics of cybersecurity as a military domain, cybersecurity as a protective requirement in industry and non-profits, and other contemporary issues. The course addresses a range of topics to provide the student with a solid overall theoretical foundation of cybersecurity issues.
**Prerequisites:** HSEM F301, AIS F310 or AIS F316.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F416 Cybersecurity Management**
3 Credits
Offered As Demand Warrants
Develop an understanding of the concepts, trends and strategies associated with cybersecurity and managing risk. This course will enable managers to understand risks associated with information technology, develop compensating controls or mitigations and implement them. Planning process, mitigation strategies, detection and recovery associated with cybersecurity and risk management are covered.
**Prerequisite:** HSEM F301, AIS F310 or AIS F316.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F417 Cybersecurity Resiliency**
3 Credits
Offered As Demand Warrants
Cybersecurity resiliency focuses on the challenges faced by organizational leadership resisting, responding, and recovering from cyber-attacks and other events which adversely impact business-critical data. Topics further explore the dynamics of building and maintaining a cyber resilient organization.
**Prerequisites:** HSEM F301, AIS F310 or AIS F316.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F418 Cybercrime, Fraud and Law**
3 Credits
Offered As Demand Warrants
This course introduces cybercrime, including the history of cybercrime in the U.S. and the resulting law and regulatory environment which has resulted. Techniques and resources for investigating cyber incidents will be explored, to include methods used to commit malicious or criminal acts.
**Prerequisites:** HSEM F301, AIS F310 or AIS F316.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F423 Disaster Response Operations and Management**
3 Credits
Offered Fall and Spring
Topics explored within this course creates an understanding of the principles that promote effective disaster response and recovery operations. Students examine the nature of disasters, roles and responsibilities of various actors, and various problems associated with response and recovery operations.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F434 All-hazards Risk Analysis**
3 Credits
Offered Fall and Spring
This course covers risk analysis and assessment from an All-Hazards emergency management and homeland security perspective. Students will explore vulnerability and risk assessment methodologies for natural, man-made as well as technological disasters/events and develop an understanding of the processes used in identifying and quantifying vulnerabilities in a system (e.g., a physical facility such as a chemical plant, or an infrastructure component such as a power plant).
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F439 Supervising Emergency Services**
3 Credits
Offered Spring
Issues relating to the supervision of firefighters and emergency environment will be explored. Topics include federal laws, labor relations, coaching, counseling and disciplinary action, managing conflict, motivation, stress, time management, and group dynamics. The course aligns with the National Fire Academy Fire and Emergency Services Higher Education model core curriculum.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F440 Advanced Principles of Fire Service Administration**
3 Credits
Offered Fall
This course examines the emergency services field. Topics include community risk management, strategic planning, labor relations, leadership, visioning, managing change, politics, organizational culture, and data analysis. The course aligns with the United States Fire Administration (USFA) Fire and Emergency Services Higher Education Curriculum.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 0 + 0 + 0

**HSEM F445 Business Continuity and Crisis Management**
3 Credits
Offered Fall, Spring and Summer
Topics include comprehensive emergency management, public and private roles and partnerships for emergency and crisis management, the risk management process, strategic crisis management, contingency planning, training and exercises, emergency response, business continuity and recovery, the role of the crisis management team and crisis communication.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; HSEM F301 or AIS F310 or AIS F316 or BA F360.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F452 Internship in Emergency Management**
3 Credits
Offered As Demand Warrants
A supervised practical work experience to enable students to apply their coursework in a fire department or closely related field of emergency services. Admission dependent upon approved sponsorship arrangements.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; B E M degree major; upper-division standing.
**Recommended:** Four semesters of bachelor core; business administration courses.
**Lecture + Lab + Other:** 0 + 6 + 0

**HSEM F456 Leaderships in Dangerous Contexts**
3 Credits
Offered Fall, Spring and Summer
Course focuses on the challenges faced by leaders during crisis and emergency circumstances. During emergency circumstances, leading others, being able to influence and motivate them is critical. Topics including leadership and followership, crisis decision making, fear and emotion and the unique circumstances of an emergency manager/homeland security professional are examined.
**Prerequisites:** HSEM F301; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** LEAD F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F461 Human Security in Alaska** (an)
3 Credits
Offered As Demand Warrants
This course explores the concept of human security, and takes an individual-centered approach to security, unlike the traditional state-centric approach. Topics covered include economic security, food security, health security, personal security, community security, environmental security and political security. Students will examine Alaska Native life through the human security framework.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F121X, COJO F131X or COJO F141X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F467 Current Topics in Public Safety**
3 Credits
Offered As Demand Warrants
This course examines current public safety topics with regards to relevant trends and practices. Topics of interest may include militarization of the police, mass shootings, police-community partnerships, technology, media relations, and transparency.
**Prerequisites:** HSEM F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F601 Legal Aspects of Homeland Security and Emergency Management**
3 Credits
Offered As Demand Warrants
An in depth examination of the applicable statutory, regulatory and policy aspects regulating the fields of security and disaster management will be undertaken. Topics include relevant statutes such as the Stafford Act, the Economy Act Insurrection Act, Posse Comitatus Act, and those relating to governmental and individual liability/defenses while performing.
**Prerequisites:** Must be admitted to the MSDM program; or permission of the MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F603 Disaster Management Policy**
3 Credits
Offered Fall and Spring
This course provides context for and coverage of disaster management and homeland security. The course explores how social science research can be applied to policy development and everyday practice. Students will discuss and review public policy, organizational management, and leadership issues faced by future practitioners and leaders in the field.
**Prerequisites:** Must be admitted to MSDM program; or permission of the MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F605 Community Planning in Emergency Management**
3 Credits
Offered As Demand Warrants
Students will explore how community and urban planning principles affect the homeland security and emergency management enterprise with both traditional emergency manager and urban/community planner in mind to provide a wider perspective as to the considerations of urban and community planning.
**Prerequisites:** Must be admitted to the MSDM program; or permission of MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F607 Vulnerability and Protection**
3 Credits
Offered Spring
This course examines security as a discipline and responsibility. The key topics include protection of assets, management principles and concepts, the relationship of security to vulnerability, control of access, terrorist attacks, critical infrastructure protection, insider threats, and workplace violence.
**Prerequisites:** Must be admitted to the MSDM program; or permission of MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F609 Human Security**
3 Credits
Offered Fall
Students will explore the major elements of human security and examine traditional security influencers, such as public and mental health, climate change, and population and pathogen migration. The course focuses on the holistic approach of people as the foundation, in terms of cause, effect, and change agents.
**Prerequisites:** Must be admitted to the MSDM program; or permission of MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F613 International Disaster Management**
3 Credits
Offered Fall and Spring
This course examines international disaster management in relation to historical, socio-economic, risk, hazard, response, preparedness and recovery aspects for international disasters. Special emphasis on the organizations and agencies playing a prominent role in international disaster management will explored as well.
**Prerequisites:** Must be admitted to the MSDM program; or permission of the MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F621 Circumpolar Competition-Arctic Diplomacy and Defense**
3 Credits
The purpose of this course is to provide an understanding on fundamentals involving global competition and how it relates to the Arctic. As a result, an understanding of Arctic Security can be developed through studies defined by the primary security management actors for global issues: diplomatic and defense officials.
**Prerequisites:** Graduate standing or as approved by the program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F622 Arctic Strategies and Operations**
3 Credits
The purpose of this course is to provide an understanding of northern national policies of the Arctic states as well as select non-Arctic states. Understanding Arctic national interests and strategies help inform defense authorities of critical Arctic issues required for diplomacy and security planning, regional dynamics, and complex international influences.
**Prerequisites:** Graduate standing or as approved by program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F632 Project Management**
3 Credits
Offered Fall and Spring
This course is designed to cover key components of project management fundamentals with emphasis on the project life cycle, project definition, project schedule and cost management, human resource allocation and the challenges facing project managers in every industry.
**Prerequisites:** Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program director.
**Cross-listed with** MBA F632.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F641 Information Assurance and Risk Assessment**
3 Credits
Offered As Demand Warrants
Overview of enterprise security, privacy and information security assessment and management, and cybersecurity. Concentration on tangible and intangible costs of risks and examination of information assurance and security risk assessment concepts. Students will understand how to assess information security risks and use that information to develop potential solutions.
**Prerequisites:** Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
**Cross-listed with** MBA F641.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F645 Crisis Management**
3 Credits
Offered As Demand Warrants
An in-depth review of crisis management to include the different crises an organization may face. The importance of an ethical and strategic response, developing a solid crisis management plan, strong crisis communication, and developing a crisis management team will be discussed.
**Prerequisites:** Graduate standing in the MSDM, MBA or certificate program.
**Crosslisted with** MBA F645.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F646 Business Continuity and Risk Assessment**
3 Credits
Offered As Demand Warrants
In-depth analysis of business continuity to include risk analysis and plan assessment. Overview of potential risks from more than a natural disaster standpoint. The correct way to use risk analyzes while developing a continuity plan will be discussed. The importance of exercising and maintaining a plan will also be reviewed.
**Prerequisites:** Graduate standing in the MSDM, MBA or certificate program.
**Cross-listed with** MBA F646.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F647 Business Continuity Audit**
3 Credits
Offered As Demand Warrants
As part of the business continuity cycle, audits of the business continuity system must be conducted. Topics for this class include: What an audit is, the framework for conducting, how to conduct an audit, the importance of auditing, and what and how the final product should be used.
**Prerequisites:** Graduate standing in the MSDM, MBA or certificate program.
**Cross-listed with** MBA F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F648 Perspectives in Addressing Cybersecurity & Critical Infrastructure**
3 Credits
Offered As Demand Warrants
The course explores the nature of the critical infrastructure, the possible threats that exist or might exist and how they can be countered. Through case studies, we will examine the varied serious potential threats out there to the numerous critical infrastructures we have identified.
**Prerequisites:** Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
**Crosslisted with** MBA F648.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F649 Cyber Threats and Vulnerabilities**
3 Credits
Offered As Demand Warrants
This course is focused on threats, vulnerabilities, patch management, incident response, and security operations to identify and protect against internal and external threats. Various security threats will be covered including hacker attacks, e-mail borne viruses, backdoor problems, and internal sabotage. Cybercrime, cybersecurity, and global information security will be discussed.
**Prerequisites:** Graduate standing in the MSDM or MBA programs, certificates, or as approved by program director.
**Cross-listed with** MBA F649.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F656 Strategic Leadership**
3 Credits
Offered As Demand Warrants
Focus on the understanding and application of strategic leadership. We will discuss the process by which leaders make decisions at the strategic level. We will use historical examples of strategic leaders and assess the success-- and failure-- of strategic leadership under the challenging and catastrophic scenarios.
**Prerequisites:** Graduate standing within the MSDM or MBA programs.
**Cross-listed with** MBA F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F665 Strategic Collaboration**
3 Credits
Offered Summer
This course is designed to explore the techniques of collaboration and communication and their strategic use in managing contemporary organizations. Students will identify their own communication style and how to deploy it in various managerial situations. Topics will include exploring individual personality type and the effect of type on collaboration.
**Prerequisites:** Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program manager.
**Cross-listed with** MBA F665.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F670 Environmental Security**
3 Credits
Offered As Demand Warrants
The course examines environmental and climate related issues as they pertain to areas of policy and decision making, the process of securitization involved, areas of conflict as they connect to people and infrastructure, and how these factors affect security and disaster management planning efforts.
**Prerequisites:** Graduate Standing within the MSDM program.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F672 Climate Catastrophes: A Case Study Approach**
3 Credits
Offered As Demand Warrants
The course examines connections between climate, natural hazards, and security concerns, through security and disaster case studies. We will cover a range of challenges that societies have faced from climate-driven pressures, how those pressures influence security and resilience, and how those lessons apply to security and disaster management efforts.
**Lecture + Lab + Other:** 6 + 0 + 0

**HSEM F673 Models and Scenarios for Disaster Risk Reduction**
3 Credits
Offered As Demand Warrants
The course explores how models and scenario planning are used to prepare for current and future hazards. It covers issues of scale (temporal, spatial, and political), uncertainty and extreme events, and how scientific models and tools are used to improve decision- decision-making and reduce risk, primarily focusing on climate hazards.
**Lecture + Lab + Other:** 6 + 0 + 0

**HSEM F690 Security and Disaster Management**
3 Credits
Offered Spring
This course serves as the capstone course for the security and disaster management degree. This course should be taken near the end of the students' graduate program. This course will focus on the integration of both security and disaster management in a complex globalized environment. The course will explore touchpoints for public and private partnerships, organizing for effective security and disaster management solutions and the development of effective policies for both the public and private sectors.
**Prerequisites:** Must be admitted to the MSDM program; or permission of MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

**HSEM F692 Security and Disaster Management Seminar**
3 Credits
Offered Summer
This course is designed to bring Homeland Security and emergency management topics into the classroom as necessary. Such topics might include international security, disaster logistics or disaster economics. Additional topics will arise out of current events. This course may be taken 2 times as topics change.
**Prerequisites:** Must be admitted to the MSDM program; or permission of MSDM program director.
**Lecture + Lab + Other:** 3 + 0 + 0

# Honors College (HONR)

Honors College (https://www.uaf.edu/honors/)
907-474-6612

**HONR F101 Introduction to the Honors College**
1 Credit
Offered Fall
This course explains the services provided by the University in general and the Honors College specifically and how to best achieve goals in this academic setting. Student explores personal interests, strengths and weaknesses. Culminates in the development of an academic plan for a four-year degree program at UAF.
**Prerequisites:** Admission to the UAF Honors College.
**Lecture + Lab + Other:** 1 + 0 + 0

**HONR F125 Our Changing Climate: Past, Present, Future** (s)
3 Credits
Offered Spring
Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.
**Prerequisites:** Placement in WRTG F111X.
**Cross-listed with** ACNS F125, NRM F125, RD F125.
**Lecture + Lab + Other:** 3 + 0 + 0

**HONR F201 Methods of Inquiry**
3 Credits
Offered Fall
This course introduces students to epistemology, the theory of knowledge, and provides a broad overview of research methods from the perspectives of the humanities, social sciences and natural sciences. The course content provides a foundation for the Honors student who will be developing independent research for their capstone thesis project.
**Prerequisites:** admission to the Honors College; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X, COJO F131X or COJO F141X.
**Lecture + Lab + Other:** 0 + 0 + 0

**HONR F290 Honors Reading Seminar** (h)
2 Credits
Offered Fall
Selected readings in a variety of disciplines. Students provide written reflections, respond to specific questions on the books, and meet to discuss the books. May be repeated for credit.
**Prerequisites:** WRTG F111X; enrollment in the Honors College.
**Lecture + Lab + Other:** 2 + 0 + 0

**HONR F298 Research**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**HONR F301 Honors Interdisciplinary Seminar**
3 Credits
Offered As Demand Warrants
Honors students will explore a problem or challenge of national or international significance from the perspective of the natural sciences, social sciences, and humanities. Students will be expected to research information and present it, to lead discussions, and to propose ways to address the problem.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; admission to the Honors College.
**Lecture + Lab + Other:** 0 + 0 + 0

**HONR F381 Honors Capstone Development**
1 Credit
Offered As Demand Warrants
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is recommended. This course is the first in the sequence. Students in this course will develop their capstone proposal and by the end of the course will be fully prepared to begin their capstone projects.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; enrollment in the Honors College.
**Recommended:** Honors sections of WRTG F211X or WRTG F213X and of COJO F141X.
**Lecture + Lab + Other:** 1 + 0 + 0

**HONR F382 Honors Capstone Support**
1 Credit
Offered As Demand Warrants
In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is strongly recommended. By the completion of the course, each student will have made significant advancement towards the completion of their capstone project.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; HONR F381; enrollment in the Honors College.
**Recommended:** Honors sections of WRTG F211X or WRTG F213X and of COJO F141X.
**Lecture + Lab + Other:** 1 + 0 + 0

**HONR F383 Honors Capstone Seminar**
1 Credit
Offered As Demand Warrants
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is recommended for Honors students. This course is the last in the sequence. Students in this course will present their work to an audience of their peers, and practice the skills of posing substantive questions to speakers outside their own fields.
**Prerequisites:** HONR F381; HONR F382; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F141X or COJO F131X; enrollment in the Honors College.
**Recommended:** Honors sections of WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X and of COJO F141X.
**Lecture + Lab + Other:** 1 + 0 + 0

**HONR F390 Liability and Values**
3 Credits
Offered As Demand Warrants
The study of standards of conduct and moral judgment. The professional, moral and ethical responsibilities of the individual to employers, employees and society will be examined.
**Prerequisites:** Sophomore standing; permission of the Honors Director or instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**HONR F453 Fire, Ice, and the Fate of Humanity: A History of Energy and Climate Change** (s)
3 Credits
Offered Spring
This course examines how energy regimes and climatic changes have structured the history of the world, with a focus on North America. From the Little Ice Age to the Atomic Age and the Anthropocene, energy and climate have contoured the fate of humanity.
**Crosslisted with** ACNS F453; HIST F453.
**Stacked with** ACNS F653.
**Lecture + Lab + Other:** 3 + 0 + 0

**HONR F498 Research**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**HONR F499 Senior Thesis**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Human Services (HUMS)

**College of Rural and Community Development**
Human Services Program (https://www.uaf.edu/iac/academic-programs/rural-human-services/)
907-474-5439

**HUMS F101 Introduction to Human Services**
3 Credits
Offered Fall
Provides an overview and orientation for individuals who have either started or are exploring human service careers. Designed for entry level behavioral health providers with an emphasis in understanding social service systems in rural and frontier Alaska. Strongly encourage students to be accepted into the Human Services Degree Program.
**Special Notes:** Recommended, Should be taken within the first academic year when possible.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F102 Standards of Practice**
2 Credits
Offered Fall
Designed to provide an integrative approach for ongoing development of critical thinking skills, best practices evaluation, and application of skill based competencies. Development of a professional portfolio and integration of past human service experience.
**Special Notes:** This course should be taken as soon as possible upon acceptance into the Human Services Program.
**Lecture + Lab + Other:** 2 + 0 + 0

**HUMS F105 Personal Awareness and Growth**
2-3 Credits
Offered Spring
Interpersonal and intrapersonal communication explored. Personal growth process presented from a holistic perspective. Focus will identify opportunities for personal enrichment through increased awareness of self and others.
**Lecture + Lab + Other:** 2-3 + 0 + 0

**HUMS F117 Practical Math Skills**
3 Credits
Offered Spring
Computation involving percentages, estimation, problem-solving, reading and creating graphs and tables, data organization and interpretation. Applications of computational skills will be emphasized.
**Cross-listed with** ECE F117.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F120 Cultural Diversity in Human Services**
3 Credits
Offered Spring
The impact of culture on the delivery of human services including Alaska Native cultures; examination of relationship of multicultural and multi-ethnic concepts. Issues of age, class, disablement, race, gender and sexual orientation will also be discussed. Student exploration of personal values and cultural world view included.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F125X Introduction to Addictive Processes** (s)
3 Credits
Offered Fall, Spring and Summer
Focus on gaining knowledge of the psycho-social aspects of addiction. Historic and behavioral approaches, disease concept and current trends relating to addiction presented. Twelve step and self-help approaches explored.
**Cross-listed with** JUST F125X.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F140 Family Dynamics**
3 Credits
Offered Fall
Focus is on the family as a system and its involvement in the services provided to elders and children as well as services to family members with mental illness, developmental disabilities and substance abuse or dependence.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F202 Standards of Practice II**
1 Credit
Offered Spring
This course is designed for students who are either in practicum placement or finalizing their Human Services degree program. Students will demonstrate their competencies as lifelong learners, professional readiness and personal development by encompassing their best written work and self assessment by refining their human services portfolios. Active verbal participation is required.
**Prerequisite:** HUMS F102 or departmental approval.
**Lecture + Lab + Other:** 1 + 0 + 0

**HUMS F205 Basic Principles of Group Counseling**
3 Credits
Offered Spring
Concepts and techniques of working with small groups, including establishing group goals, effective group interaction, termination and evaluation. Development of therapeutic group activities presented.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F210 Crisis and Grief Counseling**
3 Credits
Offered Fall
Helping people in crisis from a theoretical and experiential perspective. Understanding how people feel, think and behave during periods of crisis and grieving. Suicide, violence, life transitions and AIDS explored.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F215 Individual Interviewing**
2-3 Credits
Offered Fall
Introduction to interpersonal communication skills. Focus on gathering client information through the interviewing process. Emphasis on development of one to one interviewing, behavioral observation and documentation.
**Lecture + Lab + Other:** 2-3 + 0 + 0

**HUMS F232 Human Service Practicum I**
3 Credits
Offered Fall and Spring
Integration of human service theory with skill-based training through a professional, supervised experience in a human service agency. Practicum requires 125 hours. Seminar also meets one hour per week; student-shared learning, peer support and documentation, including progress notes, social history, mental status and case planning.
**Prerequisites:** Human Services major or minor.
**Lecture + Lab + Other:** 1 + 8 + 0

**HUMS F233 Human Service Practicum II**
3-6 Credits
Offered Fall and Spring
Continuation of HUMS F232. Course may be repeated once for credit to meet program requirements.
**Prerequisites:** HUMS F232.
**Lecture + Lab + Other:** 1 + 8 + 0

**HUMS F250 Current Issues in Human Services**
1-4 Credits
Offered As Demand Warrants
Selected current issues of importance to the human service field. Emphasis on issues impacting Alaskan communities. Repeatable for credit by Human Services majors to a maximum of 9 credits.
**Lecture + Lab + Other:** 1-4 + 0 + 0

**HUMS F260 History of Alcohol in Alaska**
1 Credit
Offered Fall
Significant historical forces, events and consequences related to alcohol and other drug use in Alaska. Includes current impact and trends.
**Prerequisites:** HUMS F125X.
**Lecture + Lab + Other:** 1 + 0 + 0

**HUMS F261 Substance Abuse Assessment: ASAM PPC II**
1 Credit
Offered Fall
Treatment begins with assessment of need and intensity of services required. Students will understand criteria of ASAM: PPC II and have the skill to apply it to specific cases.
**Prerequisites:** HUMS F125X.
**Lecture + Lab + Other:** 1 + 0 + 0

**HUMS F263 Fetal Alcohol Spectrum Disorder**
1 Credit
Offered Fall
Identification of alcohol-related neurodevelopmental disorder (fetal alcohol syndrome/effect), understanding of developmental differences, secondary problems and development of intervention strategies leading to best practice.
**Lecture + Lab + Other:** 1 + 0 + 0

**HUMS F264 Culture, Chemical Dependency and Alaska Natives**
1 Credit
Offered As Demand Warrants
The importance of culture to recovery and the impact of cultural diversity on counseling and service delivery. Meets requirements for certification as substance abuse counselor in Alaska.
**Prerequisites:** HUMS F125X.
**Lecture + Lab + Other:** 1 + 0 + 0

**HUMS F266 Co-occurring Disorders**
1-2 Credits
Offered Fall
Theories and skills related to counseling the mentally ill substance abuser. Includes diagnosis, treatment planning and approaches, and special considerations.
**Prerequisites:** HUMS F125X.
**Lecture + Lab + Other:** 1-2 + 0 + 0

**HUMS F280 Prevention and Community Development**
3 Credits
Offered As Demand Warrants
Examine the historical evaluation, conceptual framework, practical realities of community development and prevention in rural Alaska. Surveys diverse approaches, community need evaluation processes for addressing community needs. Review of a multiplicity of approaches which can be considered in designing and implementing culturally respectful projects.
**Prerequisite:** HUMS F101; HUMS F102; or departmental approval.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F290 Case Management**
3 Credits
Offered As Demand Warrants
Challenge and broaden students' understanding, thinking, and conceptualizing case management. Investigate the case management model emphasizing its useful application to diverse client groups with an emphasis on Alaska and rural communities. The role of community in supporting efforts as well in providing resources such as natural supports will be emphasized.
**Prerequisite:** HUMS F101; HUMS F102; or departmental approval.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F301 Ethics in Human Service**
3 Credits
Offered Spring
Professional and ethical issues related to the helping professions. Ethical concerns in multicultural and rural human service delivery. Ethics and legal issues related to substance abuse counseling in Alaska.
**Prerequisites:** PSY F101X or SOC F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUMS F305 Substance Abuse Counseling**
3 Credits
Offered Spring
Introduction to the basic principles of substance abuse counseling. Application of counseling modalities to intervention and treatment of individuals, families and groups experiencing alcohol and drug abuse or dependence. Cross-cultural issues addressed.
**Prerequisites:** HUMS F125X.
**Lecture + Lab + Other:** 3 + 0 + 0

# Humanities (HUM)

**College of Liberal Arts**
Philosophy Department (https://www.uaf.edu/philo/)
907-474-7231

**HUM F201X Unity in the Arts** (h)
3 Credits
Offered Spring
Concentration on the interdependence of the visual arts, the performing arts, and literature, as set against a specific social, political and cultural background of selected eras.
**Attributes:** UAF Core Aesthetic Appreciatio, UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**HUM F492 Senior Seminar** (h)
3 Credits
Offered Fall Even-numbered Years
Consideration of the humanities at the University of Alaska and on alternate approaches elsewhere. Student project paper required with oral presentation and defense.
**Prerequisites:** Open requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**HUM F492P Senior Seminar**
3 Credits
Offered Fall Even-numbered Years
Consideration of the humanities at the University of Alaska and on alternate approaches elsewhere. Student project paper required with oral presentation and defense.
**Prerequisites:** Open requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

# Interdisciplinary Studies (INDS)

**General Studies**
Interdisciplinary Studies (https://www.uaf.edu/inds/)
907-479-2436

**INDS F400 Interdisciplinary Capstone**
0 Credit
Offered Fall, Spring and Summer
Students identify their values, strengths, and post-graduation goals. They will prepare a resume and writing sample. Students will also be expected to develop and research an action plan to reach their stated goals. These materials have practical applications and facilitate self-reflection on the learning outcomes of their interdisciplinary degree.
**Prerequisites:** admittance to an interdisciplinary major; senior standing.
**Cross-listed with** GENR F400.
**Lecture + Lab + Other:** 0 + 0 + 0

**INDS F498 Research**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**INDS F698 Research**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**INDS F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Inupiaq (INU)

**College of Rural and Community Development**
Alaska Native Languages Program (https://www.uaf.edu/anlc/)
907-474-7874

**INU F106 Introduction to Inupiaq** (an)
1 Credit
Offered As Demand Warrants
Entry-level course to learn to speak and understand basic words and phrases of the Inupiaq Eskimo language of the Northwest Arctic. Instruction is thematic and the focus is on communications for everyday situations.
**Lecture + Lab + Other:** 1 + 0 + 0

**INU F111X Elementary Inupiaq I** (an, h)
5 Credits
Offered Fall
Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound and the North Slope. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others it provides a framework for learning to speak, read and write the language. Consideration given to dialect differences.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**INU F112X Elementary Inupiaq II** (an, h)
5 Credits
Offered Spring
Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound, and North Slope. Open to both speakers and non-speakers. For speakers, the course provides literacy and grammatical analysis. For others, it provides a framework for learning to speak, read, and write the language. Consideration given to dialect differences.
**Prerequisites:** INU F111X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**INU F115 Conversational Inupiaq I** (an)
1-3 Credits
Offered As Demand Warrants
Introduction for students who wish to acquire the ability to speak Inupiaq, the language of Norton Sound, Seward Peninsula, Kotzebue Sound, North Slope, and the arctic portions of Canada and Greenland. Students first learn to understand simple spoken language, to speak simple Inupiaq, developing a beginning level of communicative competence.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**INU F116 Conversational Inupiaq II** (an)
1-3 Credits
Offered As Demand Warrants
Continuation of INU F115X. Introduction in Inupiaq, the language of Norton Sound, Seward Peninsula, Kotzebue Sound, North Slope, and the arctic portions of Canada and Greenland. Students first learn to understand simple spoken language, then to speak simple Inupiaq, developing a beginning level of communicative competence.
**Prerequisites:** INU F115.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**INU F118 Inupiaq Orthography** (an)
3 Credits
Offered As Demand Warrants
Entry-level course designed for students who are fluent in Inupiaq. Reading silently and aloud, and writing. Emphasis on specific skills and practical application of skills through writing assignments.
**Prerequisites:** Demonstrated conversational Inupiaq skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**INU F211 Intermediate Inupiaq I** (an, h)
3 Credits
Offered Fall
Continuation of INU F111X and INU F112X, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary.
**Prerequisites:** INU F112X.
**Lecture + Lab + Other:** 3 + 0 + 0

**INU F212 Intermediate Inupiaq II** (an, h)
3 Credits
Offered Spring
Continuation of INU F211, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary.
**Prerequisites:** INU F211.
**Lecture + Lab + Other:** 3 + 0 + 0

**INU F218 Inupiaq Composition** (an)
3 Credits
Offered As Demand Warrants
An examination of the development of written Inupiaq. Open to new genres, rather than simply translating the standard categories of English composition. Students receive extensive practice in the Inupiaq orthography and actively participate in the evaluation of each others' writing.
**Prerequisites:** INU F118.
**Lecture + Lab + Other:** 3 + 0 + 0

**INU F417 Advanced Inupiaq** (an, h)
3 Credits
Offered Spring
Advanced study in Inupiaq Eskimo. Continuation of INU F212.
**Prerequisites:** INU F111X; INU F112X; INU F211; INU F212.
**Lecture + Lab + Other:** 3 + 0 + 0

# Italian (ITAL)

Community and Technical College
Associate of Arts (https://www.ctc.uaf.edu/programs/associate-of-arts/)
907-455-2800

**ITAL F100A Elementary Italian I** (h)
3 Credits
Offered As Demand Warrants
Introductory study of the Italian language, culture and geography. Focuses on language skills to include grammar, vocabulary, pronunciation, and contemporary use of the language. Students will be introduced to the written and spoken language while learning about Italian culture. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**ITAL F100B Elementary Italian II** (h)
3 Credits
Offered As Demand Warrants
For students already in the process of learning Italian. Will be working individually, in pairs and in small groups toward reading, writing, listening and speaking. Focuses on language skills to include vocabulary terms, grammatical structures and conversational abilities. Will also learn about different cultures in the Italian-speaking world. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Prerequisites:** ITAL F100A.
**Lecture + Lab + Other:** 3 + 0 + 0

# Japanese (JPN)

**College of Liberal Arts**
Japanese Studies (https://www.uaf.edu/language/languages/japanese.php)
907-474-7396

**JPN F100A Japanese Culture and Conversation IA** (h)
3 Credits
Offered As Demand Warrants
Courses JPN F100A and JPN F100B are introductory courses in the Japanese language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F100B Japanese Culture and Conversation IB** (h)
3 Credits
Offered As Demand Warrants
Courses JPN F100A and JPN F100B are introductory courses in the Japanese language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Prerequisites:** JPN F100A.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F100E Japanese Culture and Conversation IIA** (h)
3 Credits
Offered As Demand Warrants
This is the first semester of second-year exploration of Japanese culture and conversation and requires completion of JPN F100B with a grade of C- or higher. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Prerequisites:** JPN F100B.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F100F Japanese Culture and Conversation IIB** (h)
3 Credits
Offered As Demand Warrants
This is the first semester of second-year exploration of Japanese culture and conversation and requires completion of JPN F100E with a grade of C- or higher. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Prerequisites:** JPN F100E.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F101X Elementary Japanese I**
4 Credits
Offered Fall
Introduction to spoken and written Japanese. Student will acquire a vocabulary of approximately 1,000 words and will learn to read and write the two syllabaries, hiragana and katakana, as well as 150 kanji. Cultural dimension is explored implicitly through language and explicitly through audiovisual materials. Courses are taught in Japanese.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 4 + 0 + 0

**JPN F102X Elementary Japanese II**
4 Credits
Offered Spring
Introduction to spoken and written Japanese. Student will acquire a vocabulary of approximately 1,000 words and will learn to read and write the two syllabaries, hiragana and katakana, as well as 150 kanji. Cultural dimension is explored implicitly through language and explicitly through audiovisual materials. Course is taught in Japanese.
**Prerequisites:** JPN F101X or equivalent.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 4 + 0 + 0

**JPN F201 Intermediate Japanese I** (h)
4 Credits
Offered Fall
The student will learn to read and write an additional 250 kanji. Conversational ability and listening comprehension enhanced by using videotape materials. Course is taught in Japanese.
**Prerequisites:** JPN F102X.
**Lecture + Lab + Other:** 4 + 0 + 0

**JPN F202 Intermediate Japanese II** (h)
4 Credits
Offered Spring
The student will learn to read and write an additional 250 kanji. Conversational ability and listening comprehension enhanced by using videotape materials. Course is taught in Japanese.
**Prerequisites:** JPN F201.
**Lecture + Lab + Other:** 4 + 0 + 0

**JPN F210 Beginning Kanji** (h)
2 Credits
Offered Fall
Students will learn to read and write 500 basic kanji (Chinese characters) through studying their history, composition and artistic value.
**Prerequisites:** Hiragana and Katakana recognition.
**Lecture + Lab + Other:** 2 + 0 + 0

**JPN F301 Advanced Japanese** (h)
3 Credits
Offered Fall
Development of advanced conversational and reading skills. Topics may include: modern Japanese prose fiction; newspaper Japanese; advanced conversation through the study of common contractions and idiomatic usage in the standard Tokyo dialect; and a study of television drama series. May be repeated with different topics.
**Prerequisites:** JPN F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F302 Advanced Japanese** (h)
3 Credits
Offered Spring
Development of advanced conversational and reading skills. Topics may include: modern Japanese prose fiction; newspaper Japanese; advanced conversation through the study of common contractions and idiomatic usage in the standard Tokyo dialect; and a study of television drama series. May be repeated with different topics.
**Prerequisites:** COJO F131X or COJO F141X; JPN F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F310 Intermediate Kanji** (h)
2 Credits
Offered Spring
Continuation of JPN F210 Beginning Kanji. Students will learn to read and write additional 500 kanji (Chinese characters) through studying their history, composition and artistic value.
**Prerequisites:** JPN F210.
**Lecture + Lab + Other:** 2 + 0 + 0

**JPN F311 Advanced Kanji** (h)
2 Credits
Offered As Demand Warrants
Continuation of JPN F310 Intermediate Kanji. Students will learn to read and write additional 1000 kanji (Chinese characters) through studying their history, composition and artistic value.
**Prerequisites:** JPN F310.
**Lecture + Lab + Other:** 2 + 0 + 0

**JPN F330 Classical Japanese Literature** (h)
3 Credits
Offered As Demand Warrants
A survey of the major works and genres of Japanese prose and poetry from the 8th to 18th centuries including Heian tales (monogatari), medieval folk tales and military chronicles, and the playful literature of the Edo period. Major emphases include the Tale of Genji, the Tale of the Heike and mastering the conventions that continue to be both adapted and subverted in modern Japanese literature. Course is taught in English.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F331 Women's Voices in Japanese Literature** (h)
3 Credits
Offered As Demand Warrants
Selected novels, short stories, poems and diaries by Japanese women from the tenth century to the present which reveal the personal, social, aesthetic and intellectual concerns of women in different periods of Japanese history. Focus on the changing role of women in Japanese society and the role of women writers.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F200X or FL F200X.
**Recommended:** HIST F121, HIST F122X, HIST F331.
**Cross-listed with** WGS F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F332 Japanese Cultural Traditions and Arts** (h)
3 Credits
Offered Fall Even-numbered Years
A study of Japanese cultural traditions and arts as influenced by the religious and philosophical systems of Shinto, Buddhism, Confucianism and Taoism. Lectures will cover a wide range of Japanese traditional arts such as tea ceremony, calligraphy, martial arts, Noh, Bunraku, and Kabuki. Course is taught in English.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F333 20th-Century Japanese Prose Fiction**
3 Credits
Offered As Demand Warrants
A study of selected novels, short stories and film scripts in translation representative of styles and themes which characterize twentieth century Japanese literature. Analysis of each work in terms of characterization, themes, structure, style and as an expression of social problems or intellectual issues in modern Japanese society. Course is taught in English.
**Prerequisites:** Junior standing.
**Special Notes:** Course may be repeated for credit when topic varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F431 Studies in Japanese Culture** (h)
3 Credits
Offered Fall
Further study of advanced written and spoken Japanese through essays, newspaper and journal articles, and television documentaries dealing with topics in Japanese culture.
**Prerequisites:** JPN F302.
**Special Notes:** Course may be repeated for credit when topic varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F432 Studies in Japanese Language** (h)
3 Credits
Offered Spring
In-depth study of Japanese language or literature. Course may be repeated for credit when topics vary.
**Prerequisites:** JPN F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F475 Seminar on Contemporary Japan** (h)
3 Credits
Offered Spring
Ties together various threads of the Japanese studies program and gives students an opportunity to apply their knowledge to contemporary issues in Japan. Provides a forum for student presentations of research papers begun in Japan.
**Prerequisites:** Upper-division semester in Japan at pre-approved program.
**Lecture + Lab + Other:** 3 + 0 + 0

**JPN F482 Selected Topics in Japanese** (h)
3 Credits
Offered As Demand Warrants
Focuses on topics not covered in JPN F431 or JPN F432.
**Prerequisites:** JPN F302; junior standing.
**Special Notes:** May be repeated for credit.
**Lecture + Lab + Other:** 3 + 0 + 0

# Justice (JUST)

**College of Liberal Arts**
Justice Department (https://www.uaf.edu/justice/)
907-474-5500

**JUST F110X Introduction to Justice** (s)
3 Credits
Offered Fall, Spring and Summer
Survey of the structure and process of the agencies of criminal justice. Includes introduction to criminology, criminal law, police, courts and corrections.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F125X Introduction to Addictive Processes** (s)
3 Credits
Offered Fall, Spring and Summer
Focus on gaining knowledge of the psycho-social aspects of addiction. Historic and behavioral approaches, disease concept and current trends relating to addiction presented. Twelve step and self-help approaches explored.
**Cross-listed with** HUMS F125X.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F201 Dispute Resolution and Restorative Practices** (s)
3 Credits
Offered Fall and Spring
This course surveys the basic practical and theoretical foundations of conflict, conflict resolution and restorative practices. It introduces students to the basic theories and practices of conflict resolution and peace-making, providing students with grounding in theories, applications and dynamics of conflict and key conflict resolution processes.
**Prerequisites:** WRTG F111X; COJO F131X, COJO F141X; PS F100X, ECON F120X, JUST F110X.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F222 Research Methods** (s)
3 Credits
Offered Fall, Spring and Summer
Application of social science research methods to solving scientific and nonscientific questions arising in justice or political science. Basic methods include statistical analysis, survey research, and Internet applications.
**Prerequisites:** JUST F110X.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F251X Criminology** (s)
3 Credits
Offered Fall, Spring and Summer
The study of the major areas of deviant behavior and its relationship to society, law and law enforcement, including the theories of crime causation.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F300X Ethics and Justice** (h)
3 Credits
Offered Fall, Spring and Summer
An examination of ethical and moral concepts, and their relationship to criminal justice issues. Applies ethics theories to the criminal justice institutions of police, courts and corrections. Examines ethical and moral dilemmas which confront crime control policymakers.
**Prerequisites:** Junior standing.
**Attributes:** UAF GER Ethics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F310 Principles of Corrections** (s)
3 Credits
Offered Spring and Summer
An introduction to adult institutions, community-based programs, and theories of incarceration. Correctional programs are examined.
**Prerequisites:** JUST F110X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F315 Correctional Counseling and Rehabilitation**
3 Credits
Offered As Demand Warrants
A study of various treatment and rehabilitative/restorative methods utilized in correctional settings. Topics include the roles of correctional personnel, the assessment and treatment of juveniles and adults, casework in correctional settings, crisis intervention, and the assessment and treatment of special populations in the correctional setting.
**Prerequisites:** Junior standing; JUST F310; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F335 Gender and Crime**
3 Credits
Offered Fall and Summer
An exploration of gender and crime including the extent of female crime, victimization, masculinity and violence, and women professionals in the justice system.
**Prerequisites:** JUST F110X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Cross-listed with** WGS F335.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F340 Rural Justice in Alaska** (an, s)
3 Credits
Offered Fall and Spring
Application of the western justice system to remote northern Native villages including issues arising from cultural conflicts, difficulties associated with a centralized justice system serving distant roadless communities, the federal/Indian relationship, and a description of crime occurring in the villages.
**Prerequisites:** JUST F110X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F345 Police Problems**
3 Credits
Offered Fall and Summer
This course examines the following: the potential for abuse of power and the special problems faced by those who assume the responsibility of coercing others; the influence of institutions and organizations on power; the nature of power and types of power; and the organizational tools to better manage power.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; JUST F110X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F352 Criminal Law**
3 Credits
Offered Fall and Spring
A study of elements, purposes and functions of the substantive criminal law with emphasis upon historical and philosophical concepts.
**Prerequisites:** JUST F110X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F354 Procedural Law**
3 Credits
Offered Fall and Spring
The legal limitations of the police and the right of the people to be secure from the government under the protection of the Constitution and the Rules of Evidence.
**Prerequisites:** WRTG F111X; JUST F110X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F358 Juvenile Delinquency** (s)
3 Credits
Offered Fall and Spring
Theories of delinquency, the extent of delinquency, the historical development of juvenile justice, the juvenile system, and how it impacts on youth in relation to police, courts, institutions and community programs. Includes youth violence, gangs, gender, race and class.
**Prerequisites:** JUST F110X; JUST F251X.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F360 Gender and Human Trafficking**
3 Credits
Offered Summer
The course will introduce students to human trafficking in its historical, legal, economic, and political/social contexts on a global scale, in the United States, and in Alaska.
**Prerequisites:** JUST F110X.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F400 Forensic Investigations**
3 Credits
Offered As Demand Warrants
This course explores forensic investigation techniques used to preserve evidence for trial. The history and purpose of forensic inquiries are explored. A variety of investigative techniques including hair and fiber analysis, botany, fingerprinting, DNA profiling, blood spatter, toxicology, handwriting analysis, entomology, casts and impressions, ballistics, among other evidence is examined.
**Prerequisites:** JUST F110X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X (course may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F453 Comparative Criminology** (s)
3 Credits
Offered Fall and Spring
The Justice program focuses on the American justice system with an emphasis in restorative processes, alternative dispute resolution, and Alaskan justice. This course examines the development of philosophy and law; and the historical and modern practice of justice throughout the world.
**Prerequisites:** COJO F131X or COJO F141X; JUST F110X; JUST F251X.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F454 Advanced Problems in Procedural Law**
3 Credits
Offered As Demand Warrants
Advanced study of the elements of criminal procedural law. Emphasis on the legal limitations of the police and the right of people to be secure from the government under protection of the U.S. Constitution and "rules of evidence."
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; JUST F110X; JUST F354; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F460 American Crime Control** (s)
3 Credits
Offered As Demand Warrants
Major concepts of the structure and process of criminal justice revisited with emphasis on current issues.
**Prerequisites:** COJO F131X or COJO F141X; JUST F110X; JUST F222; JUST F251X; senior standing; justice major.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F475 Internship**
3-9 Credits
Offered Fall and Spring
Supervised work experience in criminal justice agencies.
**Prerequisites:** Permission of director of intern program.
**Special Notes:** Department approval required for 9 credits.
**Lecture + Lab + Other:** 3-9 + 0 + 0

**JUST F490 Capstone: Seminar in Critical Issues in Criminal Justice**
3 Credits
Offered Spring and Summer
This seminar is one of three ways to satisfy the major capstone experience. Topics covered will be of current interest. Candidates in standing for B.A. degree in justice will examine current debates of a controversial and/or ethical nature.
**Prerequisites:** Senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F492 Seminar**
1-6 Credits
Various topics of current interest and importance to the justice major will be presented. Topics will be announced prior to each offering.
**Prerequisites:** JUST F110X; junior standing; permission of instructor.
**Lecture + Lab + Other:** 1-6 + 0 + 0

**JUST F492P Seminar**
1 Credit
**Lecture + Lab + Other:** 1 + 0 + 0

**JUST F498 Research Project**
3 Credits
Offered Spring
This course surveys the basic practical and theoretical foundations of conflict, conflict resolution and restorative practices. It introduces students to the basic theories and practices of conflict resolution and peace-making, providing students with grounding in theories, applications, and dynamics of conflict and key conflict resolution processes.
**Prerequisites:** WRTG F111X; COJO F121X or COJO F131X or COJO F141X; ECON F120X or PS F100X or JUST F110X.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F605 Administration and Management of Criminal Justice Organizations**
3 Credits
Offered Fall
A comprehensive overview of management and administration of criminal justice agencies with an emphasis on organizational behavior. Included is the study of management theories, leadership roles, and the development of human resources within the organizational context.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program.
**Recommended:** B.A. or B.S. in relevant area.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F610 Ethics in Criminal Justice Management**
3 Credits
Offered Spring and Summer
Confronting ethical situations that may arise in the management of criminal justice organizations. Examination of the ethical and moral foundations of our current criminal justice system to help make decisions in keeping with the goals of justice.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program.
**Recommended:** B.A. or B.S. in relevant area.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F615 Justice Program Planning/ Evaluation and Grant Writing**
3 Credits
Offered Spring
Program planning and evaluation. Includes grant proposal writing with emphasis on federal sources of grant funding.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program.
**Recommended:** B.A. or B.S. in relevant area.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F620 Personnel Management in Criminal Justice**
3 Credits
Offered Spring
Foundation for effective management of personnel in criminal justice by supervisors. Includes recruiting, selection, training, on-site supervision, termination and replacement of subordinates.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program.
**Recommended:** B.A. or B.S. in relevant area.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F625 Legal Aspect of Criminal Justice Management**
3 Credits
Offered Spring
A basic understanding of legal issues faced by criminal justice managers and administrators. Included is a study of the legal considerations surrounding recruitment and hiring practices, sexual harassment, the Age Discrimination in Employment Act, the Americans with Disabilities Act and the Fair Labor Standards Act.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program.
**Recommended:** B.A. or B.S. in relevant area.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F640 Community/Restorative Justice**
3 Credits
Offered Fall
Using community resources to address public safety concerns. Includes recent developments and an emerging awareness that public safety solutions can be achieved efficiently by cooperative efforts between justice agencies and community resources.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program.
**Recommended:** B.A. or B.S. in relevant area.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F670 Seminar in the Administration of Juvenile Justice**
3 Credits
Offered As Demand Warrants
Legal and administrative aspects of the juvenile justice system. Emphasis will be placed on developing an applied knowledge regarding the administration of juvenile justice within the legal framework. Includes hypothetical situations in an effort to enhance the ability to apply theoretical concepts to real life situations.
**Prerequisites:** JUST F605; Must be admitted to the Justice Administration master's degree program.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F690 Seminar in Critical Issues and Criminal Justice Policy**
3 Credits
Offered Fall and Summer
Over the semester, the candidates will review the core courses in the M.A. program. Candidates will complete projects designed to prepare them for the qualifying exam. Candidates in standing for the M.A. degree in justice will make presentations.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program.
**Recommended:** B.A. or B.S. in relevant area.
**Special Notes:** Available online only.
**Lecture + Lab + Other:** 3 + 0 + 6

**JUST F692 Justice Administration Seminar**
3 Credits
Offered Summer
Various topics of current interest and importance to the Justice Administration majors will be presented. Topics will be announced prior to each offering.
**Prerequisites:** Must be admitted to the Justice Administration master's degree program; or permission of Justice Administration M.A. program coordinator.
**Lecture + Lab + Other:** 3 + 0 + 0

**JUST F698 Non-thesis Research/Project**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-12

**JUST F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-12

# Latin (LAT)

College of Liberal Arts
Department of Foreign Languages and Literature (https://uaf.edu/language/)
907-474-7396

**LAT F101X Beginning Latin I** (h)
3 Credits
Offered Fall
Introduction to ancient Latin language and Roman culture, development of competence through reading original authors with emphasis on vocabulary, recognition and correct use of grammar.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**LAT F102X Beginning Latin II** (h)
3 Credits
Offered Fall
Continuation of the introduction to ancient Latin language and Roman culture, development of competence through reading original authors with emphasis on vocabulary, recognition and correct use of grammar.
**Prerequisites:** LAT F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**LAT F201 Intermediate Latin I** (h)
3 Credits
Offered Spring
Continuation of LAT F102X. Increasing development of competence through reading original authors with growing emphasis on grammar usage and vocabulary.
**Prerequisites:** First year college Latin.
**Lecture + Lab + Other:** 3 + 0 + 0

**LAT F202 Intermediate Latin II** (h)
3 Credits
Offered Spring
Continuation of LAT F201. Increasing development of competence through reading original authors with growing emphasis on grammar usage and vocabulary.
**Prerequisites:** LAT F201.
**Lecture + Lab + Other:** 3 + 0 + 0

# Law Enforcement (LE)

**Community and Technical College**
Law Enforcement (https://www.ctc.uaf.edu/programs/lawacad/)
907-455-2800

**LE F110 Cultural and Behavioral Strategies for Law Enforcement Officers**
1 Credit
Offered As Demand Warrants
Introduction to a number of behavioral strategies to facilitate interaction among various cultures to be found in Alaska. It also gives the student a strong concept of police ethics as it relates to everyday performance of police duties. The student receives an introduction to problems and strategies for law enforcement officers in their relationships to their marriages and families.Special Conditions: Students must meet basic Police Standards qualifications for police officers.
**Lecture + Lab + Other:** 1 + 0 + 0

**LE F115 Enforcement Skills for Law Enforcement Officers**
4 Credits
Offered As Demand Warrants
Introduction to basic skills necessary to use firearms, operate motor vehicles under emergency conditions and use Oleoresin Capsicum (pepper) spray and Taser effectively. Topics include use of force, judgement in the use of deadly force, physical defense tactics, physical arrest, radar and courtroom testimony, active shooter response, and officer safety.
**Lecture + Lab + Other:** 2 + 6 + 0

**LE F120 Law Enforcement Operations**
4 Credits
Offered As Demand Warrants
Preparation to conduct specific investigations into auto theft, domestic violence events, DUI detection, juvenile procedures, care of the emotionally disturbed, report writing and jail procedures.
**Special Notes:** Students must meet basic Police Standards qualifications for police officers.
**Lecture + Lab + Other:** 3 + 3 + 0

**LE F125 Basic Police Procedures**
4 Credits
Offered As Demand Warrants
Introduction to conducting investigations, using approved methods, at any major crime scene. Specific skills are presented for use in the investigation of sexual assaults, homicides, arson, gang related activity and death investigations. Skills are taught in: interview and interrogation, crime scene physical collection, hostage situations, scene investigation and mapping. Introduction to the danger of blood-bourne pathogens and protective measures.Special Conditions: Students must meet basic Police Standards qualifications for police officers.
**Lecture + Lab + Other:** 3 + 3 + 0

**LE F205 Criminal Law for Police**
4 Credits
Offered As Demand Warrants
Introduction to the more complex issues of criminal law. The Alaska Statutes, constitutional law and court decisions as well as traffic law, search and seizure, rights of defendants and warrant procedures.Special Conditions: Students must meet basic Police Standards qualifications for police officers.
**Lecture + Lab + Other:** 4 + 0 + 0

# Leadership (LEAD)

**College of Business and Security Management**
Leadership (https://www.uaf.edu/cbsm/)
907-474-7461

**LEAD F280 Sport Leadership**
3 Credits
Offered Fall
Provides leadership theory and develop leadership skills for application internal and external to their sport. Focus on the identification and development of leadership skills/abilities and application within the classroom, a sport and for an on-campus project.
**Cross-listed with** BA F280; SPRT F280.
**Lecture + Lab + Other:** 3 + 0 + 0

**LEAD F456 Leaderships in Dangerous Contexts**
3 Credits
Offered Fall, Spring and Summer
Course focuses on the challenges faced by leaders during crisis and emergency circumstances. During emergency circumstances, leading others, being able to influence and motivate them is critical. Topics including leadership and followership, crisis decision making, fear and emotion and the unique circumstances of an emergency manager/homeland security professional are examined.
**Prerequisites:** HSEM F301; WRTG F111X, WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** HSEM F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**LEAD F470 Leadership Theory and Development**
3 Credits
Offered As Demand Warrants
A guide for interpreting leadership theory and research as well as practical advice on how to be a better leader. Reviews functional leadership theories, how the theories relate to one another, and how students can apply the leadership theories to their own personal development.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390.
**Lecture + Lab + Other:** 3 + 0 + 0

**LEAD F472 Leading Change**
3 Credits
Offered As Demand Warrants
Explore how organizations to develop their capability and to achieve change, including the way change agents deal with conflicting demands. Learn the capabilities necessary to become a change agent within an organization and extend your understanding of key leadership theories.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; BA F390.
**Lecture + Lab + Other:** 3 + 0 + 0

# Library Science (LS)

Department of Library Science (https://library.uaf.edu/people/)
907-474-7224

**LS F101X Library Information and Research**
1 Credit
Offered Fall, Spring and Summer
Introduction to library research methods and principles of information organization and retrieval. Emphasis on applied experience finding and evaluating information, especially through the use of library catalogs, library databases and internet resources. Some sections are discipline-specific. Students are advised that this course may feature mature content.
**Attributes:** UAF Core Library Skills Req, UAF GER Library Skills Req
**Lecture + Lab + Other:** 1 + 0 + 0

# Linguistics (LING)

**College of Liberal Arts**
Linguistics Program (https://www.uaf.edu/linguist/)
907-474-7446

**LING F100 Language, Education, Linguistics** (h)
3 Credits
Offered Fall and Spring
Introduction to the field of linguistics as it pertains to the field of education. Includes discussions of language structure, acquisition and bilingualism, and variation and public policy. The course does not satisfy requirements for the B.A. in Linguistics.
**Cross-listed with** ED F100.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F101X Nature of Language** (h)
3 Credits
Offered Fall
The study of language: systematic analysis of human language and description of its grammatical structure, distribution and diversity.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F200 The Field of Teaching English to Speakers of Other Languages**
1 Credit
Offered Spring
The course provides an introduction to the profession of English second language teaching with a focus on the types knowledge, training and experience valued in the field as well as available international and US employment options. The course is offered on a pass/fall basis.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 1 + 0 + 0

**LING F216X Languages of the World** (h)
3 Credits
Offered Fall
A comprehensive survey of the world's languages--past and present. Topics include genetic relationships among languages, linguistic change, language universals, language classification and language families, as well as the interaction of culture and language.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F223 Sociolinguistics: Language and Social Inequality**
3 Credits
Offered As Demand Warrants
An Introduction to the concepts and methods of linguistic anthropology and sociolinguistics. It draws from these disciplines to investigate the role of language variation in social inequality. Covers concepts including language varieties, speech styles, language ideologies, the creation of standard languages and portrayals of ethnolinguistic groups in media.
**Prerequisites:** ANTH F100X or LING F101X.
**Cross-listed with** ANTH F223.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F260 Fundamentals of Linguistic Anthropology: Language in Culture and Communication** (s)
3 Credits
Offered Spring
An introduction to the study of the language and culture nexus. Questions addressed include: How does the language you speak affect how you think and view the world? How do ways of speaking structure culture? What do we know about how human language evolved? How does language encode cultural meaning?
**Prerequisites:** ANTH F100X, ANTH F101X, ANTH F215, SOC F101X or LING F101X.
**Cross-listed with** ANTH F260.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F302 Introduction to Second Language Acquisition**
3 Credits
Offered Spring
Survey of traditional and contemporary theories of second language acquisition and implications for language teaching and learning.
**Prerequisites:** LING F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F303 Language Acquisition** (s)
3 Credits
Offered As Demand Warrants
Theories of the acquisition and development of first and second languages, including consideration of biological and sociocultural factors. Survey of traditional and contemporary theories, and implications for pedagogy and public policy.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** LING F101X.
**Cross-listed with** ED F303.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F308 Language and Gender** (s)
3 Credits
Offered As Demand Warrants
Examination of relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X, LING F216X, ANTH F100X, ANTH F101X or WGS F201X.
**Cross-listed with** ANTH F308; WGS F308.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F315 English Language for Second Language Teaching**
3 Credits
Offered Fall
Study of the history, spread and varieties of the English language and the basic elements of its grammar, sound system and its use in discourse. This course is designed for students interested in teaching English as a second language and focuses on teaching implications of course content.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F318 Introduction to Phonetics and Phonology** (h)
3 Credits
Offered Spring
Scientific study of human speech sounds, mechanism of their production, and sound systems of languages.
**Prerequisites:** Upper-division standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F320 Introduction to Morphosyntax** (h)
3 Credits
Offered Fall
Study of principles and processes of word and sentence construction in language. Morphosyntactic structure of Alaska Native languages and other non-Indo-European languages.
**Prerequisites:** LING F318.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F389 Klingon, Elvish and Dothraki: The Art and Science of Language Creation** (s)
3 Credits
Offered As Demand Warrants
Exposure to linguistics and linguistic anthropology through inventing a language. The range of human linguistic and cultural variation will inform design of the sound system, grammar, orthography, lexicon and cultural context for the language. The class as a whole will collaboratively create a basic ConWorld, lexicon, grammar and writing system.
**Prerequisites:** WRTG F111X; one semester of foreign language; ENGL F318, LING F101X, LING F223 or ANTH F260.
**Cross-listed with** ANTH F389.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F410 Theory and Methods of Second Language Teaching**
3 Credits
Offered Fall Odd-numbered Years
Theory and methods of teaching a second language, including various pedagogical approaches, overview of second language acquisition theory, discussion of materials and testing.
**Prerequisites:** COJO F131X or COJO F141X; three years of a foreign or Alaska Native language or LING F302 and LING F315.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F420 Semantics** (h)
3 Credits
Offered As Demand Warrants
A systematic exploration of the nature of meaning in human language. Focus is on historical and contemporary approaches to understanding problems of reference, categorization and lexical relationships in meaningful contexts.
**Prerequisites:** LING F101X.
**Stacked with** LING F620.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F430 Historical Linguistics** (h)
3 Credits
Offered Fall Even-numbered Years
Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages.
**Prerequisites:** LING F318.
**Stacked with** LING F630.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F431 Field Methods in Descriptive Linguistics I**
3 Credits
Offered Spring Odd-numbered Years
Introduction to issues in field linguistics and specific issues around documenting little studied and endangered languages. Focus on making recordings, transcription, elicitation with consultants and ethics in the field. Projects build up to documenting an unfamiliar language with a consultant and designing and carrying out a research project.
**Prerequisites:** LING F318; LING F320.
**Cross-listed with** ANTH F432.
**Stacked with** ANTH F632; LING F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F434 Field Methods in Descriptive Linguistics II**
3 Credits
Offered As Demand Warrants
Second semester of Field Methods sequence. Planning a field project, including selecting a field site, making community contacts, intellectual property and repatriation. In class group elicitation with a speaker of a non-Indo-European language. Projects may involve either work with a consultant or archival research on languages no longer spoken.
**Prerequisites:** LING F431, ANTH F432.
**Cross-listed with** ANTH F434.
**Stacked with** ANTH F634; LING F634.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F435 Political Media and Discourses of the American Right** (s)
3 Credits
Offered As Demand Warrants
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** ANTH F435; COJO F435.
**Stacked with** ANTH F635; COJO F640; LING F635.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F440 Aspects of Bilingualism** (h)
3 Credits
Offered As Demand Warrants
Cognitive, linguistic, sociopolitical and educational aspects of bilingualism at both the individual and societal levels, including factors contributing to language maintenance and language shift.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F441 Topics in Linguistics**
3 Credits
An elective course in linguistics for majors. Content will vary from year to year and may be drawn from many areas of linguistics to include current research and methodologies.
**Prerequisites:** LING F101X; LING F318; LING F320.
**Special Notes:** Course may be repeated two times for credit when content varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F450 Language Policy and Planning** (s)
3 Credits
Offered Fall Odd-numbered Years
Consideration of minority languages, including Alaskan Native Languages, in light of their histories, current status, and factors affecting future maintenance.
**Prerequisites:** COJO F131X or COJO F141X.
**Cross-listed with** ANTH F450.
**Stacked with** ANTH F654, LING F650.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F451 English Second Language Teaching Practicum**
3 Credits
Offered Spring
Methodology workshop for students interested in teaching English as a second language. Includes language acquisition pedagogy and employment of these techniques in a lower division language classroom under the supervision of a classroom teacher. Enrollment subject to available classroom placement.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F410.
**Lecture + Lab + Other:** 2 + 0 + 3

**LING F481 Seminar in Applied Linguistic Research**
1 Credit
Offered Fall
The course provides an introduction to applied linguistic research with a focus on how research is defined, the ethics of research, the different research paradigms, and the variety of methods used to conduct research in applied linguistics.
**Prerequisites:** LING F101X, LING F318, LING F320.
**Lecture + Lab + Other:** 1 + 0 + 0

**LING F482 Seminar in Linguistics**
3 Credits
Offered Spring
Current issues in various subfields of linguistics including semantics and pragmatics, discourse analysis, bilingualism, lexicography, language philosophy and issues within a particular language or language group, e.g. Eskimo phonology, Athabascan morphology. May be repeated once.
**Prerequisites:** LING F101X; LING F318; LING F320.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F485 Discourse in Society: Analyzing Language in Social Context** (s)
3 Credits
Offered Fall Even-numbered Years
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.
**Prerequisites:** LING F101X, ANTH F260 or ANTH F320.
**Cross-listed with** ANTH F485.
**Stacked with** ANTH F685, LING F685.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F600 Research Methods for Applied Linguistics**
3 Credits
Offered Spring
Review of quantitative and qualitative research paradigms, data gathering techniques and analytical tools (questionnaires, surveys, observations, testing) used in the study of applied linguistics. Topics will include ethical issues in human subjects research, how to conduct a literature review, how to conduct classroom-based research.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F601 Principles of Linguistic Analysis**
3 Credits
Offered Fall
Provides experience in working with various languages to determine systematic principles of transcribing and organizing sounds; isolating morphemes; categorizing words into semantic categories; and understanding narrative and other rhetorical structures. For students whose specialty is other than linguistics who could benefit from a graduate-level introduction to linguistic methods.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F602 Second Language Acquisition**
3 Credits
Offered Fall
Central issues in second language acquisition research. Includes a critical review of SLA theories and research.
**Prerequisites:** LING F101X or LING F601; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F603 Phonetics and Phonology**
3 Credits
Offered Spring
Scientific approach to the study of human speech sounds and the mechanism of their production (phonetics), as well as the exploration of the fundamental concepts of the sound systems of languages (phonology) and theories which allow for the analysis of real language data.
**Prerequisites:** LING F101X or LING F601; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F604 Morphology and Syntax**
3 Credits
Offered Fall
The study of how meaning is encoded in words in languages of the world. Morphological and morphophonemic processes, lexical categories, derivation and inflection, productivity, tense, aspect, mode, case, concord, valence changes, morphological typologies. Similarities and differences among languages in signaling relations between nouns and verbs, negation, comparison, attribution.
**Prerequisites:** LING F101X or LING F601; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F610 Theory and Methods of Second Language Teaching**
3 Credits
Offered Spring
Theory and practice of teaching a second language, including methodological approaches, second language acquisition theory, materials, and testing.
**Prerequisites:** LING F602.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F611 Second Language Materials and Assessment**
3 Credits
Offered Spring Even-numbered Years
Exploration/discussion of theoretical perspectives in Second Language materials development and assessment. Emphasis on the interconnectivity of materials, syllabus, curriculum, learning and assessment. As a result of this course, students will be able to choose, adapt and construct a variety of language teaching materials and understand the ramifications of syllabus and curriculum design and assessment.
**Prerequisites:** LING F602; LING F610.
**Recommended:** LING F601.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F612 Assessment for the Second Language Classroom**
3 Credits
Offered As Demand Warrants
Exploration/discussion of theoretical perspectives in second language assessment, practical considerations in creating language tests, and statistical methods used for analyzing test data. As a result of this course, students will be able to choose, adapt and construct a variety of language assessments for classroom and institutional purposes as well as evaluate the validity of existing assessments.
**Prerequisites:** LING F602; LING F610.
**Recommended:** LING F601.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F620 Semantics**
3 Credits
Offered As Demand Warrants
A systematic exploration of the nature of meaning in human language. Focus is on historical and contemporary approaches to understanding problems of reference, categorization and lexical relationships in meaningful contexts.
**Prerequisites:** Graduate standing.
**Stacked with** LING F420.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F621 Cultural Aspects of Language Acquisition**
3 Credits
Offered As Demand Warrants
An expanded view of the ways in which individuals become socialized into particular patterns of first and second language and literacy. The ongoing acquisition of both oral and written language(s) from early childhood through adult life. Topics will include the cultural dimensions of language development, the relationship between communication and culture, bilingualism and the role of language in the transmission of sociocultural knowledge.
**Cross-listed with** ED F621.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F627 Introduction to Linguistic Description and Documentation**
3 Credits
Offered As Demand Warrants
General introduction to lexicography, field phonetics, grammatical documentation, investigation of narrative, other levels of linguistic documentation, the distinction between description and documentation, and differences in structure and method between pedagogical and academic materials resulting from field work.
**Prerequisites:** LING F601; demonstrated background in phonology and morphology.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F630 Historical Linguistics**
3 Credits
Offered Fall Even-numbered Years
Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages.
**Prerequisites:** LING F318.
**Stacked with** LING F430.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F631 Field Methods in Descriptive Linguistics I**
3 Credits
Offered Spring Odd-numbered Years
Introduction to issues in field linguistics and specific issues around documenting little studied and endangered languages. Focus on making recordings, transcription, elicitation with consultants and ethics in the field. Projects build up to documenting an unfamiliar language with a consultant and designing and carrying out a research project.
**Prerequisites:** LING F627.
**Cross-listed with** ANTH F632.
**Stacked with** ANTH F432; LING F431.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F634 Field Methods in Descriptive Linguistics II**
3 Credits
Offered As Demand Warrants
Second semester of Field Methods sequence. Planning a field project, including selecting a field site, making community contacts, intellectual property and repatriation. In class group elicitation with a speaker of a non-Indo-European language. Projects may involve either work with a consultant or archival research on languages no longer spoken.
**Prerequisites:** ANTH F632 or LING F631.
**Cross-listed with** ANTH F634.
**Stacked with** ANTH F434; LING F434.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F635 Political Media and Discourses of the American Right**
3 Credits
Offered As Demand Warrants
This class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F635; COJO F640.
**Stacked with** ANTH F435; LING F435; COJO F435.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F640 Linguistic Anthropology: Language, Thought and Action**
3 Credits
Offered As Demand Warrants
Course surveys the history of linguistic anthropology and the methods and questions that have driven and distinguished the field. Topics include an introduction to the subfields of linguistics, the evolution of language, human vs. animal communication, language socialization, linguistic relativity, semiotics, language socialization and language ideologies.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F650 Language Policy and Planning**
3 Credits
Offered Fall Odd-numbered Years
Consideration of minority languages, including Alaskan Native Languages, in light of their histories, current status, and factors affecting future maintenance.
**Cross-listed with** ANTH F654.
**Stacked with** LING F450.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F651 Topics in Athabascan Linguistics**
3 Credits
Offered As Demand Warrants
Graduate level introduction to important topics in Athabascan linguistics, including both foundational literature and current research. Topics may include laryngeal features; tonogenesis; syntax-morphology interface; argument structure; lexical semantics; and discourse. Course may be repeated once.
**Prerequisites:** LING F601; graduate standing.
**Recommended:** LING F603; LING F604.
**Cross-listed with** ANL F651.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F652 Linguistics Applications**
3 Credits
Offered As Demand Warrants
In-depth investigation of linguistic problems in selected languages. Includes phonological, morphological, syntactic and semantic issues. Students will produce a grammatical sketch of a chosen language.
**Prerequisites:** LING F318; LING F320; LING F601; or relevant course work.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F660 Internship**
3 Credits
Offered As Demand Warrants
Student works as an apprentice to a language teacher or a linguist doing fieldwork. Maintain a log and a portfolio of work. If teaching, goal would be to develop appropriate lesson plans and do mentored teaching. If doing fieldwork, goal would be to develop appropriate materials for teaching.
**Prerequisites:** LING F603; LING F604; ANTH F632 or LING F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F685 Discourse in Society: Analyzing Language in Social Context** (s)
3 Credits
Offered Fall Even-numbered Years
Hands-on experience in collection, transcription and analysis of naturally-occurring written and spoken texts. Offers a critical introduction to contemporary usage-based theories of language structure, including cognitive, cultural and interactional explanations for the distribution of linguistic resources in discourse.
**Prerequisites:** ANTH F631, ANTH F670, LING F602, LING F631 or LING F640.
**Cross-listed with** ANTH F685.
**Stacked with** LING F485, ANTH F485.
**Lecture + Lab + Other:** 3 + 0 + 0

**LING F692 Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**LING F692P Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**LING F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 1-9 + 0 + 0

**LING F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 1-9 + 0 + 0

# Marine Science and Limnology (MSL)

College of Fisheries and Ocean Sciences (https://www.uaf.edu/cfos/academics/)
907-474-7824

**MSL F102 Fact or Fishin': Case Studies in Fisheries and Marine Sciences**
1 Credit
Offered Fall
This seminar will promote active learning, critical thinking, and problem solving through a series of case studies involving current issues in fisheries and marine sciences conservation and management. Students enrolled in this course will also receive instruction on fundamental skills required to successfully complete a four-year degree at UAF.
**Crosslisted with** FISH F102.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**MSL F111L MSL F111X Laboratory**
0 Credit
**Co-requisites:** MSL F111X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**MSL F111X The Oceans** (n)
4 Credits
Offered Fall, Spring and Summer
Broad study of our ocean through combining insights from biology, physics, chemistry and geology. Topics include evolution of the ocean basins, seawater composition, generation of ocean currents and waves, and the combined processes that sustain life in the ocean. Societal topics related to climate change, fisheries and pollution are discussed.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** MSL F111L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**MSL F211 Introduction to Marine Science I**
3 Credits
Offered Fall
This is the first part of a two-semester sequence in Marine Science: MSL F211 and MSL F212. This course introduces students to the geology, chemistry and physics of the ocean and the roles of the hydrosphere, cryosphere and atmosphere in the climate system.
**Prerequisites:** MATH F151X (may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F212 Introduction to Marine Science II**
3 Credits
Offered Spring
This course explores the diversity of marine life, from microbes to mammals, and the interactions of marine organisms with each other and with their environment. Topics include primary productivity, marine food webs, physiological adaptations, and ecology of marine habitats from coastal to deep-sea systems. Students will also be introduced to current topics in marine and fisheries research.
**Prerequisites:** MSL F211.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F219 Marine Mammals of the World**
2 Credits
Offered Spring
We will go on a tour of the 129 currently recognized extant marine mammal species in the world. We will explore taxonomy, species description and identifying characteristics, distribution, ecology, including feeding strategies, reproduction etc., status, threats and conservation.
**Prerequisites:** MSL F111X, FISH F102, FISH F103, BIOL F115X or BIOL F116X.
**Lecture + Lab + Other:** 2 + 0 + 0

**MSL F220 Scientific Diving**
2 Credits
Offered Spring
Introduction to cold water diving and SCUBA techniques used in the research community. Includes familiarization with Alaska subtidal flora and fauna. Opportunity to work underwater and assist with diving projects conducted by MSL F421 students at the Kasitsna Bay Marine Lab during spring break. Completion of this course will allow students to be eligible to join the UAF (AAUS) dive program and to dive on the UAF sanctioned diving projects and have reciprocity to dive with other universities and other government agencies. Through this course, students also can be certified with a Research Diver Specialty (PADI) and a Dry Suit Specialty (PADI). CPR, First Aid (Red Cross), and Emergency Oxygen Administration (DAN) are offered through this course. Special Conditions: Must have current SCUBA physical approved.
**Prerequisites:** Basic biology/ecology courses, SCUBA (open water) certification.
**Lecture + Lab + Other:** 1 + 1 + 8

**MSL F303 Data Analysis and Writing for Aquatic Sciences**
3 Credits
Offered Fall
In this course, students will develop skills in basic data analysis, scientific writing and interpretation of published research. This course will utilize public data sets and peer-reviewed scientific writing samples drawn from the fields of fisheries, marine sciences and limnology that address an important question in aquatic science.
**Prerequisites:** STAT F200X, MSL F211, MSL F212.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F306 Aquatic Invertebrate Zoology**
4 Credits
Offered Fall Even-numbered Years
We will explore the phylogenetics, life history, reproduction, physiology, morphology, and sexual systems of aquatic invertebrates. Hands on approaches, including a survey and comparison of taxonomic groups using microscopy and visual observations, recorded in a lab notebook, are central to the laboratory component of this course.
**Prerequisites:** MSL F211; MSL F212, BIOL F115X; BIOL F116X.
**Lecture + Lab + Other:** 3 + 3 + 0

**MSL F315 Marine Geological Drama and Undersea Catastrophes**
3 Credits
Offered Fall
Case studies of geological events that disrupt the ocean environment as an introduction to geological oceanography. Geological concepts are covered as part of the background and context for each one. The case studies include everyday geological drama, sudden catastrophes, and slow-motion catastrophes on a geologic time scale.
**Prerequisites:** MSL F111X, MSL F211.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F317 Introduction to Marine Mammal Biology**
3 Credits
Offered Spring
The course will introduce students to the biology and diversity of cetaceans, pinnipeds, sirenians, and other marine mammals. Topics will include evolution, ecology, reproduction, and behavior of marine mammals, their special adaptations, such as diving, osmo- and thermoregulation, and will explore some current conservation and management issues. The course will be structured in a lecture format.
**Prerequisites:** BIOL F116X or MSL F212.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F320 Aquatic Ecology**
3 Credits
Offered Fall
An introduction to the relationship between aquatic species and their environment, with an emphasis on biological interactions and environmental factors that structure these communities.
**Prerequisites:** (MSL F211 and MSL F212) OR (BIOL F115X and BIOL F116X).
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F410 Marine Bird Ecology and Conservation**
3 Credits
Offered Fall Even-numbered Years
This course will introduce students to the biology, ecology and conservation of marine birds, with emphasis on seabirds, sea ducks and shorebirds, especially species found in Alaska and the Northern hemisphere. Through ecological and evolutionary perspectives, topics will include biodiversity, adaptations, life histories, population ecology, demography, community ecology and conservation.
**Prerequisites:** BIOL F371 or MSL F320.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F412 Early Life Histories of Marine Invertebrates**
3 Credits
Offered Fall Odd-numbered Years
This course will explore the diversity of reproductive strategies and larval forms in marine invertebrates, and consider selective pressures governing the evolution of these forms. Topics include: larval ecology and evolution, environmental constraints on early life histories, reproductive biology, population dynamics, sources of larval mortality, dispersal and recruitment. Graduate standing or instructor permission and invertebrate zoology recommended.
**Prerequisites:** MSL F212 and upper-division standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F415 Physiology of Marine Organisms**
3 Credits
Offered Fall
We will study the problems and challenges vertebrates and invertebrates are facing in the marine environment, and their responses and solutions. Characteristic issues for marine animals include oxygen supply, salinity, temperature and pressure, and adaptations can vary widely or be remarkably similar.
**Prerequisites:** BIOL F310, MSL F212, (BIOL F111X & BIOL F112X).
**Stacked with** MSL F615.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F419 Concepts in Physical Oceanography**
3 Credits
Offered Fall Even-numbered Years
This course establishes the physical concepts that drive ocean motion on our rotating earth including the roles of the Coriolis force, ocean stratification, wind driven and thermohaline circulation, tides and why the major ocean gyres exist.
**Prerequisites:** MATH F251X or PHYS F211X.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F421 Nearshore Ecology Field Course**
2 Credits
Offered Spring
Students will propose a hypothesis that they will develop in the first two months of the semester and then experimentally test during a spring break field trip to the Kasitsna Bay Marine Lab. Projects may be subtidal (if the student is a current AAUS diver) or intertidal.
**Prerequisites:** MSL F220, successful completion of a 200 level marine biology, ecology, or equivalent courses; If the student wants to dive as part of their project, they must be AAUS divers with current CPR, First Aid, O2 Administration certifications, and have a current AAUS medical physical.
**Stacked with** MSL F623.
**Lecture + Lab + Other:** 1 + 1 + 8

**MSL F425 Subarctic Oceanography Field Course**
3 Credits
Offered Fall
This two-week intensive course provides students with skills and techniques for modern oceanographic investigation. Students develop, carry out and present their own field program conducted within fjords surrounding Seward, Alaska. An additional course fee covers ship time, lodging and meals in Seward. Fairbanks-to-Seward return travel costs are covered by students.
**Prerequisites:** MSL F211; MSL F212.
**Stacked with** MSL F625.
**Lecture + Lab + Other:** 11 + 20 + 17

**MSL F431 Polar Marine Science**
3 Credits
Offered Fall Odd-numbered Years
Physical, biological, chemical and geological oceanography of the polar oceans with emphasis on comparing and contrasting the Arctic and Antarctic.
**Prerequisites:** MSL F211; MSL F212.
**Stacked with** MSL F621.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F443 Fisheries Oceanography**
4 Credits
Offered Fall Odd-numbered Years
Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.
**Prerequisites:** FISH F110 or FISH F288; STAT F200X, MSL F111X, or CHEM F105X; PHYS F123X.
**Cross-listed with** FISH F443.
**Stacked with** MSL F643, FISH F643.
**Lecture + Lab + Other:** 4 + 0 + 0

**MSL F449 Biological Oceanography**
3 Credits
Offered Fall
Survey of biological processes emphasizing organic matter synthesis and transfer including topics essential to a basic understanding of contemporary biological oceanography. Primary and secondary production, standing stocks, distribution, and structure and dynamics of phytoplankton and zooplankton populations. The transfer of organic matter to higher trophic levels and food webs. Nutrient cycling, especially but not exclusively nitrogen, phosphorus and silicon, microbiological processes relevant to nutrient cycling. Heterotrophic production, benthic communities, coastal ecosystems, the influence of organisms on the composition of seawater, particularly with reference to oxygen and carbon dioxide regimes. Aspects of regional oceanography.
**Prerequisites:** Upper Division standing in a Science major; MSL F212 for undergraduate students.
**Stacked with** MSL F650.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F450 Marine Biology and Ecology Field Course**
4 Credits
Offered Summer Odd-numbered Years
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab (Kachemak Bay, Alaska). Includes the study of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology.
**Prerequisites:** One year of biology.
**Recommended:** Basic courses in ecology and invertebrate zoology.
**Stacked with** MSL F651.
**Lecture + Lab + Other:** 3 + 6 + 0

**MSL F453 Zooplankton Ecology**
3 Credits
Offered Fall Even-numbered Years
Survey of marine zooplankton and processes that influence their production and dynamics. Emphasis is placed upon zooplankton communities of northeast Pacific and Arctic oceans. Field and lab methodology reviewed include fixing, preserving, subsampling, identifying and quantifying zooplankton collections. Reviewed laboratory techniques cover culture of zooplankton, including physiological measurements of parameters.
**Prerequisites:** MSL F449.
**Stacked with** MSL F663.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F455 Phytoplankton and Marine Microbes**
3 Credits
Offered Spring Even-numbered Years
An in-depth exploration of microbial life in the marine environment focusing on phytoplankton, microzooplankton, bacteria and archaea. Students will learn the importance of marine microbes, including their impacts on fisheries and biogeochemical cycles. Topics include harmful algal blooms and the impacts of climate change on marine microbial communities.
**Prerequisites:** MSL F212.
**Stacked with** MSL F655.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F456 Kelp Forest Ecology**
2 Credits
Offered Summer Even-numbered Years
Introduction to knowledge, hypotheses and disputes regarding kelp forest ecology, including the environmental and ecological interactions that influence their distribution, structure and function. Course includes lectures, discussions, labs and scuba diving field trips. We take a global perspective but focus on local Alaska subtidal flora and fauna.
**Prerequisites:** UAF Science Diver certification.
**Stacked with** MSL F656.
**Lecture + Lab + Other:** 5 + 35 + 0

**MSL F457 Field Techniques in Ocean Acidification Research**
3 Credits
Offered Summer Even-numbered Years
An introduction to the design and fabrication of experimental ocean acidification systems and oceanographic pH sensors for the study of ocean acidification. This course will require extra fees to cover laboratory activities, room and board. Students are responsible for the travel to and from Kasitsna Bay Laboratory, near Seldovia, Alaska.
**Prerequisites:** MSL F211 and MSL F212.
**Lecture + Lab + Other:** 2 + 4 + 3

**MSL F459 Computer Programming for Scientific Applications**
3 Credits
Offered Spring Odd-numbered Years
Introduction to scientific programming techniques and applications. This MATLAB-based course will cover programming fundamentals, input/output operations, and mapping and other data visualization techniques. Students will work with NetCDF and OpenDAP protocols and remote large-volume data repositories. No prior programming experience required.
**Prerequisites:** Senior or graduate level standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F461 Chemical Oceanography**
3 Credits
Offered Spring
An integrated study of the chemical, biological, geological and physical processes that control the chemical composition of seawater. Boundary interactions with the atmosphere and lithosphere, biogeochemical cycles and tracers of these complex cycles are examined. The marine chemistry of inorganic carbon is considered in detail.
**Prerequisites:** Upper-division standing, CHEM F106X, BIOL F116X.
**Stacked with** CHEM F660; MSL F660.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F463 Chemical Coastal Processes**
3 Credits
Offered Spring Even-numbered Years
A study of chemical processes in the coastal ocean, including interactions at boundaries, and physical and biological controls on the chemistry of coastal environments. Key topics include riverine input, coastal acidification, photochemistry, coastal productivity, and challenges in coastal management. Intended for students with general chemistry and marine science backgrounds.
**Prerequisites:** Upper-division standing; CHEM F105X; CHEM F106X; MSL F111X or (MSL F211;MSL F212).
**Stacked with** MSL F663.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F467 Ecology and Physiology of Marine Macroalgae** (n)
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of marine seaweed related to their diversity, structure, physiology, ecology, and basic grouping approaches, and marine seaweed's relation to human affairs. This course will allow students to increase their awareness of the ecological and economic relevance of marine seaweeds.
**Prerequisites:** BIOL F115X; MSL F212.
**Stacked with** MSL F667.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F476 Aquatic Food Web Ecology**
3 Credits
Offered Fall Even-numbered Years
Examines theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
**Prerequisites:** Upper-level undergraduate standing.
**Cross-listed with** BIOL F470; FISH F476.
**Stacked with** BIOL F670; FISH F676; MSL F676;.
**Lecture + Lab + Other:** 2 + 3 + 0

**MSL F481 The Oceans and Global Change**
3 Credits
Offered Fall
Explores how human activities are affecting Earth's oceans. Topics include climate change, sea-level rise, coastal erosion, declining sea ice, shifting ecosystems, ocean acidification, pollution and various mitigation proposals. The course will investigate the causes and effects of these changes and consider the challenges and opportunities that arise from them.
**Prerequisites:** Upper-division standing or MSL F212.
**Stacked with** MSL F681.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F482 Human Impacts to the Marine Biosphere**
3 Credits
Offered Spring
A review of the biological mechanisms that marine species utilize to respond to ocean change focusing on the links between physical, chemical and biological systems and human activities.
**Prerequisites:** (MSL F211 and MSL F212) or (BIOL F115X and BIOL F116X).
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**MSL F498 Research**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**MSL F499 Senior Thesis**
3 Credits
Under the supervision and mentorship of a fisheries and ocean sciences faculty member, students will complete a self-designed project that is the capstone of a student's exemplary academic performance. The student will complete a senior thesis based on field and/or laboratory data collected during a field course or work that was completed with the faculty mentor within the context of the existing literature relevant to the study topic. Students are required to present their study results as an oral or poster presentation at a UAF seminar or symposium, or at a state or national scientific conference. In addition, students are encouraged to work with their mentor to submit their thesis for publication in a peer-reviewed scientific journal.
**Prerequisites:** Permission of a fisheries and ocean sciences faculty mentor.
**Lecture + Lab + Other:** 0 + 0 + 9

**MSL F601 Professional Development**
1 Credit
Offered Spring Odd-numbered Years
Improve ability to make oral and poster presentations and to write resumes and cover letters. Includes lectures, discussions, and four individual projects. Students are encouraged to use their thesis/dissertation material for the posters and oral presentations. Feedback on all projects will be given by both instructor and students.
**Recommended:** Graduate status.
**Lecture + Lab + Other:** 1 + 0 + 0

**MSL F602 Proposal Writing**
1 Credit
Offered Fall
Familiarize students with the proposal writing process. Writing proposals is a common requirement during graduate school and will be continuing during the career as a scientist and researcher. This class aims to cover some common rules about good proposal writing. Students will be required to write a proposal and to give feedback to 1-2 proposals of classmates. Course may be repeated for credit.
**Recommended:** Graduate status.
**Lecture + Lab + Other:** 1 + 0 + 0

**MSL F604 Modern Applied Statistics for Fisheries**
4 Credits
Offered Fall Odd-numbered Years
Covers general statistical approaches to quantitative problems in marine science and fisheries with guidance on how to collect and organize data, how to select appropriate statistical methods and how to communicate results. A variety of advanced statistical methods for analyzing environmental data sets will be illustrated in theory and practice.
**Prerequisites:** STAT F200X; STAT F401; proficiency in computing with R.
**Cross-listed with** FISH F604.
**Lecture + Lab + Other:** 3 + 3 + 0

**MSL F605 Controversies in Marine Science**
1 Credit
Offered Spring Even-numbered Years
Introduction to the idea that science is fluid and controversies and disagreements do occur. These disagreements are often published in the primary literature. This course will be a discussion/debate of various controversial topics in marine science.
**Recommended:** Graduate status.
**Lecture + Lab + Other:** 1 + 0 + 0

**MSL F610 Marine Biology**
3 Credits
Offered Spring
Biology of the major plant and animal groups in the sea and their roles in pelagic and benthic systems. Physical, chemical and geological features affecting marine organisms and the role of bacteria in the sea. The basic biology and adaptations of selected species of zooplankton and nekton. The benthos-shore biota, shelf and deep-sea organisms: basic biology, trophic roles and adaptations of selected species.
**Prerequisites:** Degree in biology.
**Recommended:** Courses in invertebrate zoology, ichthyology, and vertebrate zoology.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F612 Early Life Histories of Marine Invertebrates**
3 Credits
Offered Fall Odd-numbered Years
This course will explore the diversity of reproductive strategies and larval forms in marine invertebrates, and consider selective pressures governing the evolution of these forms. Topics include: larval ecology and evolution, environmental constraints on early life histories, reproductive biology, population dynamics, sources of larval mortality, dispersal and recruitment. Graduate standing or instructor permission and invertebrate zoology recommended.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F613 Veterinary Nutrition and Metabolism**
2 Credits
Offered Spring
This course will examine the nutritional needs of major species of veterinary importance. Discussion will revolve around specific nutritional needs as they relate to life-stages and production status of monogastric and ruminant animals. Course topics deal with the classification and function of nutrients, digestive processes (monogastric, ruminant, hind-gut fermenters), evaluation of feedstuffs and feed labels, and principles of disease related to nutritional deficiency as well as nutritional excess.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** DVM F623.
**Lecture + Lab + Other:** 2 + 0 + 0

**MSL F615 Physiology of Marine Organisms**
3 Credits
Offered Fall
We will study the problems and challenges vertebrates and invertebrates are facing in the marine environment, and their responses and solutions. Characteristic issues for marine animals include oxygen supply, salinity, temperature and pressure, and adaptations can vary widely or be remarkably similar.
**Prerequisites:** Graduate standing.
**Stacked with** MSL F415.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F618 Functional Anatomy**
8 Credits
Offered Fall
The course will include an introduction to veterinary anatomy in which the basics veterinary anatomy, orientation, nomenclature, locomotion apparatus, circulatory system, digestive, respiratory apparatus, lymphatic organs and nervous system of domestic animals will be explained. A general explanation of the basic anatomical preparation techniques will be presented to improve the manual skills of the students. The course will place the anatomical knowledge in a clinical context.
**Prerequisites:** Admittance to the professional veterinary program.
**Cross-listed with** DVM F616.
**Lecture + Lab + Other:** 5 + 6 + 0

**MSL F619 Biology of Marine Mammals**
3 Credits
Offered As Demand Warrants
Introduction to a broad range of research and conservation topics associated with marine mammals. Topics include physiological adaptations, phylogeny and evolution, behavior, ecology, population dynamics and conservation.
**Prerequisites:** Graduate standing; or upper-division ecology and biology courses.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F620 Physical Oceanography**
4 Credits
Offered Fall
Physical description of the sea, physical properties of seawater, methods and measurements, boundary processes, currents, tides and waves, and regional oceanography.
**Prerequisites:** MATH F253X; PHYS F123X or PHYS F211X; science or engineering degree.
**Lecture + Lab + Other:** 3 + 3 + 0

**MSL F621 Polar Marine Science**
3 Credits
Offered Fall Odd-numbered Years
Physical, biological, chemical and geological oceanography of the polar oceans with emphasis on comparing and contrasting the Arctic and Antarctic.
**Prerequisites:** graduate standing.
**Stacked with** MSL F431.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F623 Nearshore Ecology Field Course**
2 Credits
Offered Spring
Students will propose a hypothesis that they will develop in the first two months of the semester and then experimentally test during a spring break field trip to the Kasitsna Bay Marine Lab. Projects may be subtidal (if the student is a current AAUS diver) or intertidal.
**Prerequisites:** Graduate standing; MSL F220, successful completion of a 200 level marine biology, ecology, or equivalent courses; If the student wants to dive as part of their project, they must be AAUS divers with current CPR, First Aid, O2 Administration certifications, and have a current AAUS medical physical.
**Stacked with** MSL F421.
**Lecture + Lab + Other:** 1 + 1 + 8

**MSL F625 Subarctic Oceanography Field Course**
3 Credits
Offered Fall
This two-week intensive course provides students with skills and techniques for modern oceanographic investigation. Students develop, carry out and present their own field program conducted within fjords surrounding Seward, Alaska. An additional course fee covers ship time, lodging and meals in Seward. Fairbanks-to-Seward return travel costs are covered by students.
**Stacked with** MSL F425.
**Lecture + Lab + Other:** 11 + 20 + 17

**MSL F627 Statistical Computing with R**
2 Credits
Offered Fall
Using the free, open-source software R to teach computing, programming, and modeling concepts for the statistical computing of fisheries and biological data. Prepares students for other graduate-level, quantitative fisheries courses and covers exploratory statistical and graphical analyses, as well as computer-intensive methods such as bootstrapping and randomization tests.
**Prerequisites:** STAT F200X, STAT F401, and proficiency with Excel.
**Cross-listed with** FISH F627.
**Lecture + Lab + Other:** 1 + 3 + 0

**MSL F630 Geological Oceanography**
3 Credits
Offered Spring
Topography and structure of the ocean floor. Theory of plate tectonics. Geology of ocean basins, continental slope, shelf and coastal environments. Major sediment types and distributions. Sediment transport and deposition. Interaction between seawater, rock, and sediment. Paleoceanography. Upper-division standing are invited to contact the instructor.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F631 Data Analysis in Community Ecology**
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of statistical methods that have been specifically developed to aid our understanding and interpretation of the structure, abundance, and distribution of species and communities in relation to resources and the environment.
**Prerequisites:** STAT F200X; STAT F401; FISH F627 (Statistical Computing with R) or familiarity with R, general ecology, graduate standing in fisheries.
**Cross-listed with** FISH F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F632 Oceanographic Data Analysis and Visualization**
3 Credits
Offered Spring Even-numbered Years
This course introduces students to data analysis and visualization techniques commonly applied to oceanographic datasets. Students will gain a theoretical and practical understanding of propagation of errors, linear least squares regression, and time series analyses such as correlation, coherence and spectral estimation.
**Prerequisites:** Graduate standing; MATH F253X; MATH F314.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F637 Veterinary Bacteriology and Mycology**
2 Credits
Offered Spring
This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** BIOL F632; DVM F637.
**Lecture + Lab + Other:** 2 + 0 + 0

**MSL F639 Veterinary Virology**
2 Credits
Offered Spring
This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** BIOL F639; DVM F639.
**Lecture + Lab + Other:** 2 + 0 + 0

**MSL F642 Veterinary Pathology/Biology of Disease I**
5 Credits
Offered Spring
This course will discuss basic principles of disease with special emphasis on processes likely to be encountered veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell-mediated processes to more specific disease mechanisms.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** BIOL F640; DVM F640.
**Lecture + Lab + Other:** 4 + 3 + 0

**MSL F643 Fisheries Oceanography**
4 Credits
Offered Fall Odd-numbered Years
Oceanography of marine processes affecting vertebrates and invertebrates. Interactions between fisheries resources and physical and biological oceanography, and climatological and meteorological conditions that support sustainable management. Topics include recruitment, transport, mortality, feeding, distribution, abundance, El Nino/La Nina, regime shifts, and climate change. Global to local scales. Worldwide ecosystems and examples.
**Prerequisites:** Graduate standing.
**Cross-listed with** FISH F643.
**Stacked with** MSL F443, FISH F443.
**Lecture + Lab + Other:** 4 + 0 + 0

**MSL F650 Biological Oceanography**
3 Credits
Offered Fall
Survey of biological processes emphasizing organic matter synthesis and transfer including topics essential to a basic understanding of contemporary biological oceanography. Primary and secondary production, standing stocks, distribution, and structure and dynamics of phytoplankton and zooplankton populations. The transfer of organic matter to higher trophic levels and food webs. Nutrient cycling, especially but not exclusively nitrogen, phosphorus and silicon, microbiological processes relevant to nutrient cycling. Heterotrophic production, benthic communities, coastal ecosystems, the influence of organisms on the composition of seawater, particularly with reference to oxygen and carbon dioxide regimes. Aspects of regional oceanography.
**Prerequisites:** Upper-division standing in a science major.
**Stacked with** MSL F449.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F651 Marine Biology and Ecology Field Course**
4 Credits
Offered Summer Odd-numbered Years
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab (Kachemak Bay, Alaska). Includes the study of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology.
**Prerequisites:** One year of biology; graduate standing.
**Recommended:** Basic courses in ecology and invertebrate zoology.
**Stacked with** MSL F450.
**Lecture + Lab + Other:** 3 + 6 + 0

**MSL F652 Marine Ecosystems**
3 Credits
Offered Fall Even-numbered Years
Understanding ecosystems of the sea in the context of evaluating the impact of human activities. Focus on current concepts, trends and perspectives.
**Prerequisites:** BIOL F472; MSL F620; MSL F650.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F653 Zooplankton Ecology**
3 Credits
Offered Fall Even-numbered Years
Survey of marine zooplankton and processes that influence their production and dynamics. Emphasis is placed upon zooplankton communities of northeast Pacific and Arctic oceans. Field and lab methodology reviewed include fixing, preserving, subsampling, identifying and quantifying zooplankton collections. Reviewed laboratory techniques cover culture of zooplankton, including physiological measurements of parameters.
**Stacked with** MSL F453.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F654 Benthic Ecology**
3 Credits
Offered Fall Even-numbered Years
Ecology of marine benthos, from subtidal to hadal zone. Methods of collecting, sorting, narcotizing, preserving and analyzing benthic assemblages, including video analytical techniques from submersibles and ROVs. Hydrothermal vent and cold seep assemblages. Physiology/energetics of benthic organisms, including animal-sediment relationships, feeding, reproduction and growth. Depth, spatial and latitudinal distribution patterns.
**Prerequisites:** Invertebrate zoology course, marine biology course.
**Cross-listed with** FISH F654.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F655 Phytoplankton and Marine Microbes**
3 Credits
Offered Spring Even-numbered Years
An in-depth exploration of microbial life in the marine environment focusing on phytoplankton, microzooplankton, bacteria and archaea. Students will learn the importance of marine microbes, including their impacts on fisheries and biogeochemical cycles. Topics include harmful algal blooms and the impacts of climate change on marine microbial communities.
**Stacked with** MSL F455.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F656 Kelp Forest Ecology**
2 Credits
Offered Summer Even-numbered Years
Introduction to knowledge, hypotheses and disputes regarding kelp forest ecology, including the environmental and ecological interactions that influence their distribution, structure and function. Course includes lectures, discussions, labs and scuba diving field trips. We take a global perspective but focus on local Alaska subtidal flora and fauna.
**Prerequisites:** UAF Science Diver certification.
**Stacked with** MSL F456.
**Lecture + Lab + Other:** 5 + 35 + 0

**MSL F660 Chemical Oceanography**
3 Credits
Offered Spring
An integrated study of the chemical, biological, geological and physical processes that control the chemical composition of seawater. Boundary interactions with the atmosphere and lithosphere, biogeochemical cycles and tracers of these complex cycles are examined. The marine chemistry of inorganic carbon is considered in detail.
**Prerequisites:** Graduate standing.
**Cross-listed with** CHEM F660.
**Stacked with** MSL F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F661 Stable Isotope Techniques in Environmental Research**
3 Credits
Offered Spring
An examination of the use of added or naturally occurring isotope tracers in ecological studies. Demonstration of equipment and modern techniques.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F663 Chemical Coastal Processes**
3 Credits
Offered Spring Even-numbered Years
A study of chemical processes in the coastal ocean, including interactions at boundaries, and physical and biological controls on the chemistry of coastal environments. Key topics include riverine input, coastal acidification, photochemistry, coastal productivity, and challenges in coastal management. Intended for students with general chemistry and marine science backgrounds.
**Prerequisites:** Graduate standing.
**Stacked with** MSL F463.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F667 Ecology and Physiology of Marine Macroalgae**
3 Credits
Offered Spring Odd-numbered Years
This course will provide an overview of marine seaweed related to their diversity, structure, physiology, ecology, and basic grouping approaches, and marine seaweed's relation to human affairs. This course will allow students to increase their awareness of the ecological and economic relevance of marine seaweeds.
**Prerequisites:** Upper-division standing in a natural science for undergraduates or graduate standing.
**Stacked with** MSL F467.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F676 Aquatic Food Web Ecology**
3 Credits
Offered Fall Even-numbered Years
Examines theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Includes a lecture component focused on peer reviewed studies and a lab component focused on applying concepts with data.
**Cross-listed with** BIOL F670; FISH F676.
**Stacked with** BIOL F470; FISH F476; MSL F476.
**Lecture + Lab + Other:** 2 + 3 + 0

**MSL F677 Scientific Writing Techniques**
3 Credits
Students learn to write scientifically with skill and clarity by practicing using easy-to-follow writing techniques to write and rewrite a draft manuscript. Topics include writing approaches, storytelling, outlines, style, grammar, punctuation, and editorial review. Most beneficial for graduate students writing theses, but provides excellent writing experience for new students.
**Prerequisites:** Graduate Standing.
**Cross-listed with** MSL F677.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F681 The Oceans and Global Change**
3 Credits
Offered Fall
Explores how human activities are affecting Earth's oceans. Topics include climate change, sea-level rise, coastal erosion, declining sea ice, shifting ecosystems, ocean acidification, pollution and various mitigation proposals. The course will investigate the causes and effects of these changes and consider the challenges and opportunities that arise from them.
**Prerequisites:** Upper-division standing or MSL F212.
**Stacked with** MSL F481.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSL F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**MSL F692A Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**MSL F692D Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**MSL F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

**MSL F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**MSL F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Master of Business Administration (MBA)

**College of Business and Security Management**
Masters of Business Administration (https://www.uaf.edu/som/degrees/graduate/mba/)
907-474-4622

**MBA F602 Accounting for Managers**
3 Credits
Offered Fall or Spring
A complete and balanced treatment of the concepts, procedures and uses of financial accounting. Coverage includes the accounting cycle, accounting principles, mass processing of transactions, internal control, inventories and merchandising operations, long-lived assets and liabilities, corporate accounting and reporting, partnership accounting, financial statements, funds flow analysis, cost systems for manufacturing operations, and managerial accounting.
**Prerequisites:** Graduate standing; or approval of the MBA director.
**Special Notes:** This course is NOT an approved elective for MBA students.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F605 Contemporary Topics in Accounting**
3 Credits
Offered As Demand Warrants
An advanced seminar designed to meet the accounting needs of managers. These topics can range from taxes to management control systems. May be taken twice for credit when topic changes.
**Prerequisites:** MBA F602; graduate standing; or permission of the MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F607 Human Resources Management**
3 Credits
Offered Spring
The study of the effective management of human resources in organizations to include employee planning and recruiting, selection and orientation, training and career development, performance evaluation, compensation, EEO, occupational safety and health, and labor relations.
**Prerequisites:** Admission to the MBA program; or permission of the MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F617 Organizational Theory for Managers**
3 Credits
Offered Fall and Spring
Overview of the history, concepts, literature and applications in organizational theory. Emphasis on applications and cases applying organizational theory concepts to management.
**Prerequisites:** Admission to the MBA program; or permission of the MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F620 Portfolio Theory and Asset Pricing**
3 Credits
Offered As Demand Warrants
Examination of modern normative portfolio theory and asset pricing. Includes mathematics of portfolio analysis, single-period risk and return measures, and the process of optimal portfolio selection.
**Prerequisites:** Admission to the MBA program; MBA F680; or permission of the MBA Director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F622 Managing in a Scientific or Technical Field**
3 Credits
Offered As Demand Warrants
An overview of managerial skills needed to succeed in a technical field (such as an engineering team or research lab), including leadership best practices for knowledge-workers with diverse technical capabilities & evidence-based and data-driven management techniques. Explores unique aspects of the technical workplace, from intellectual property protection to capital-raising.
**Prerequisites:** Admission to the MBA program, permission of the MBA director; Undergraduate degree or work experience in a STEM discipline.
**Lecture + Lab + Other:** 6 + 0 + 9

**MBA F623 Business Analytics**
3 Credits
Offered As Demand Warrants
This class provides an introduction and application of data analytics in accounting and business contexts. Students will develop an understanding of analytic concepts and how they apply to the investigation of business data relationships and trends.
**Prerequisites:** Admission to the MBA program.
**Stacked with** BA F421.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F624 Controllership**
3 Credits
Offered As Demand Warrants
An advanced course designed to meet the accounting needs of managers. Topics of study include evaluating the design and implementation of management control systems and making recommendations for efficiency and effectiveness, recognizing the ethical, environmental, legal/regulatory, political and social issues embedded within the design, evaluation and effective implementation of management control systems.
**Prerequisites:** MBA F602; Must be admitted to MBA program; or permission of MBA Director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F627 Business Law and Ethics**
3 Credits
Offered Fall
Gain an understanding of the legal, ethical and practical aspects of business law. This course is intended to prepare graduate students for their roles as leaders in the business world by enhancing their ethical decision making and understanding of relevant law.
**Prerequisites:** Admission to the MBA program.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F630 Derivative Securities**
3 Credits
Offered As Demand Warrants
Derivative securities including options strategies, binomial and Black-Scholes pricing models, commodity and interest-rate futures, hedging strategies using options and futures, and risk management.
**Prerequisites:** Admission to the MBA program; MBA F620; or permission of the MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F632 Project Management**
3 Credits
Offered Fall and Spring
This course is designed to cover key components of project management fundamentals with emphasis on the project life cycle, project definition, project schedule and cost management, human resource allocation and the challenges facing project managers in every industry.
**Prerequisites:** Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program director.
**Cross-listed with** HSEM F632.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F633 Human Resources Analytics**
3 Credits
Offered As Demand Warrants
An introduction to the theory of people analytics. This course will explore how data and models are used for decision-making in employee selection, compensation, and performance evaluations. Students will learn how and when data is used to make soft-skill decisions about hiring and talent development.
**Prerequisites:** Admission to the MBA program.
**Lecture + Lab + Other:** 6 + 0 + 0

**MBA F634 Marketing Analytics**
3 Credits
Offered As Demand Warrants
This course will explore introductory principles and strategies of data-driven marketing. Students will gain familiarity with common analytical methods, data management, and digital tools for applying marketing analytics.
**Prerequisites:** Admission to the MBA program.
**Lecture + Lab + Other:** 6 + 0 + 0

**MBA F635 Storytelling with Data**
3 Credits
Offered As Demand Warrants
This course introduces students to the visual representation and interpretation of data. Students learn to develop meaningful data visualizations for the appropriate audiences through the use of Tableau, Excel, and other data visualization tools.
**Prerequisites:** Admission to the MBA program.
**Lecture + Lab + Other:** 7 + 0 + 0

**MBA F641 Information Assurance and Risk Assessment**
3 Credits
Offered As Demand Warrants
Overview of enterprise security, privacy and information security assessment and management, and cybersecurity. Concentration on tangible and intangible costs of risks and examination of information assurance and security risk assessment concepts. Students will understand how to assess information security risks and use that information to develop potential solutions.
**Prerequisites:** Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
**Cross-listed with** HSEM F641.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F642 Economics of Environmental and Business Sustainability**
3 Credits
Offered As Demand Warrants
Examines the emerging role of business in responding to the economic challenges of achieving social and ecological sustainability. Investigates alternative measurements for evaluating the performance of the economy and the business and consumer sectors, including the triple bottom line model.
**Prerequisites:** Must be admitted to the MBA program.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F643 Marketing Management**
3 Credits
Offered Fall, Spring and Summer
Provides managerial approach to examining processes for identifying prospective opportunities, as well as review of marketing mix elements relating to planning, developing and implementing marketing plans. Topics include market segmentation, buyer behavior, product policy and strategy, pricing, promotion and sales force management, distribution channel policy, competitive behavior, market research and marketing ethics.
**Prerequisites:** Admission to the MBA program; or permission of the MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F645 Crisis Management**
3 Credits
Offered As Demand Warrants
An in-depth review of crisis management to include the different crises an organization may face. The importance of an ethical and strategic response, developing a solid crisis management plan, strong crisis communication, and developing a crisis management team will be discussed.
**Prerequisites:** Graduate standing in the MSDM, MBA or certificate program.
**Crosslisted with** HSEM F645.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F646 Business Continuity and Risk Assessment**
3 Credits
Offered As Demand Warrants
In-depth analysis of business continuity to include risk analysis and plan assessment. Overview of potential risks from more than a natural disaster standpoint. The correct way to use risk analyzes while developing a continuity plan will be discussed. The importance of exercising and maintaining a plan will also be reviewed.
**Prerequisites:** Graduate standing in the MSDM, MBA or certificate program.
**Cross-listed with** HSEM F646.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F647 Business Continuity Audit**
3 Credits
Offered As Demand Warrants
As part of the business continuity cycle, audits of the business continuity system must be conducted. Topics for this class include: What an audit is, the framework for conducting, how to conduct an audit, the importance of auditing, and what and how the final product should be used.
**Prerequisites:** Graduate standing in the MSDM, MBA or certificate program.
**Cross-listed with** HSEM F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F648 Perspectives in Addressing Cybersecurity & Critical Infrastructure**
3 Credits
Offered As Demand Warrants
The course explores the nature of the critical infrastructure, the possible threats that exist or might exist and how they can be countered. Through case studies, we will examine the varied serious potential threats out there to the numerous critical infrastructures we have identified.
**Prerequisites:** Graduate standing in the MSDM or MBA program or certificates, or as approved by program director.
**Crosslisted with** HSEM F648.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F649 Cyber Threats and Vulnerabilities**
3 Credits
Offered As Demand Warrants
This course is focused on threats, vulnerabilities, patch management, incident response, and security operations to identify and protect against internal and external threats. Various security threats will be covered including hacker attacks, e-mail borne viruses, backdoor problems, and internal sabotage. Cybercrime, cybersecurity, and global information security will be discussed.
**Prerequisites:** Graduate standing in the MSDM or MBA programs, certificates, or as approved by program director.
**Cross-listed with** HSEM F649.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F653 Internship in Business Administration**
3 Credits
Offered As Demand Warrants
A supervised practical work experience that engages students in structured exploration of the business environment and an opportunity to demonstrate and apply previous coursework and prior learning to their current internship. Focus on applying previous learning, developing business acumen, and preparing for future employment. Admission requires approved job arrangements.
**Prerequisites:** Admission to the MBA program.
**Stacked with** MBA F453.
**Lecture + Lab + Other:** 0 + 3 + 20

**MBA F656 Strategic Leadership**
3 Credits
Offered As Demand Warrants
Focus on the understanding and application of strategic leadership. We will discuss the process by which leaders make decisions at the strategic level. We will use historical examples of strategic leaders and assess the success-- and failure-- of strategic leadership under the challenging and catastrophic scenarios.
**Prerequisites:** Graduate standing within the MSDM or MBA programs.
**Cross-listed with** HSEM F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F665 Strategic Collaboration**
3 Credits
Offered Summer
This course is designed to explore the techniques of collaboration and communication and their strategic use in managing contemporary organizations. Students will identify their own communication style and how to deploy it in various managerial situations. Topics will include exploring individual personality type and the effect of type on collaboration.
**Prerequisites:** Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program manager.
**Cross-listed with** HSEM F665.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F673 Innovation Management**
3 Credits
Offered Fall
Overview of the skills a manager needs to administer an innovation systems and toolkit for dealing with various innovation issues in a broad business setting. Topics include creation innovation diversity; innovation dynamics, intellectual properties, technology/innovation commercialization, and innovation strategies.
**Prerequisites:** Graduate standing or approval of the MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F674 New Venture Development**
3 Credits
Offered Spring
Students will take a hands-on approach to commercializing their own or selected innovative ideas through focused study in several key areas of entrepreneurship, as well as learn how to assess and understand the industry, customers and competitors for a new venture.
**Prerequisites:** Must be admitted to the MBA program.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F675 Quantitative Methods for Managers**
3 Credits
Offered Fall and Spring
An in-depth treatment of quantitative research methods in an applied context. The usefulness of those techniques to the managerial decision-making process. Research skills are presented as a set of tools that enable managers to make better decisions.
**Prerequisites:** STAT F200X; admission to the MBA program; or permission of MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F680 Financial Markets and Strategy**
3 Credits
Offered Fall and Spring
Description of capital markets, development of the major financial theories that explain how to value financial instruments, and examination of how these theories can be used by corporations to evaluate real investments. How firms choose among the various instruments available to them for financing operations and how these instruments help firms manage risks. These corporate financial decisions are viewed as part of the overall corporate strategy of firms, affecting investment and operating strategies, product market strategies, and the ways in which executives are compensated.
**Prerequisites:** Admission to the MBA program; MBA F675; or permission of MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F681 Fixed Income Securities and Markets**
3 Credits
Offered As Demand Warrants
Fixed income securities and markets including treasury, agency, mortgage-backed and corporate securities, municipal bonds and derivatives. Introduces technical issues relating to duration, convexity and bond-portfolio management.
**Prerequisites:** Admission to the MBA program; MBA F630; or permission of MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F682 Financial Statement Analysis**
3 Credits
Offered Fall
How to comprehend and critically evaluate financial statements. Building on topics introduced in a first-year course in financial accounting, analyze additional disclosures typically included in financial statements. These activities will be useful in tasks related to valuation, credit decisions, competitor assessment and bankruptcy predictions.
**Prerequisites:** Admission to the MBA program; or permission of MBA director.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F683 Advanced Topics in Marketing**
3 Credits
Offered As Demand Warrants
Current topics and issues in marketing management, such as political and services marketing, marketing communications, marketing in Alaska or other relevant subjects.
**Prerequisites:** Admission to the MBA program; MBA F643; or permission of MBA director.
**Special Notes:** May be taken twice for credit when topic changes.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F690 Corporate Strategy**
3 Credits
Offered Fall and Spring
An integrative approach to strategy formation and implementation (decision-making) to achieve organization goals. Students will be introduced to theoretical perspectives and associated methodologies directed toward resolving the unstructured problems and opportunities which confront general managers at the highest levels of an organization.
**Prerequisites:** Admission to the MBA program; MBA F617; MBA F675; MBA F680; or permission of MBA director.
**Special Notes:** MBA F690 is an advanced seminar taken during the student's last spring semester.
**Lecture + Lab + Other:** 3 + 0 + 0

**MBA F691 Advanced Topics in Business**
3 Credits
Offered As Demand Warrants
Developing managers' ability to excel in specialized areas of business such as entrepreneurship and risk management.
**Prerequisites:** Admission to the MBA program; or permission of MBA director.
**Special Notes:** May be taken twice for credit when topic changes.
**Lecture + Lab + Other:** 3 + 0 + 0

# Mathematics (MATH)

**College of Natural Science and Mathematics**
Department of Mathematics and Statistics (https://www.uaf.edu/dms/)
907-474-7332

**MATH F051 Math Skills Review**
1 Credit
Offered As Demand Warrants
Develops and reviews basic mathematical terminology, theory and operations as outlined by the Alaska State Mathematics Standards. Mathematics topics focus on reviewing the six basic "strands" of mathematical content: numeration, measurement, estimation/computation, function/relationship, geometry, and statistics/probability. Approaches to problem solving will emphasize the process of mathematical thinking, communication and reasoning. May be repeated for a total of three credits.
**Special Notes:** It is an appropriate course for those preparing for the High School Qualifying Exam in Alaska or those needing a review of basic math skills in preparation for a math placement test at UAF.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F053 SAT/ACT Math Prep and Review**
1 Credit
Offered As Demand Warrants
This course will review basic concepts and practice math test taking skills to help prepare for the ACT and SAT tests.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F054 Prealgebra**
3 Credits
Offered As Demand Warrants
Basic concepts of prealgebra mathematics. Topics include operations and applications of whole numbers, integers, fractions, decimals, ratios and proportions, percents, geometry and measures, evaluation of algebraic expressions and applications.
**Prerequisites:** DEVS F111 (may be taken concurrently); and appropriate placement scores.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F054A Modularized Mastery Math: Prealgebra Module A**
1 Credit
Offered As Demand Warrants
This course covers one credit of MATH F054 Prealgebra and includes the following topics: identifying and solving basic linear equations involving whole numbers, integers, decimals and fractions, solving ratio and proportion problems, solving percent problems, and solving applied problems. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting,
**Prerequisites:** Appropriate placement test score within one calendar year; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F054B Modularized Mastery Math: Prealgebra Module B**
1 Credit
Offered As Demand Warrants
This course covers one credit of MATH F054 Prealgebra and includes the following topics: identifying and solving basic linear equations involving whole numbers, integers, decimals and fractions, solving ratio and proportion problems, solving percent problems, and solving applied problems. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting,
**Prerequisites:** Grade of B or better in MATH F054A; or appropriate placement test scores taken within one calendar year; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F054C Modularized Mastery Math: Prealgebra Module C**
1 Credit
Offered As Demand Warrants
This course covers one credit of MATH F054 Prealgebra and includes the following topics: identifying and solving basic linear equations involving whole numbers, integers, decimals and fractions, solving ratio and proportion problems, solving percent problems, and solving applied problems. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting, Prerequisite courses and/or placement exams must be taken within one calendar year.
**Prerequisites:** Grade of B or better in MATH F054B; or appropriate placement test scores; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F055 Elementary Algebra**
3 Credits
Offered As Demand Warrants
Topics include evaluation and simplifying algebraic expressions, polynomials, factoring, integer exponents, rational expressions, solutions of linear equations and inequalities, graphing lines, solving systems of linear equations, solving quadratic equations by factoring, and some rational equations. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.
**Prerequisites:** DEVS F111 (may be taken concurrently); and grade of C or better in MATH F054 or ABUS F155, or appropriate placement scores.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F055D Modularized Mastery Math: Elementary Algebra Module D**
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH F055 Elementary Algebra course and includes the following topics: simplifying algebraic expressions, solving linear equations in one variable, solving linear and compound inequalities in one variable, applications of linear equations and solving formulas. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
**Prerequisites:** Grade of B or better in MATH F054, or ABUS F155; or appropriate placement test scores; permission of instructor required; prerequisite courses and/or placement exams must be taken within one calendar year.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F055E Modularized Mastery Math: Elementary Algebra Module E**
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH F055 Elementary Algebra course and includes the following topics: linear equations in two variables, graphing linear equations, find the slope of linear equations, writing equations of lines, exponent rules and operations on polynomials. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
**Prerequisites:** Grade of B or better in MATH F055D taken within one calendar year; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F055F Modularized Mastery Math: Elementary Algebra Module F**
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH F055 Elementary Algebra course and includes the following topics: factoring polynomials, solving quadratic equations by factoring, simplifying rational expressions, operations with rational expressions, complex fractions, solving rational equations and applications of quadratic and rational equations. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
**Prerequisites:** Grade of B or better in MATH F055E taken within one calendar year; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F056 Math Fast Track: Prealgebra/Elementary Algebra Review**
1 Credit
Offered As Demand Warrants
A 20-hour intensive review of math concepts available prior to each semester. Covers prealgebra and elementary algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math.
**Prerequisites:** Placement into MATH F054 or MATH F055.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F061 Review of Elementary Algebra**
1 Credit
Offered As Demand Warrants
Designed to assist students in reviewing material covered by MATH F055. Individuals who have not previously taken an elementary algebra course are recommended to enroll in MATH F055. Available via UAF eCampus only.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F062 Alternative Approaches to Math: Elementary Algebra**
3 Credits
Offered As Demand Warrants
Algebraic topics. Includes operations with polynomial expressions, first- and second-degree equations, graphing, integral and relational exponents, and radicals using alternative teaching styles.
**Prerequisites:** Grade of C- or better in MATH F054; or ABUS F155; or appropriate placement test scores; prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F065 Mathematics Skills**
1-3 Credits
Offered As Demand Warrants
Designed to assist students in reviewing and reinforcing course concepts covered by MATH F054, MATH F055, MATH F062, MATH F105 and MATH F105N. Consists of instruction which may include lab instruction, individual student work or group work. May be repeated.
**Special Notes:** Recommended for students who need more time and help to master the material in developmental math courses.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**MATH F066 Advanced Math Fast Track: Elementary/Intermediate Algebra Review**
1 Credit
Offered As Demand Warrants
A 20-hour intensive review of math concepts available prior to each semester. Covers elementary and intermediate algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math.
**Prerequisites:** Placement into MATH F055 or MATH F105 or MATH F105N.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F068 Math Essentials**
4 Credits
Offered As Demand Warrants
Arithmetic and introductory algebra. Solve problems related to operations and properties of real numbers; proportion; percent; evaluation of algebraic expressions; solution and graphs of linear equations and inequalities; solving systems of linear equations; exponent rules; operations on polynomials; factoring; fundamental operations with rational expressions; solutions and applications of quadratic equations. Prerequisite course and/or placement exams must be taken within one calendar year prior to commencement of the course.
**Prerequisites:** DEVS F111 (may be taken concurrently); and appropriate placement score.
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F071 Review of Intermediate Algebra**
1 Credit
Offered As Demand Warrants
Course reviews material covered by MATH F105. Individuals who have not taken an intermediate algebra course on the high-school level are recommended to enroll in MATH F105. Available via UAF eCampus only.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F105 Intermediate Algebra**
3 Credits
Offered As Demand Warrants
Topics include expressions, equations and applications involving linear, absolute value, radical, quadratic, rational and radical functions; graphs of absolute value, radical, quadratic, exponential and logarithmic functions; functions and their inverses; and introduction to exponential and logarithmic functions. To matriculate to MATH F151X from MATH F105, students must earn a grade of B or higher.
**Prerequisites:** Grade of C or better in MATH F055, MATH F062, MATH F068, or appropriate placement test scores; prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F105G Modularized Mastery Math: Intermediate Algebra Module G**
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH F105 Intermediate Algebra course and includes the following topics: solving systems of equations and applications, simplifying radicals and expressions with rational exponents, performing operations on radical expressions, solving radical equations and performing operations on complex numbers. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Prerequisite courses and/or placement exams must be taken.
**Prerequisites:** Grade of B or better in MATH F055 or MATH F069 or appropriate placement test scores; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F105H Modularized Mastery Math: Intermediate Algebra Module H**
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH F105 Intermediate Algebra course and includes the following topics: review of solving quadratic equations by factoring, solving quadratic equations that are not factorable, relations and functions, graphs and transformations of functions, quadratic functions and their graphs, performing operations on functions, compositions of functions and applications of quadratic equations and functions. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
**Prerequisites:** Grade of B or better in MATH F105G taken within one calendar year; permission of instructor is required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F105J Modularized Mastery Math: Intermediate Algebra Module J**
1 Credit
Offered As Demand Warrants
This course covers one credit of the MATH Intermediate Algebra course and includes the following topics: solving absolute value equations and inequalities, solving linear and compound linear inequalities, solving quadratic and rational inequalities, inverse functions, exponential and logarithmic functions, properties of logarithms and solving exponential and logarithmic equations. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting.
**Prerequisites:** Grade of B or better in MATH F105H taken within one calendar year; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F105N Intensive Intermediate Algebra**
4 Credits
Offered As Demand Warrants
Includes exponents, radicals, graphing, quadratic equations and inequalities, logarithms, exponentials and complex numbers using alternative teaching styles.
**Prerequisites:** MATH F055, MATH F055F, MATH F062, MATH F068, MATH F105, MATH F105J, or appropriate placement scores; prerequisite courses and placement scores must be taken within one calendar year.
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F113X Numbers and Society** (m)
3 Credits
Offered Fall and Spring
Numbers and patterns are present in every aspect of daily life. We use mathematical concepts and tools to understand what numbers and patterns can tell us. Topics may include the mathematics of voting; dividing things fairly; determining efficient routes and schedules; modeling population growth; understanding financial mathematics; and introductory cryptography.
**Prerequisites:** An appropriate score on the math placement test, or a grade of B or better in MATH F055, MATH F062, MATH F068.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F122X Essential Precalculus with Applications** (m)
3 Credits
Offered Fall and Spring
A study of various classes of functions, exploring their numeric, algebraic and graphical aspects. Function classes include linear, quadratic, rational, exponential and logarithmic. This course is appropriate for students in programs relating to business and economics or life sciences or students intending to take MATH F230X.
**Prerequisites:** Appropriate placement score, MATH F105, MATH F105N or MATH F105J.
**Special Notes:** Credit may be earned for MATH F151X or MATH F122X, but not for both.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F151X College Algebra for Calculus** (m)
4 Credits
Offered Fall and Spring
Study of algebraic, logarithmic and exponential functions; systems of equations; applications.
**Prerequisites:** Appropriate score on the math placement test, B or better in MATH F105, B or better in MATH F105J or C or better in MATH F105N.
**Special Notes:** Credit may be earned for MATH F151X or MATH F122X, but not for both; Only eight credits total may be earned from MATH F151X, MATH F152X and MATH F156X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 4.5 + 0 + 0

**MATH F152X Trigonometry** (m)
3 Credits
Offered Fall and Spring
A study of trigonometric functions including graphing, identities, inverse trigonometric functions, solving equations and polar coordinates; applications.
**Prerequisites:** MATH F151X (may be taken concurrently) or placement.
**Special Notes:** Only eight credits total may be earned from MATH F151X, MATH F152X and MATH F156X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F156X Precalculus** (m)
4 Credits
Offered Fall and Spring
Various classes of functions and their graphs are explored numerically, algebraically and graphically. Function classes include polynomial, rational, exponential, logarithmic and trigonometric. Skills and concepts needed for calculus are emphasized. This class is intended for students intending to take MATH F251X.
**Prerequisites:** Placement into MATH F156X.
**Special Notes:** Only eight credits total may be earned from MATH F151X, MATH F152X and MATH F156X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 4 + 1 + 0

**MATH F211 Mathematics for Elementary School Teachers** (m)
3 Credits
Offered Fall
Elementary set theory, numeration systems, and algorithms of arithmetic, divisors, multiples, integers and introduction to rational numbers. Emphasis on classroom methods. Restricted to Elementary Education majors; others by permission of instructor.
**Prerequisites:** MATH F122X; or MATH F151X; or MATH F156X; or placement.
**Lecture + Lab + Other:** 3 + 1 + 0

**MATH F212 Mathematics for Elementary School Teachers II** (m)
3 Credits
Offered Spring
A continuation of MATH F211. Real number systems and subsystems, logic, informal geometry, metric system, probability and statistics. Emphasis on classroom methods.
**Prerequisites:** MATH F211.
**Lecture + Lab + Other:** 3 + 1 + 0

**MATH F230X Essential Calculus with Applications**
3 Credits
Offered Fall and Spring
An introduction to the key ideas of differential and integral calculus, and their uses in business, economics and the life sciences. This course emphasizes a solid conceptual understanding, along with calculation techniques for basic applications. MATH F230X cannot serve as a prerequisite for MATH F252X.
**Prerequisites:** MATH F122X; or MATH F151X; or MATH F156X; or placement.
**Special Notes:** Credit cannot be earned for both MATH F230X and MATH F251X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F251L Calculus I Recitation**
0 Credit
Offered Fall and Spring
Recitation section for Calculus I. Activities may include worksheets, quizzes and problem sessions associated with corresponding lecture material from MATH F251X, with an emphasis on prerequisite support.
**Corequisites:** MATH F251X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 0 + 2 + 0

**MATH F251X Calculus I** (m)
4 Credits
Offered Fall and Spring
A first course in single-variable calculus. Topics include limits; continuity and differentiation of functions; applications of the derivative to graphing, optimization, and rates of change; definite and indefinite integration; and the Fundamental Theorem of Calculus.
**Prerequisites:** Appropriate score on the math placement test; or MATH F151X and MATH F152X; or MATH F156X.
**Corequisites:** MATH F251L.
**Special Notes:** Credit may not be earned for both MATH F251X and MATH F230X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F252L MATH F252X Recitation**
0 Credit
Offered Fall and Spring
**Co-requisites:** MATH F252X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 0 + 0 + 0

**MATH F252X Calculus II** (m)
4 Credits
Offered Fall and Spring
Further topics in single-variable calculus, including techniques of integration; applications of integration; convergence of sequences and series; parameterized curves; and polar coordinates.
**Prerequisites:** MATH F251X.
**Co-requisites:** MATH F252L.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 4 + 1 + 0

**MATH F253X Calculus III** (m)
4 Credits
Offered Fall and Spring
Multivariable calculus. Topics include vectors in 2- and 3-dimensions; differential calculus of functions of several variables; multiple integration; vector calculus, including Green's and Stokes' Theorem; and applications.
**Prerequisites:** MATH F252X.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F265 Introduction to Mathematical Proofs** (m)
3 Credits
Offered Spring
Emphasis on proof techniques with topics including logic, sets, cardinality, relations, functions, equivalence, induction, number theory, congruence classes and elementary counting. In addition, a rigorous treatment of topics from calculus or a selection of additional topics from discrete mathematics may be included.
**Prerequisites:** MATH F252X (may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F302 Differential Equations**
3 Credits
Offered Fall and Spring
Nature and origin of differential equations, first order equations and solutions, linear differential equations with constant coefficients, systems of equations, power series solutions, operational methods, and applications.
**Prerequisites:** MATH F253X.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F305 Geometry**
3 Credits
Offered Spring Even-numbered Years
Topics selected from such fields as Euclidean and non-Euclidean plane geometry, affine geometry, projective geometry, and topology.
**Prerequisites:** MATH F265; MATH F314.
**Recommended:** MATH F253X.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F307 Discrete Mathematics**
3 Credits
Offered Spring
Logic, counting, sets and functions, recurrence relations, graphs and trees. Additional topics chosen from probability theory.
**Prerequisites:** MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F314 Linear Algebra**
3 Credits
Offered Fall and Spring
Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations and characteristic values. Inner product spaces.
**Prerequisites:** MATH F252X.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F316 Introduction to the History and Philosophy of Mathematics**
3 Credits
Offered Spring Odd-numbered Years
Important periods in the history of mathematics, including mathematics of Ancient Babylon, Mesopotamia, Greece, China and India, medieval Europe, the Middle East and the Renaissance; the development of geometry, algebra and calculus. Other areas in the development and philosophy of mathematics will be studied as time permits.
**Prerequisites:** MATH F253X; MATH F265 (may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F320 Topics in Combinatorics**
3 Credits
Offered Fall Odd-numbered Years
Introduction to some fundamental ideas of combinatorics. Topics selected from such fields as enumerative combinatorics, generating functions, set systems, recurrence relations, directed graphs, matchings, Hamiltonian and Eulerian graphs, trees and graph colorings.
**Prerequisites:** MATH F265.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F321 Number Theory**
3 Credits
Offered Fall Even-numbered Years
Number theory investigates the properties of the integers, one of the most basic of mathematical sets. Seemingly naive number-theoretic questions stimulated much of the development of modern mathematics! Topics may include classical areas such as primality, congruences, quadratic reciprocity and Diophantine equations, and more recent applications, such as cryptography.
**Prerequisites:** MATH F265.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F371 Probability**
3 Credits
Offered Fall Odd-numbered Years
Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions and characteristic functions.
**Prerequisites:** MATH F253X.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F401 Introduction to Real Analysis**
3 Credits
Offered Fall
Completeness of the real numbers and its consequence, convergence of sequences and series, limits and continuity, differentiation, the Riemann integral.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F253X; MATH F265.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F404 Introduction to Topology**
3 Credits
Offered Fall Even-numbered Years
Introduction to topological spaces, set theory, open sets, compactness, connectedness, product spaces, metric spaces and continua.
**Prerequisites:** MATH F253X; MATH F265.
**Recommended:** MATH F314 and/or MATH F405.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F405 Abstract Algebra**
3 Credits
Offered Spring
Theory of groups, rings and fields.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F265.
**Recommended:** MATH F307 and/or MATH F314.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F408 Mathematical Statistics**
3 Credits
Offered Spring Even-numbered Years
Distribution of random variables and functions of random variables, interval estimation, point estimation, sufficient statistics, order statistics, and test of hypotheses including various criteria for tests.
**Prerequisites:** MATH F371; STAT F200X or STAT F300.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F410 Introduction to Complex Analysis**
3 Credits
Offered Spring
Complex functions including series, integrals, residues, conformal mapping and applications.
**Prerequisites:** MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F412 Differential Geometry**
3 Credits
Offered Spring Odd-numbered Years
Introduction to the differential geometry of curves, surfaces, and Riemannian manifolds. Basic concepts covered include the Frenet-Serret apparatus, surfaces, first and second fundamental forms, geodesics, Gauss curvature and the Gauss-Bonnet Theorem. Time permitting, topics such as minimal surfaces, theory of hypersurfaces and/or tensor analysis may be included.
**Prerequisites:** MATH F314; MATH F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F426 Numerical Analysis**
3 Credits
Offered Fall
Direct and iterative solutions of systems of equations, interpolation, numerical differentiation and integration, numerical solutions of ordinary differential equations, and error analysis.
**Prerequisites:** MATH F302 or MATH F314.
**Recommended:** Knowledge of programming.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F430 Topics in Mathematics**
3 Credits
Offered Spring
An elective course in mathematics for majors. Topics will vary from year to year and may be drawn from mathematical biology, numerical linear algebra, graph theory, logic, or other areas of mathematics. May be repeated with permission of instructor for a total of nine credits.
**Prerequisites:** MATH F265.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F432 Introduction to Partial Differential Equations**
3 Credits
Offered Fall
Analysis and solution of partial differential equations. Initial and boundary value problems for parabolic, hyperbolic and elliptic types. Solution methods include separation of variables and Fourier transform.
**Prerequisites:** MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F460 Mathematical Modeling**
3 Credits
Offered Fall Odd-numbered Years
Introduction to mathematical modeling using differential or difference equations. Emphasis is on formulating models and interpreting qualitative behavior such models predict. Examples will be taken from a variety of fields, depending on the interest of the instructor. Students develop a modeling project.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MATH F252X.
**Recommended:** one or more of MATH F302, MATH F314, MATH F401, MATH F426, STAT F300 or some programming experience.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F490 Senior Seminar**
2 Credits
Offered Spring
Advanced topics selected from areas outside the usual undergraduate offerings. A substantial level of mathematical maturity is assumed.
**Prerequisites:** COJO F131X or COJO F141X; at least one of MATH F401 or MATH F405; senior standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**MATH F600 Teaching Seminar**
1 Credit
Offered Fall
Fundamentals of teaching mathematics in a university setting. Topics may include any aspect of teaching: university regulations, class and lecture organization, testing, book selection, teaching evaluations, etc. Specific topics will vary on the basis of student and instructor interest. Individual classroom visits will also be used for class discussion. May be repeated for credit.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**MATH F614 Numerical Linear Algebra**
3 Credits
Offered Fall Odd-numbered Years
Algorithms and theory for stable and accurate computation using matrices and vectors on computers. Matrix factorizations, direct and iterative methods for solving linear systems, least squares, eigenvalue and singular value decompositions. Practical implementation and application of algorithms.
**Prerequisites:** MATH F314.
**Recommended:** MATH F401 or MATH F432.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F615 Numerical Analysis of Differential Equations**
3 Credits
Offered Spring Odd-numbered Years
Review of numerical differentiation and integration, and the numerical solution of ordinary differential equations. Main topics to include the numerical solution of partial differential equations, curve fitting, splines, and the approximation of functions. Supplementary topics such as the numerical method of lines, the fast Fourier transform, and finite elements may be included as time permits and interest warrants.
**Prerequisites:** CS F201; MATH F314; MATH F410; MATH F426; MATH F432.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F617 Functional Analysis**
3 Credits
Offered Spring Even-numbered Years
Study of Banach and Hilbert spaces, and continuous linear maps between them. Linear functionals and the Hahn-Banach theorem. Applications of the Baire Category theorem. Compact operators, self adjoint operators, and their spectral properties. Weak topology and its applications.
**Prerequisites:** MATH F314; MATH F401.
**Recommended:** MATH F410; MATH F641.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F631 Algebra I**
4 Credits
Offered Fall Even-numbered Years
Rigorous development of groups, rings and fields.
**Prerequisites:** MATH F405.
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F632 Algebra II**
3 Credits
Offered Spring Odd-numbered Years
Advanced topics which may be chosen from group theory, Galois theory, commutative or non-commutative algebra, algebraic geometry, homological algebra or other areas.
**Prerequisites:** MATH F631.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F641 Real Analysis**
4 Credits
Offered Fall Odd-numbered Years
General theory of Lebesgue measure and Lebesgue integration on the real line. Convergence properties of the integral. Introduction to the general theory of measures and integration. Differentiation, the product measures and an introduction to LP spaces.
**Prerequisites:** MATH F401.
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F645 Complex Analysis**
4 Credits
Offered Spring Even-numbered Years
Analytic functions, power series, Cauchy integral theory, residue theorem. Basic topology of the complex plane and the structure theory of analytic functions. The Riemann mapping theorem. Infinite products.
**Prerequisites:** MATH F641.
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F651 Topology**
4 Credits
Offered Spring Odd-numbered Years
Treatment of the fundamental topics of point-set topology. Separation axioms, product and quotient spaces, convergence via nets and filters, compactness and compactifications, paracompactness, metrization theorems, countability properties, and connectedness. Set theory as needed for examples and proof techniques.
**Prerequisites:** MATH F401 or MATH F404.
**Lecture + Lab + Other:** 4 + 0 + 0

**MATH F658 Topics in Geometry**
3 Credits
Offered Fall Even-numbered Years
Elective topics in geometry. Recent offerings include configurations of points and lines; topology and differential geometry of surfaces; polyhedra and polytopes.
**Prerequisites:** Linear algebra; geometry; undergraduate real analysis; undergraduate abstract algebra.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F660 Advanced Mathematical Modeling**
3 Credits
Offered Spring Even-numbered Years
The mathematical formulation and analysis of problems arising in the physical, biological, or social sciences. The focus area of the course may vary, but emphasis will be given to modeling assumptions, derivation of model equations, methods of analysis, and interpretation of results for the particular applications. Examples include heat conduction problems, random walk processes, molecular evolution, perturbation theory. Students will develop a modeling project as part of the course requirements.
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F661 Optimization**
3 Credits
Offered Fall Even-numbered Years
Linear and nonlinear programming, simplex method, duality and dual simplex method, post-optimal analysis, constrained and unconstrained nonlinear programming, Kuhn-Tucker conditions. Applications to management, physical and life sciences. Computational work with the computer.
**Prerequisites:** Knowledge of calculus, linear algebra and computer programming.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F663 Graph Theory**
3 Credits
Offered Fall Odd-numbered Years
A survey of modern techniques in graph theory; topics may include graphs and digraphs, trees, spanning trees, matchings, graph connectivity, graph coloring, planarity, cycles, and extremal problems.
**Prerequisites:** MATH F314; MATH F320.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F665 Topics in Graduate Mathematics**
3 Credits
Offered As Demand Warrants
Elective courses in graduate mathematics offered by faculty on a rotating basis. Topics may include, but are not limited to, graph theory, glaciology modeling, general relativity, mathematical biology, Galois theory and numerical linear algebra. May be repeated for credit with permission of instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**MATH F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**MATH F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**MATH F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Mechanical Engineering (ME)

**College of Engineering and Mines**
Department of Mechanical Engineering (https://cem.uaf.edu/me/)
907-474-7136

**ME F254 Unmanned Aircraft Systems (UAS) Investigation**
3 Credits
Offered As Demand Warrants
An introductory analysis of unmanned air systems (UAS), including typical missions and performance expectations for various classes of UAS. Students investigate subsystem choices for a UAS and how these affect mission performance. Includes discussion of external factors impacting UAS design choices, including support infrastructure, flight operations and data requirements.
**Cross-listed with** AERO F254.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F256 Unmanned Aircraft Systems (UAS) Design**
3 Credits
Offered As Demand Warrants
A multidisciplinary team of students will design, build, test and deliver an unmanned aircraft system (UAS) in support of university research mission requirements. Students will learn basic concepts related to the systems engineering design process. Graded events include team briefings, written reports, multimedia products and a finished UAS product.
**Prerequisites:** AERO F254; ME F254.
**Crosslisted with** CS F254, AERO F256.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F258 Unmanned Aircraft Systems (UAS) Operations**
3 Credits
Offered As Demand Warrants
Covers the use of unmanned aircraft systems (UAS), sensors, and support infrastructure required to conduct a selected mission set. Emphasis is on mission analysis, planning, and conduct, including definition of requirements/constraints, identification of appropriate assets, flight planning considerations, and data analysis requirements. Teams coordinate resources for mission and report results.
**Cross-listed with** CS F258; GEOS F258; and AERO F258.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F302 Dynamics of Machinery**
4 Credits
Offered Fall
Kinematics and dynamics of mechanisms. Analysis of displacements, velocities, accelerations, and forces in linkages, cams and gear systems by analytical, experimental and computer methods. Design applications.
**Prerequisites:** ES F301 (may be taken concurrently); ES F210.
**Lecture + Lab + Other:** 3 + 3 + 0

**ME F308 Instrumentation and Measurement**
3 Credits
Offered Spring
Principles of measurement, instrumentation, Laplace transform, Fourier series, transfer function, steady-state response, calibration, and errors. Signal filtering and amplification, data acquisition, recording, and processing. Methods and devices for measuring strain, force, torque, displacement, velocity, acceleration, pressure, fluid flow properties, and temperature. Mechatronics, sensors, actuators, and controls.
**Prerequisites:** ES F331.
**Lecture + Lab + Other:** 2 + 3 + 0

**ME F313 Mechanical Engineering Thermodynamics**
3 Credits
Offered Spring
Investigation and design of power and refrigeration cycles (Rankine, Brayton, Otto, and Diesel), compressible flow (isentropic, shock waves, and flow in ducts with friction), and combustion and gas vapor mixtures.
**Prerequisites:** ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F321 Industrial Processes**
3 Credits
Offered Fall
Manufacturing processes used in modern industry. Primary and secondary manufacturing processes, casting, hot and cold forming, machining, welding and mass production tools and techniques as related to economic and efficient product design.
**Prerequisites:** Mechanical Engineering major.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F334 Elements of Material Science/Engineering**
3 Credits
Offered Spring
Properties of engineering materials. Crystal structure, defect structure, structure and properties, aspects of metal processing, heat treatment, joining, testing and failure analysis for engineering applications and design.
**Prerequisites:** CHEM F105X.
**Lecture + Lab + Other:** 2 + 3 + 0

**ME F402 Advanced Mechanical System Design**
3 Credits
Offered As Demand Warrants
Advanced analysis of two- and three-dimensional multi-body mechanical systems. Rigid body system formulation and deformable body system formulation. Application of CAE software for rigid body and large deformable body systems.
**Prerequisites:** ME F302; ME F408.
**Stacked with** ME F602.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F403 Machine Design**
3 Credits
Offered Spring
Design and analysis of machines by analytical, experimental and computer methods. Identification of requirements and conceptual design of mechanical systems, detailed design of components, strength, life, reliability, and cost analysis.
**Prerequisites:** ES F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F405 Computer Aided Design**
3 Credits
Offered As Demand Warrants
Introduction to principles of computer aided design and engineering. Applications of software and hardware in solid modeling, design analysis, motion analysis, rapid prototyping, and interface between computer aided design and computer aided manufacturing.
**Prerequisites:** Senior standing.
**Lecture + Lab + Other:** 1.5 + 4.5 + 0

**ME F406 Computer Aided Manufacturing**
3 Credits
Offered As Demand Warrants
Introduction to computer aided manufacturing (CAM). This includes the principles of computer aided process planning (CAPP) and an introduction to computer numerical control (CNC) tools used in manufacturing. Emphasis will be on methodology with hands-on applications of computer software and specific machine tools.
**Prerequisites:** ME F321; senior standing.
**Lecture + Lab + Other:** 1.5 + 4.5 + 0

**ME F408 Mechanical Vibrations**
3 Credits
Offered Fall
Modeling of vibratory mechanical systems with single and multiple degrees of freedom. Study of free and forced vibrations with or without damping by lumped-parameter methods and finite element analysis. Vibrations of rotor systems and vibration stability.
**Prerequisites:** ES F210, ES F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F409 Controls**
3 Credits
Offered As Demand Warrants
Analysis and design of control systems. Block diagrams, transfer functions and frequency analysis. Closed loop systems and system stability. Industrial controllers and system compensation.
**Prerequisites:** ME F408.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F414 HVAC Systems Optimization**
3 Credits
Offered As Demand Warrants
Design of thermal and heating, ventilation, and air-conditioning (HVAC) systems with emphasis on economic considerations and optimization. Concepts of thermodynamics, fluid mechanics and heat transfer will be integrated under a design framework, and include economic and technical considerations.
**Prerequisites:** ES F341; ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F415 Thermal Systems Laboratory**
3 Credits
Offered Spring
Testing and evaluation of components and energy systems such as pumps, fans, engines, heat exchangers, refrigerators and heating/power plants.
**Prerequisites:** ME F308 (may be taken concurrently); WRTG F111X; ES F341; ME F313; ME F441.
**Lecture + Lab + Other:** 1.5 + 4.5 + 0

**ME F416 Design of Mechanical Equipment for the Petroleum Industry**
3 Credits
Offered As Demand Warrants
Design, selection and operation of equipment used in production and processing of crude oil and gas. Instrumentation and control systems used with mechanical equipment.
**Prerequisites:** ES F341; ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F418 Shape and Structure of Mechanical Systems**
3 Credits
Offered As Demand Warrants
Optimization of flow configuration by minimizing the flow resistance in mechanical and energy systems. Introduction to the concepts of entropy minimization and constructal law. Applications to engineering problems in solid mechanics, fluid mechanics, and heat transfer.
**Prerequisites:** ES F331; ES F341; ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F431 Intermediate Mechanics of Materials**
3 Credits
Offered As Demand Warrants
Applications of Hooke's law and energy method to thin-walled beams and shafts, and analysis of stress and strain under combined loading. Introduction to fatigue and fracture of elastic materials. Applications to engineering problems.
**Prerequisites:** ES F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F436 Introduction to Nanomaterials**
3 Credits
Offered As Demand Warrants
This course aims to providing a comprehensive study of the synthesis, characterization, properties, and applications of nanomaterials. It will cover the fundamental scientific principles for the different synthesis techniques, assembly of nanostructured materials, and new physical and chemical properties at the nanoscale. Existing and emerging applications will also be discussed.
**Prerequisites:** ME F334 (may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F440 Introduction to Microfluidics**
3 Credits
Offered As Demand Warrants
Overview of basic concepts and principles of fluids at the micron scale; introduction to the design and fabrication of microfluidic devices.
**Prerequisites:** ES F341 (may be taken concurrently); PHYS F123X (for Math and non-Physics science major); PHYS F211X (for Engineering, Math and Physics major); junior standing.
**Stacked with** ME F640.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F441 Heat and Mass Transfer**
3 Credits
Offered Fall
Application of heat and mass transfer concepts to engineering problems including steady state and transient conduction, numerical analysis of heat transfer problems, laminar and turbulent free and forced convection, and black body and real surface radiation.
**Prerequisites:** ES F301; ES F341; ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F443 Fluid Mechanics and Heat Transfer Characteristics of Nanofluids**
3 Credits
Offered As Demand Warrants
Description of nanofluids, nanostructured materials and dispersion in base fluids. Thermophysical properties: density, viscosity, thermal conductivity and specific heat. Theoretical equations and empirical correlations for properties. Principles of measurements of properties. Fluid dynamic losses and pumping power required for nanofluid flow in heat transfer systems. Experimental methods of determining the convective heat transfer coefficient of nanofluids. Practical application to heat exchangers in industries. Nanofluids flows in mini- and microchannels.
**Prerequisites:** ES F341; ME F441; senior standing.
**Stacked with** ME F643.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F450 Theory of Flight**
3 Credits
Offered Fall
Airfoil theory in subsonic flow. Performance, stability and control of aircraft. Aircraft design.
**Prerequisites:** ES F341 (may be taken concurrently); ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F451 Aerodynamics**
3 Credits
Offered Spring
Aerodynamics of non-lifting and lifting airfoils in incompressible irrotational flow, wings of finite span, the Navier-Stokes equations, boundary layers, numerical methods, supersonic and transonic flow past airfoils, rocket aerodynamics, rocket drag.
**Prerequisites:** ES F341 (may be taken concurrently); ES F301; ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F452 Introduction to Astrodynamics**
3 Credits
Offered Fall
Geometry of the solar system, detailed analysis of two-body dynamics and introduction to artificial satellite orbits; Hohmann transfer and patched conics for lunar and interplanetary trajectories. Elements of orbit determination.
**Prerequisites:** ES F208, ES F210; ES F301 (may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F453 Propulsion Systems**
3 Credits
Offered Spring
Basic principles of propulsion: turbojet, turboprop and rocket engines. Fluid mechanics and thermodynamics of flow in nozzles, compressors, combustors and turbines. Liquid and solid propellant rockets. Heat transfer in rocket motors and nozzles. Design and testing methods for components of propulsion systems.
**Prerequisites:** ME F313 (may be taken concurrently); ES F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F458 Energy and the Environment**
3 Credits
Offered As Demand Warrants
Overview of basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality.
**Prerequisites:** CHEM F106X; ES F346 or equivalent; MATH F252X; PHYS F211X.
**Stacked with** ME F658.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F464 Corrosion Engineering**
3 Credits
Offered As Demand Warrants
Principles and forms of corrosion and factors that affect it. Methods of testing and measurement, control and prevention are examined.
**Prerequisites:** ME F334.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F486 Senior Design**
1 Credit
Offered Fall
Focused on pursuing the design of a project selected jointly by students, project advisors, and/or the instructor. Emphasis will be on the design of practical engineering systems and components which integrate engineering knowledge and skills. Principles of the design process will be introduced.
**Prerequisites:** ME F441 (may be taken concurrently); COJO F131X or COJO F141X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**ME F487 Design Project**
3 Credits
Offered Spring
A real or simulated engineering design project selected jointly by student and instructor. Emphasis on design of practical mechanical engineering systems and/or components which integrate students' engineering knowledge and skills.
**Prerequisites:** ME F486.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F601 Finite Element Analysis in Engineering**
3 Credits
Offered As Demand Warrants
Formulation of the finite element method. Applications to problems of engineering in solid mechanics, fluid mechanics and heat transfer. Use and development of codes for computer solution of problems.
**Prerequisites:** Graduate standing in engineering; ES F201; MATH F302.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F602 Advanced Mechanical System Design**
3 Credits
Offered As Demand Warrants
Advanced analysis of two- and three-dimensional multi-body mechanical systems. Rigid body system formulation and deformable body system formulation. Application of CAE software for rigid body and large deformable body systems.
**Prerequisites:** ME F302; ME F408.
**Stacked with** ME F402.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F608 Advanced Dynamics**
3 Credits
Offered As Demand Warrants
Kinematics and kinetics of rigid bodies, introduction to analytical mechanics, Lagrange's equations and Hamiltonian mechanics. Applications to engineering problems.
**Prerequisites:** ES F210; MATH F302; graduate standing in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F609 Advanced Vibrations**
3 Credits
Offered As Demand Warrants
Analysis of discrete and continuous vibrations via energy methods, free and forced response of linear systems, stability criteria, and introduction to random and nonlinear vibration. Applications to engineering problems.
**Prerequisites:** MATH F302; ME F408; graduate standing in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F617 Power Analysis**
3 Credits
Offered As Demand Warrants
Fundamentals of power generation including piping, pumps, fuels and combustion, steam generators, condensers, deaerators, evaporators, feedwater treatment and heating, regeneration, fuel handling, heat balance, equipment, economics, and plant layout.
**Prerequisites:** ME F313.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F631 Advanced Mechanics of Materials**
3 Credits
Offered As Demand Warrants
Theories of elasticity and plasticity for small and large deformations. Applications to engineering problems.
**Prerequisites:** ES F331; graduate standing in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F634 Advanced Materials Engineering**
3 Credits
Offered As Demand Warrants
Atomic bonding, crystal structure, crystal imperfections, phases and interfaces, microstructures, phase diagrams, phase transformation, transport and diffusion, metal deformation, fracture of materials, deterioration of materials, electronic and physical properties of materials.
**Prerequisites:** ME F334; MATH F302; graduate standing in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F640 Introduction to Microfluidics**
3 Credits
Offered As Demand Warrants
Overview of basic concepts and principles of fluids at the micron scale; introduction to the design and fabrication of microfluidic devices.
**Prerequisites:** ES F341 (may be taken concurrently); PHYS F123X (for Math and non-Physics science major); PHYS F211X (for Engineering, Math and Physics major); junior standing.
**Stacked with** ME F440.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F641 Advanced Fluid Mechanics**
3 Credits
Offered As Demand Warrants
Introduction to viscous flows, laminar boundary layers, turbulent boundary layers, turbulent jets and wakes, applications to heat transfer and drag.
**Prerequisites:** ES F341; graduate standing in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F642 Advanced Heat Transfer**
3 Credits
Offered As Demand Warrants
Heat conduction in two and three dimensions under steady and transient conditions. Free and forced convection in internal and external flows. Radiation from black and gray surfaces and gas-filled enclosures. Both analytical and numerical methods are covered.
**Prerequisites:** ME F441; graduate standing in engineering.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F643 Fluid Mechanics and Heat Transfer Characteristics of Nanofluids**
3 Credits
Offered As Demand Warrants
Description of nanofluids, nanostructured materials and dispersion in base fluids. Thermophysical properties: density, viscosity, thermal conductivity and specific heat. Theoretical equations and empirical correlations for properties. Principles of measurements of properties. Fluid dynamic losses and pumping power required for nanofluid flow in heat transfer systems. Experimental methods of determining the convective heat transfer coefficient of nanofluids. Practical application to heat exchangers in industries. Nanofluids flows in mini- and microchannels.
**Prerequisites:** ES F341; ME F441; graduate standing.
**Stacked with** ME F443.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F656 Aerospace Systems Engineering**
3 Credits
Offered As Demand Warrants
A multidisciplinary team of students will perform a preliminary design study of a major aerospace system. Design considerations will include requirements for project management, aerospace vehicle design, power, attitude control, thermal control, communications, computer control and data handling.
**Prerequisites:** Graduate Standing.
**Cross-listed with** EE F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F658 Energy and the Environment**
3 Credits
Offered As Demand Warrants
Basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality.
**Recommended:** CHEM F106X; ES F346; MATH F252X; PHYS F211X; graduate standing.
**Stacked with** ME F458.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F685 Arctic Heat and Mass Transfer**
3 Credits
Offered As Demand Warrants
An introduction to the principles of heat and mass transfer with special emphasis on application to problems encountered in the Arctic such as ice and frost formation, permafrost, condensation and heat loss in structures.
**Prerequisites:** graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F687 Arctic Materials Engineering**
3 Credits
Offered As Demand Warrants
A study of engineering material performance at low temperatures.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**ME F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**ME F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Mechanics-Diesel/Heavy Equipment (MECN)

**Community and Technical College**
Diesel/Heavy Equipment
907-455-2800

**MECN F103 Advanced Electrical Systems**
3 Credits
Offered Fall
Theory, operation, and repair of starting and charging systems, diagnostic methods and specifications that are standard in the industry. Diagnosis and repair of common sensors, actuators, electronic fuel injectors and systems will be covered, as well as electronic scan tools, multiplexing, and CAN Bus network diagnosis and repair.
**Lecture + Lab + Other:** 1 + 4 + 0

**MECN F104 Mobile Equipment Maintenance**
1 Credit
Offered As Demand Warrants
Technical, financial and legal aspects of mobile equipment maintenance. Students will work in groups to perform a maintenance operation and create maintenance records on a variety of vehicle types.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**MECN F112 Basic Auto Maintenance**
1 Credit
Offered As Demand Warrants
Covers basic automobile system functions, owner maintenance of electrical, cooling and fuel systems, auto lubricants and fluids, tires and wheels, tune-ups, and cold weather maintenance and operation. For the person without mechanical experience.
**Lecture + Lab + Other:** 1 + 0 + 0

**MECN F154 Diesel Fuel Injection**
2 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 0 + 0 + 0

**MECN F159 Manual Transmissions and Clutches**
2 Credits
Offered As Demand Warrants
Two major areas of automotive maintenance and repair: inspection and replacement of common clutch types; and maintenance, inspection and overhaul of automotive manual transmissions.
**Lecture + Lab + Other:** 1 + 2 + 0

**MECN F201 Advanced Automobile Equipment Electronics**
2 Credits
Offered As Demand Warrants
Troubleshooting and repairing a wide range of electronic systems found in both light and heavy equipment including, but not limited to, load moment limiting, motor speed control, electronic control of hydraulic systems and electronic governors for power generation.
**Lecture + Lab + Other:** 1 + 2 + 0

**MECN F202 Principles of Electric Drive Vehicles**
2 Credits
Offered As Demand Warrants
In-depth study of batteries: design, construction, testing and charging, currents and maintenance. Knowledge applied to DC motors, electronic controls and electronic traction motor controls. The in-shop training discusses environmental impacts of electric drive vehicles.
**Lecture + Lab + Other:** 2 + 0 + 0

**MECN F203 Basic Power Generations**
3 Credits
Offered As Demand Warrants
Portable and stationary electric power generators and the relationship of magnetism, AC/DC currents, motors, generators, transformers and electrical distribution.
**Recommended:** AUTO F110.
**Lecture + Lab + Other:** 2 + 2 + 0

**MECN F204 Basic Alternating Current Electrician Skills**
2 Credits
Offered As Demand Warrants
Basic residential and commercial electrician skills; current theory and applications; electrical measurement and circuitry.
**Lecture + Lab + Other:** 1 + 2 + 0

**MECN F205 Uninterruptible Power Supplies**
1 Credit
Offered As Demand Warrants
Residential and commercial power supplies; troubleshooting batteries; electronic components; reading UPS schematics.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**MECN F206 Emergency Backup Power Generation**
1 Credit
Offered As Demand Warrants
Language and fundamentals of electricity; circuitry; conductor types and sizes; writing methods; system requirements of power generation.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**MECN F207 Power Generation Governors**
2 Credits
Offered As Demand Warrants
Mechanically and electrically controlled engines with emphasis on what is a governor and what is its function in power generation will be covered in the hands-on diagnostic training.
**Lecture + Lab + Other:** 1 + 2 + 0

**MECN F208 Alternative Fuels**
2 Credits
Offered As Demand Warrants
History of fuels with emphasis on the known alternative fuels: natural gas, methanol, ethanol and propane. A research project is required.
**Lecture + Lab + Other:** 1 + 2 + 0

**MECN F210 Hydraulics**
3 Credits
Offered Spring
Theory of fluid power and the components that make up a hydraulic system found on heavy equipment. Identification and description of hydraulic cylinders, motors, directional valves commonly found on heavy equipment. Includes testing of equipment and performing hydraulic pressure and flow tests.
**Prerequisites:** DSLT F101; DSLT F103; DSLT F105.
**Lecture + Lab + Other:** 1 + 4 + 0

# Medical Assisting (MA)

**Community and Technical College**
Allied Health (https://www.ctc.uaf.edu/academics/allied-health/)
907-455-2800

**MA F100 Medical Terminology**
3 Credits
Offered Fall, Spring and Summer
Study of medical terminology, including analysis and origin of word roots, prefixes and suffixes. Understanding the word components, students will be able to build, spell and define medical words. Content will be presented by body systems focusing on terms for anatomy, diagnostic, laboratory and medical specialties. Includes use of medical dictionary, word pronunciation and abbreviations. Designed for health care professionals.
**Cross-listed with** HLTH F100.
**Lecture + Lab + Other:** 3 + 0 + 0

**MA F114 Fundamentals of Anatomy and Physiology**
4 Credits
Offered Fall and Spring
Provides a basic understanding of human anatomy and physiology. Recommended for individuals interested in health careers or students desiring an introduction to anatomy and physiology prior to taking in-depth course work in this field.
**Recommended:** HLTH F100 or MA F100; high school biology and chemistry.
**Cross-listed with** HLTH F114.
**Special Notes:** Students should take HLTH F114 if they took HLTH F100, and MA F114 if they took MA F100.
**Lecture + Lab + Other:** 4 + 0 + 0

**MA F142 Clinical Procedures I**
4 Credits
Offered Fall and Spring
Introduction to the theoretical basis and performance competencies for the clinical duties performed by medical assistants in outpatient facilities. Includes care of patients in the examining room, use and care of medical instruments and supplies, assisting physicians with clinical procedures, administering medications, and introduction to clinical laboratory procedures. Documentation of positive antibody titer or immunizations for Hepatitis B, two MMRs, two varicella and negative 2-step PPD within the past year. Other specific immunizations as required by externship sites. Departmental approval required.
**Prerequisites:** MA F100; MA F114; HLTH F116; HLTH F122 or current AHA BLS for Health Care Provider CPR and First Aid card.
**Lecture + Lab + Other:** 3 + 2 + 0

**MA F144 Administrative Procedures for the Medical Assistant**
6 Credits
Offered Fall and Spring
This is an in-depth examination of office duties, including: reception, telephone procedures, public relations, professionalism, medical practice and financial management in the health care setting. Also includes written communications, EHR, HIPAA, and billing and coding procedures. The importance of accuracy and attention to detail is emphasized.
**Prerequisites:** MA F100, MA F114, HLTH F116, WRTG F111X.
**Lecture + Lab + Other:** 6 + 0 + 0

**MA F244 Clinical Procedures II**
4 Credits
Offered Fall and Spring
Theoretical basis and performance competencies for the clinical duties performed by medical assistants in outpatient facilities. Includes urinalysis, electrocardiograph, subcutaneous and intramuscular injections, routine laboratory procedures, venipuncture, emergencies, and assisting with specialty examinations. Documentation of current immunizations or titers for hepatitis B, measles, mumps, rubella and varicella. Flu shot and two 2-step PPDs within the past year. Other specific immunizations as required by externship sites. Departmental approval.
**Prerequisites:** MA F100; MA F114 (preferred) or BIOL F100X; HLTH F116; MA F142; HLTH F122 or current AHA BLS for healthcare provider CPR and First Aid card.
**Lecture + Lab + Other:** 3 + 2 + 0

**MA F247 Introduction to Pharmacology**
3 Credits
Offered Fall, Spring and Summer
Introduction to the use of therapeutic medications in medical settings. Includes classifications of drugs, clinical use and adverse effects of the 50 most commonly prescribed medications.
**Prerequisites:** MA F100; MA F114 or BIOL F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**MA F261 Medical/Dental Office Reception Practicum**
2 Credits
Offered As Demand Warrants
Provides students with 80 practicum hours in a medical or dental front office. With additional time required for meeting with the campus practicum coordinator. Students will be expected to perform any and all duties of a receptionist in a medical/dental care setting.
**Prerequisites:** HLTH F122; enrollment by special permission only.
**Recommended:** Students taking HLTH F261 should have passed MA F144, and students taking HLTH F261 should have passed HLTH F132 and HLTH F234.
**Cross-listed with** HLTH F261.
**Special Notes:** Students part of the Medical Assisting program should take the HLTH F261 section of this course.
**Lecture + Lab + Other:** 0 + 0 + 6

**MA F267 Medical Assisting Practicum Completion**
2-4 Credits
Offered As Demand Warrants
Provides 100 hours hands on experience in back office of outpatient healthcare facility for Medical assisting students. Additional contact time required for meeting with instructor. MA F267 combined with MA F261 provides experience equivalent to that in MA F268 and satisfies the practicum requirement for the medical assistant programs.
**Prerequisites:** HLTH F122; MA F100; MA F114; MA F142; MA F144; MA F244; MA F247; enrollment by special permission only; completion of all Medical Assisting program courses with a C or better in each class; departmental approval.
**Lecture + Lab + Other:** 0 + 0 + 8

**MA F268 Medical Assisting Practicum**
4 Credits
Offered Fall, Spring and Summer
Provides 180 hours of hands-on experience in an outpatient healthcare facility. Students will gain both front office and back office experience. Additional time required for meeting with the instructor. Students will not receive compensation for practicum. Students will be expected to perform procedures learned throughout the medical assisting curriculum. All courses required for the certificate program must be completed the following courses prior to enrolling. Documentation of positive antibody titer or immunizations for Hepatitis B, two MMRs, two varicella and negative 2-step PPD within the past year. Other specific immunizations as required by externship sites. Departmental approval required.
**Prerequisites:** HLTH F116; HLTH F122; MA F100; MA F114; MA F142; MA F144; MA F244; MA F247; WRTG F111X.
**Special Notes:** This is the last course in the Medical Assisting Certificate degree program.
**Lecture + Lab + Other:** 0 + 0 + 12

# Military Science (MILS)

**College of Business and Security Management**
Department of Military Science and Leadership (https://www.uaf.edu/rotc/)
907-474-7501

**MILS F101 Introduction to the Army**
1-2 Credits
Offered Fall
The MSL I Course produces a Cadet who accepts the Army as a Values - based organization and embraces the scholar-athlete-warrior ethos; familiar with individual roles and responsibilities in support of team efforts and problem solving; demonstrates oral and written communications skills, understands resilience and develops a commitment to learning.
**Lecture + Lab + Other:** 1 + 2 + 0

**MILS F102 Foundations of Agile and Adaptive Leadership**
1-2 Credits
Offered Spring
The MSL I Course produces a Cadet who accepts the Army as a Values - based organization and embraces the scholar-athlete-warrior ethos; familiar with individual roles and responsibilities in support of team efforts and problem solving; demonstrates oral and written communications skills, understands resilience and develops a commitment to learning.
**Lecture + Lab + Other:** 1 + 2 + 0

**MILS F201 Leadership and Decision Making** (s)
2-3 Credits
Offered Fall
The MSL II Course produces a Cadet grounded in foundational leadership doctrine and skills by following and leading small units; comprehends critical thinking and problem solving using TLPs; comprehends the value of diversity and understands the officer's role in leading change; understands the fundamentals of the Army as a profession.
**Lecture + Lab + Other:** 2 + 2 + 0

**MILS F202 Army Doctrine and Team Development**
2-3 Credits
Offered Spring
This course produces a Cadet grounded-in foundational leadership doctrine and skills by following and leading small units to achieve assigned missions; comprehends critical thinking and problem solving using TLPs; comprehends the value of diversity and the officer's role in leading change; understands the fundamentals of the Army as a profession.
**Lecture + Lab + Other:** 2 + 2 + 0

**MILS F250 Leaders Training Course**
3 Credits
Offered As Demand Warrants
A four-week camp in basic military skills and leadership experience in preparation for entrance into the advanced course. For students who did not take the basic course.
**Prerequisites:** At least two years of schooling remaining upon completion of camp; admission by arrangement with professor of military science.
**Lecture + Lab + Other:** 3 + 0 + 0

**MILS F301 Training Management and the Warfighting Functions**
4 Credits
Offered Fall
The MSL III Course produces a Cadet who possesses enhanced individual and collective skills including leader competencies; effectively leads formations at squad and platoon levels in a variety of military and non-military mission context scenarios; effective at receiving and giving peer evaluations; committed and disciplined ethically, academically, physically and socially.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing in MILS; permission of instructor.
**Lecture + Lab + Other:** 3 + 2 + 0

**MILS F302 Applied Leadership in Small Unit Operations**
4 Credits
Offered Spring
The MSL III Course produces a Cadet who possesses enhanced individual and collective skills including leader competencies; effectively leads formations at squad and platoon levels in a variety of military and non-military mission context scenarios; effective at receiving and giving peer evaluations; committed and disciplined ethically, academically, physically and socially.
**Prerequisites:** COJO F131X or COJO F141X; junior standing in MILS; permission of instructor.
**Lecture + Lab + Other:** 3 + 2 + 0

**MILS F350 Leadership Development Assessment Course**
3 Credits
Offered As Demand Warrants
Five-week course structured to assess and develop the leadership capabilities of the cadet by using a variety of situations in a military environment.
**Prerequisites:** MILS F301; MILS F302; must be enrolled as an advanced course cadet; and have the recommendation of the Department Head.
**Lecture + Lab + Other:** 3 + 0 + 0

**MILS F351 Cadet Troop Leadership Training**
2 Credits
Offered As Demand Warrants
Three- to five-week full-time leadership training and development, serving in leadership positions with the active Army. Application of leadership and management principles in real life junior officer situations/positions.
**Prerequisites:** MILS F101; MILS F350; must be enrolled as an advanced course cadet.
**Lecture + Lab + Other:** 0 + 0 + 0

**MILS F401 The Army Officer** (s)
4 Credits
Offered Fall
Focuses on development of the Army Officer. It is an academically challenging course where you will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. Understand Army programs that support counseling subordinates and evaluating performance, values and ethics, career planning, and legal responsibilities.
**Prerequisites:** Senior standing in MILS and permission of instructor.
**Lecture + Lab + Other:** 3 + 2 + 0

**MILS F402 Company Grade Leadership**
4 Credits
Offered Spring
Focuses on development of the Army Officer. It is an academically challenging course where you will develop knowledge, skills, and abilities to plan, resource, and assess training at the small unit level. Understand Army programs that support counseling subordinates and evaluating performance, values and ethics, career planning, and legal responsibilities.
**Prerequisites:** Senior standing in MILS and permission of instructor.
**Lecture + Lab + Other:** 3 + 2 + 0

**MILS F442 History of the American Military** (s)
3 Credits
Offered As Demand Warrants
The military's place in American life and society from the Colonial era to the present. Role of the military institution in shaping the nature of American society while reflecting the character of the society it serves.
**Prerequisites:** HIST F275.
**Cross-listed with** HIST F442.
**Lecture + Lab + Other:** 3 + 0 + 0

# Mineral Preparation Engineering (MPR)

**College of Engineering and Mines**
Department of Mining and Geological Engineering (https://cem.uaf.edu/mingeo/)
907-474-7388

**MPR F606 Plant Design**
3 Credits
Offered As Demand Warrants
Selection and design of equipment for the operation of mineral and coal beneficiation plants for specific custom and milling problems.
**Prerequisites:** Admission by arrangement.
**Lecture + Lab + Other:** 1 + 6 + 0

**MPR F611 Hydrometallurgy**
3 Credits
Offered As Demand Warrants
Study of the theoretical and engineering aspects of the processes to recover metals from different types of ores and/or scraps, in which aqueous solutions play the predominate role.
**Prerequisites:** MATH F253X; CHEM F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**MPR F688 Graduate Seminar I**
1 Credit
Offered As Demand Warrants
Preparation and presentation of research outlines by graduate students and participation in regularly organized mineral engineering department seminars.
**Prerequisites:** Admission to graduate program.
**Cross-listed with** MIN F688.
**Lecture + Lab + Other:** 1 + 0 + 0

**MPR F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 1-9 + 0 + 0

**MPR F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Mining Applications and Technologies (AMIT)

**Community and Technical College**
Process Technology
907-455-2800

**AMIT F101 Introduction to Mining**
3 Credits
Offered As Demand Warrants
Fundamentals of surface and underground mining, economic planning, proper exploration designs, environmental concerns and safety factors.
**Lecture + Lab + Other:** 3 + 0 + 0

**AMIT F129 Surface Mine Safety**
1 Credit
Offered As Demand Warrants
Rights of miners, introduction to the work environment, ground control, hazard recognition, first aid and explosive safety. Course fulfills the Mine Safety Health Administration requirements for surface miner training. Students are awarded MSHA certificate upon completion of the class.
**Lecture + Lab + Other:** 1 + 0 + 0

**AMIT F130 Surface Mining Operations**
3 Credits
Offered As Demand Warrants
Safe operations of a surface mine. Placer gold, sand and gravel, coal, and open pit metal mines.
**Lecture + Lab + Other:** 3 + 0 + 0

**AMIT F135 Introduction to Mining Systems and Equipment**
4 Credits
Offered As Demand Warrants
An overview to the field of mining beneficiation and comminution, systems and equipment used for the mining and mineral processing industry. Fundamentals of basic separation and mineral beneficiation of surface and underground mining, economic planning, environmental concerns, safety and terminology will be explored.
**Lecture + Lab + Other:** 3 + 3 + 0

**AMIT F145 Introduction to Mineral Beneficiation**
3 Credits
Offered As Demand Warrants
Provides an overview or introduction into the field of mineral beneficiation and comminution, systems and equipment used for the mineral processing industry. Fundamentals of basic separation and mineral beneficiation, environmental concerns, safety and terminology will be explored.
**Lecture + Lab + Other:** 3 + 0 + 0

# Mining Engineering (MIN)

**College of Engineering and Mines**
Department of Mining and Geological Engineering (https://cem.uaf.edu/mingeo/)
907-474-7388

**MIN F101 Minerals, Man and the Environment**
3 Credits
Offered As Demand Warrants
A general survey of the impact of the mineral industries on man's economic, political and environmental systems.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F103 Introduction to Mining Engineering**
1 Credit
Offered Fall
Concepts and methods utilized in mining engineering and mining unit operations.
**Lecture + Lab + Other:** 1 + 0 + 0

**MIN F104 Mining Safety and Operations Laboratory**
1 Credit
Offered Fall
Practical training at the Silver Fox Mine in mining operations and safety. Course complies with Mine Safety and Health Administration (MSHA) 40 hour new miner training.
**Lecture + Lab + Other:** 0 + 3 + 0

**MIN F110 Elements of Mine Safety, Operations and Development**
2 Credits
Offered Fall and Spring
Introduction to pre-mining activities, mine unit operations and mine safety. Basics of mine development; access to mining property, haul roads, ore body, shaft, slope and ramp locations; frozen ground environments and run-off water. Underground and surface mining hazards, safe practices, and engineered controls.
**Recommended:** MATH F151X, MATH F152X.
**Lecture + Lab + Other:** 2 + 0 + 0

**MIN F202 Surveying and CAD for Engineers**
2 Credits
Offered Fall
Surveying principles for surface and underground properties. Field and office procedures for preparation of maps and engineering data. Introduction to engineering CAD software.
**Prerequisites:** MATH F151X, MATH F152X.
**Lecture + Lab + Other:** 1 + 3 + 0

**MIN F225 Quantitative Methods in Mining Engineering**
2 Credits
Offered Fall
Introduction to ore reserve estimation, classical estimation methods and techniques, error in estimations and pitfalls, introduction to classical statistics, introduction to geostatistics, ordinary kriging, block kriging, modeling the sample variogram, co-kriging and global estimation.
**Prerequisites:** MATH F251X.
**Lecture + Lab + Other:** 2 + 0 + 0

**MIN F226 Mine Development**
2 Credits
Offered Spring
Review of pre-mining activities. Access to mining property, haul road location and design. Access to ore body; shaft, slope and ramp locations; shape, sizing and development. Development of access in frozen ground environments. Layout of development mains, cross-cuts, raises and winzes for ventilation, transport and optimum extraction of ore body.
**Prerequisites:** MIN F103; MIN F225.
**Recommended:** MATH F251X.
**Lecture + Lab + Other:** 2 + 0 + 0

**MIN F301 Mine Plant Design**
3 Credits
Offered Spring
Quantitative study and design of various systems and equipment used in haulage, hoisting, drainage, pumping and power (compressed air and electricity). Importance of the natural conditions and production level in the equipment selection procedure emphasized.
**Prerequisites:** ES F208 and ES F307.
**Recommended:** ES F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F302 Underground Mine Environmental Engineering**
3 Credits
Offered Spring
Analysis of underground mine ventilation systems, ventilation requirements and system structure, ventilation planning, design and engineering control, mine ventilation network, gas and dust explosion, rescue and recovery.
**Prerequisites:** MIN F110; ES F341.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F303 Ore Handling and Industrial Explosives**
3 Credits
Offered Spring
Quantitative study and design of various systems and equipment used in haulage, hoisting, drainage, pumping and power (compressed air and electricity). Types and properties of industrial explosives; systems of initiation; theories of blasting; designs of open pit bench blasting; designs of underground blasting/rounds; and applications in mining.
**Prerequisites:** ES F208; ES F307; MIN F370 (may be taken concurrently).
**Recommended:** ES F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F313 Introduction to Mineral Preparation**
3 Credits
Offered Fall Odd-numbered Years
Elementary theory and principles of unit processes of liberation, concentration and solid-fluid separation as applied to mineral beneficiations.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F370 Rock Mechanics**
3 Credits
Offered Spring
Physical and mechanical properties of rock; rock mass classification systems; stress distribution in the vicinity of mining openings, design criteria and support for structures in rock mass, instrumentation and monitoring of opening's stability as well as strata control and surface subsidence.
**Prerequisites:** ES F331; may be taken concurrently.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F380 Computer Aided Orebody Modeling**
1 Credit
Offered As Demand Warrants
Develops an orebody model from drill hole data in a computer-aided design environment. The data is converted into a drill hole database, following which, a 3D visual model is developed. Basic tools covered include concepts of computer-aided design, database error checking and triangulation.
**Prerequisites:** GEOS F332.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F390 Geostatistics and Mineral Economics**
3 Credits
Offered Fall
Introduction to ore reserve estimation, classical estimation methods and techniques, error in estimations and pitfalls, introduction to classical statistics, introduction to geostatistics, ordinary kriging, block kriging, modeling the sample variogram, co-kriging and global estimation. Introduction to engineering economics, ore sampling and reserve calculations, and mine feasibility studies.
**Prerequisites:** COJO F131X or COJO F141X; MATH F251X; GE F261.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F401 Mine Site Field Trips**
1 Credit
Offered As Demand Warrants
Field trips to active surface and underground mines to gain perceptual knowledge of modern mining systems by observation. Includes a systematic summarization and analysis of the mine after each visit to gain an in-depth understanding of mining engineering principles.
**Prerequisites:** MIN F202; MIN F301; MIN F302; MIN F370.
**Lecture + Lab + Other:** 0.5 + 3 + 0

**MIN F407 Mine Reclamation and Environmental Management**
2 Credits
Offered Fall Even-numbered Years
Principles and practices of mine reclamation and waste disposal. Pre-mining assessments and plans. Design of settling and tailings ponds and waste impoundments. Stream bed restoration and revegetation.
**Prerequisites:** CHEM F106X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** ES F341.
**Lecture + Lab + Other:** 2 + 0 + 0

**MIN F408 Mineral Valuation and Economics**
3 Credits
Offered Spring
Introduction to engineering economics, ore sampling and reserve calculations, and mine feasibility studies.
**Prerequisites:** COJO F131X or COJO F141X; GE F375 or MIN F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F409 Operations Research and Computer Applications in Mineral Industry**
2 Credits
Offered Spring
Fundamental concepts of probability and statistics and the use of operations research and computer techniques for understanding, analysis, forecasting and optimization of mining operations and systems.
**Prerequisites:** MIN F390; MIN F454.
**Lecture + Lab + Other:** 2 + 0 + 0

**MIN F415 Coal Preparation**
3 Credits
Offered As Demand Warrants
Unit operations, flowsheets, washability characteristics and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation.
**Prerequisites:** MIN F313 or graduate standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F443 Principles and Applications of Industrial Explosives**
3 Credits
Offered Fall
Types and properties of industrial explosives; systems of initiation; theories of blasting; designs of open pit bench blasting; designs of underground blasting/rounds; applications in mining, civil construction and other fields; blasting vibration, structural damage and their control; overbreak control; safe practices; safety regulations; blast hole drilling and drilling equipment.
**Prerequisites:** MIN F370.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F444 Accidents, Emergency and Safety Management in Mines**
2 Credits
Offered Spring
Accident statistics, accident investigation and prevention, major provisions of current laws, rule-making procedures, mine fires and explosions, causes and prevention, loss control principles and methods, emergency evacuation, emergency response and emergency preparedness, safety management systems and behavioral science applications.
**Prerequisites:** MIN F302; MIN F482.
**Lecture + Lab + Other:** 2 + 0 + 0

**MIN F454 Underground Mining Methods**
2 Credits
Offered Fall
Underground mining methods for coal and non-coal deposits. Includes design parameters, selection of mining methods, mine planning process, auxiliary operations and various underground mining methods.
**Prerequisites:** MIN F302; MIN F370; MIN F482.
**Lecture + Lab + Other:** 2 + 0 + 0

**MIN F482 Computer-aided Mine Design:VULCAN**
3 Credits
Offered Fall
Familiarization with VULCAN mine design software to store, manage, model and display exploration data. Estimate volume, tonnage and quality of reserve, design declines and development drives in underground and surface coal and hardrock mines, design underground and surface coal mine plans and design of underground stopes, perform underground and surface grade control.
**Prerequisites:** Junior, senior or graduate standing in Mining Engineering, Geological Engineering.
**Stacked with** MIN F682.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F484 Surface Mining Methods**
1 Credit
Offered Spring
Modern methods of surface mine design. Strip and open pit optimization techniques. Production planning and scheduling. Use of mine design software.
**Prerequisites:** MIN F110; MIN F390; MIN F482; Junior or senior standing in mining engineering.
**Lecture + Lab + Other:** 1 + 0 + 0

**MIN F485 Mining Engineering Exit Interview**
0 Credit
Offered Spring
An Exit interview will be conducted to obtain feedback on the program.
**Prerequisites:** Senior standing in mining engineering.
**Corequisites:** MIN F490.
**Lecture + Lab + Other:** 0 + 0 + 0

**MIN F489 Mining Design Project I**
1 Credit
Offered Fall
This course is a precursor to MIN F490. The student is expected to meet with the instructor to finalize the senior design project topic, lay out a project plan, gather data and prepare (such as formatting electronic data) as necessary for the successful execution of the project in MIN F490.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; MIN F303; MIN F370.
**Lecture + Lab + Other:** 1 + 0 + 0

**MIN F490 Mining Design Project II**
2 Credits
Offered Spring
Design of mine layout including extraction and beneficiation, and economic evaluation of a mining project. A comprehensive written report of the design and analysis is required.
**Prerequisites:** MIN F454; MIN F489.
**Lecture + Lab + Other:** 1 + 4 + 0

**MIN F491 Automation and Control**
2 Credits
Offered Spring
Automation practices for controlling equipment and operations. Use of various control devices, such as sensors, transducers, motor starters, variable-frequency motor drives, and proportional hydraulic valves. Ladder logic programming of programmable automation controllers (PACs) and human-machine interface (HMI) touch-screen panels.
**Prerequisites:** ES F307; Junior standing or senior standing in Mining, Geological, Civil, Mechanical, Petroleum, Electrical Engineering.
**Lecture + Lab + Other:** 1 + 3 + 0

**MIN F601 Application of Artificial Neural Networks**
3 Credits
Offered As Demand Warrants
Basic neural network architectures, including rules, training methods and practical applications. Training and application issues typical of earth sciences problems. Some topics require mathematical analysis. Genetic algorithms and use of network ensembles will be briefly presented.
**Prerequisites:** Graduate standing in engineering; programming ability; knowledge of MATLAB, a plus.
**Recommended:** MATH F253X, MATH F314; MIN F408; MIN F635.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F621 Advanced Mineral Economics**
3 Credits
Offered As Demand Warrants
Introduction to options valuation of mineral projects; uncertainty and risk in mineral valuations; stochastic price models; dynamic programming and investment analysis; real options techniques.
**Prerequisites:** Admission by arrangement.
**Lecture + Lab + Other:** 3 + 0 + 0

**MIN F631 Research Methods in Mineral Engineering**
4 Credits
Offered As Demand Warrants
Research methods including problem definition and statement, designing experiments, collecting and interpreting data. Methods of theoretical and experimental analysis will be reviewed and examples given.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 3 + 0

**MIN F635 Advanced Geostatistical Applications**
3 Credits
Offered As Demand Warrants
Introduction to the theory and application of geostatistics. Review of classical statistics, continuous and discrete distributions, hypothesis testing and global estimation. Presentation of fundamental geostatistical concepts including: variogram, estimation variance, block variance, kriging, geostatistical simulation. Emphasis on the practical application of geostatistical techniques.
**Prerequisites:** MIN F408; graduate standing.
**Cross-listed with** GE F635.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F637 Mine Systems Simulation**
3 Credits
Offered As Demand Warrants
Application of computer simulation to the analysis of static and dynamic mine systems and the development of useful programs for mine operators. Design of simulation experiments in mining engineering.
**Prerequisites:** MIN F409; graduate standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F652 Numerical Methods in Mine Ventilation**
3 Credits
Offered As Demand Warrants
Differencing schemes for the partial differential equations of flow in mine networks, typical boundary conditions for mine ventilation systems, computer-aided solution techniques. Application to flow of fluids through porous media is covered.
**Prerequisites:** MIN F302; graduate standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F673 Advanced Rock Mechanics**
3 Credits
Offered As Demand Warrants
The study of theoretical and experimental methods in rock mechanics. State of stress and potential failure zone around two- and three-dimensional structures in rock based on theoretical, numerical and experimental techniques and failure criteria are presented.
**Prerequisites:** MIN F370; graduate standing.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F674 Advanced Ground Control**
3 Credits
Offered As Demand Warrants
A study of current rock mechanic problems related to advances in mining and construction technologies. Particular emphasis on the importance of rock and frozen ground properties and stress evaluation in designing and monitoring stability of structures for gas, oil and radioactive materials storage, geothermal energy recovery, solution mining, and those
**Prerequisites:** MIN F370.
**Lecture + Lab + Other:** 0 + 0 + 0

**MIN F682 Computer-aided Mine Design:VULCAN**
3 Credits
Offered Fall
Familiarization with VULCAN mine design software to store, manage, model and display exploration data. Estimate volume, tonnage and quality of reserve, design declines and development drives in underground and surface coal and hardrock mines, design underground and surface coal mine plans and design of underground stopes, perform underground and surface grade control.
**Prerequisites:** Graduate standing in Mining Engineering or Geological Engineering.
**Stacked with** MIN F482.
**Lecture + Lab + Other:** 2 + 3 + 0

**MIN F688 Graduate Seminar I**
1 Credit
Offered As Demand Warrants
Preparation and presentation of research outlines by graduate students and participation in regularly organized mineral engineering department seminars.
**Prerequisites:** Admission to graduate program.
**Cross-listed with** MPR F688.
**Lecture + Lab + Other:** 1 + 0 + 0

**MIN F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**MIN F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Museum Research Apprenticeship Program (MRAP)

Museum Research Apprenticeship Program (https://www.uaf.edu/museum/education/uaf-professors-students/university-instruction/museum-research-apprentic/)
907-474-7505

**MRAP F288 Museum Research Apprentice I**
1-2 Credits
Offered Fall and Spring
Provides opportunities for undergraduate student research or scholarship in museum-based subjects not available in typical undergraduate courses. Students are required to perform research tasks associated with specimens or objects and their associated data and to turn in a final report. Opportunities range across several museum-based disciplines (archaeology, botany, earth science, entomology, ethnology and history, film, fine art, ichthyology, mammalogy, informal science education, and ornithology). Course may be repeated. Student must contact a potential mentor before enrolling to determine whether matching opportunities exist.
**Prerequisite:** Instructor permission.
**Lecture + Lab + Other:** 1 + 0 + 3-6

**MRAP F488 Museum Research Apprentice II**
1-2 Credits
Offered Fall and Spring
Provides opportunities for advanced undergraduate student research or scholarship in museum-based subjects not available in typical undergraduate courses, building upon prior experience. Students are required to perform tasks associated with specimens, objects, and associated data and to turn in a final report. Opportunities range across several museum-based disciplines (archaeology, botany, earth science, entomology, ethnology and history, film, fine art, ichthyology, mammalogy, informal science education, and ornithology). Course repeatable to a maximum of 12 credits. Student must contact potential mentor before enrolling to determine whether experience is sufficient and matching opportunities exist.
**Prerequisite:** Permission of instructor.
**Lecture + Lab + Other:** 1 + 0 + 3-6

# Museum Studies (MSM)

**Museum Research Apprenticeship Program**
907-474-7505

**MSM F211 Fundamentals of Museum Studies I**
3 Credits
Offered Fall and Spring
Origin, structure and development of museums, types of museums and their functions, professional directions and ethics. Collection management systems and techniques, role and ethics of museum conservation.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSM F212 Fundamentals of Museum Studies II**
3 Credits
Museum education, including educational goals and objectives, the museum visitor, program development and publicity. A comprehensive survey of exhibits theory and practices, museum management, administrative frameworks, legal considerations and financial management.
**Prerequisites:** MSM F211.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSM F311 Museum Administration**
3 Credits
Administrative philosophy and procedures in public and private, large and small museums; the types and sources of support and interactions with local and national supportive groups.
**Prerequisites:** MSM F211 and MSM F212.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSM F312 Museum Collection Management**
3 Credits
Basic curatorial techniques and problems. Field collecting and other forms of acquisition through accessioning, cataloging, preparation, exhibit, teaching and research.
**Prerequisites:** MSM F211 and MSM F212.
**Lecture + Lab + Other:** 3 + 0 + 0

**MSM F487 Museum Practicum**
3 Credits
Supervised participation in one or more phases of museum operations or disciplines.
**Prerequisites:** MSM F211 and MSM F212.
**Lecture + Lab + Other:** 0 + 0 + 9

**MSM F488 Individual Research: Field Collecting Museum Specimens**
3 Credits
Philosophies, purposes and goals of field collection, procedures for collecting museum specimens, and methods of handling before they reach the museum. Field trips may be required. By arrangement with the appropriate curator(s). May be repeated for credit with permission of instructor.
**Prerequisites:** MSM F211 and MSM F212 and prior disciplinary preparation.
**Lecture + Lab + Other:** 3 + 0 + 0

# Music (MUS)

**College of Liberal Arts**
Department of Music (https://www.uaf.edu/music/)
907-474-7555

**MUS F101 University Chorus** (h)
1 Credit
A chorus serving both beginning and skilled singers presenting concerts each semester of popular and classic choral literature.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F103X Music Fundamentals** (h)
3 Credits
Offered Fall and Spring
An introductory study of the language of music. Includes basic notation, melodic and rhythmic writing, scales, bass and treble clefs, and basic harmony.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F117 Northern Lights String Orchestra** (h)
1 Credit
Offered Fall and Spring
Explore literature written primarily for string orchestra. Periodically, winds and percussion will join for performances of literature requiring additional instruments. Works studied vary from semester to semester depending on the instrumentation of those enrolled in the course. May be repeated for credit.
**Prerequisites:** Previous instruction on a bowed string instrument.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F125X Enjoying Jazz** (h)
3 Credits
Offered Fall and Summer
An introduction to jazz music, including its history, performance and various styles. This is a listening intensive course that offers a deeper appreciation and greater awareness of the many artists, collaborations and trends contributing to the development of this musical art.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F131 Basic Music Theory I** (h)
3 Credits
Offered Fall
Intensive training in aspects of tonal harmony. Emphasis on acquiring skills in identification and notation of pitch, rhythm, scale, key, with introduction to principles of chord functions and techniques of harmonization.
**Prerequisites:** MUS F133 (may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F132 Basic Music Theory II** (h)
3 Credits
Offered Spring
Emphasis on developing skills in voice leading, part writing and acquiring techniques for analysis of tonal harmony and musical form.
**Prerequisites:** MUS F131.
**Corequisites:** MUS F134.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F133 Basic Ear Training I** (h)
2 Credits
Offered Fall
This course is an intensive training in aural skills acquisition, including an introduction to solfege, sight-reading, rhythmic and melodic dictation. Includes computer-assisted instruction.
**Prerequisites:** MUS F131 (may be taken concurrently).
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F134 Basic Ear Training II** (h)
2 Credits
Offered Spring
This course has an emphasis on aural skills acquisition, with further development of skills in sight-reading rhythmic, melodic and harmonic dictation. Includes computer- assisted instruction.
**Prerequisites:** MUS F133; MUS F132 (may be taken concurrently).
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F151 Class Lesson** (h)
1 Credit
Offered Fall and Spring
Class instruction in piano, voice, orchestral instrument or guitar. May be repeated for credit. Course may not be audited.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F152 Functional Piano I** (h)
1 Credit
Offered Fall
Emphasis on beginning keyboard performance skills, sight-reading, harmonization and transposition.Course may not be audited. For music majors only with permission of instructor required.
**Prerequisites:** MUS F131 (may be taken concurrently).
**Lecture + Lab + Other:** 1 + 0 + 0

**MUS F153 Functional Piano II** (h)
1 Credit
Offered Spring
Emphasis on intermediate keyboard performance skills, sight-reading, harmonization and transposition.Course may not be audited.
**Prerequisites:** MUS F152; for music majors only; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MUS F154 Functional Piano III** (h)
1 Credit
Offered Fall
Emphasis on upper-intermediate keyboard performance skills, sight-reading, harmonization and transposition.Course may not be audited.
**Prerequisites:** MUS F153; for music majors only; permission of instructor required.
**Lecture + Lab + Other:** 1 + 0 + 0

**MUS F155 Functional Piano IV**
1 Credit
Offered Spring
Emphasis on upper-intermediate keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited.
**Prerequisites:** MUS F154.
**Lecture + Lab + Other:** 1 + 0 + 0

**MUS F161 Private Lessons** (h)
2 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required.
**Prerequisites:** Admission by audition.
**Special Notes:** Course may not be audited; Credit-No Credit grading not permitted.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F162 Private Lessons** (h)
2 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required.
**Prerequisites:** Admission by audition.
**Special Notes:** Course may not be audited; Credit-No Credit grading not permitted.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F190 Recital Attendance**
0 Credit
Offered Fall and Spring
Recital and concert attendance.
**Lecture + Lab + Other:** 1 + 0 + 0

**MUS F200X Explorations in Music** (h)
3 Credits
Offered Fall, Spring and Summer
Understanding and appreciation of music through explorations of its diverse styles, influences and developments. Topics include the creative process, musical forms and expression, historical and cultural contexts and popular movements and trends.
**Prerequisites:** Placement in WRTG F111X; sophomore standing.
**Attributes:** UAF Core Aesthetic Appreciatio, UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F203 Fairbanks Symphony Orchestra** (h)
1 Credit
Offered Fall and Spring
Course may be repeated for credit.
**Prerequisites:** Admission by audition.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F205 Wind Ensemble** (h)
1 Credit
Offered Fall and Spring
The wind symphony is a large ensemble comprised of wind and percussion instruments. It serves as a large ensemble in the department of music. The ensemble performs several concerts per semester of literature chosen from a variety of contemporary and traditional pieces written for or transcribed for band.
**Prerequisites:** Admission by audition; permission of instructor.
**Special Notes:** This course may not be audited.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F207 UAF Jazz Band** (h)
1 Credit
A performance ensemble that performs a feature concert each semester and tours frequently within the state and occasionally outside the state. May be repeated for credit. Course may not be audited.
**Prerequisites:** Audition and permission of instructor.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F211 Choir of the North** (h)
1 Credit
Offered Fall and Spring
A mixed choir serving more advanced singers presenting concerts of more advanced choral music literature. May be repeated for credit.
**Prerequisites:** Admission by audition.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F221 History of Western Music I** (h)
3 Credits
Offered Fall
A survey of musical eras, styles, genres, historical figures and social and cultural contexts that have significantly contributed to the development of art music in Western Europe from antiquity through the eighteenth century. The lecture-based course also emphasizes music listening skills and an introduction to resources and methods in music history research.
**Prerequisites:** MUS F132.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F222 History of Western Music II** (h)
3 Credits
Offered Spring
A survey of musical eras, styles, genres, historical figures and social and cultural contexts that have significantly contributed to the development of art music in Western Europe from the mid-eighteenth century to the present day. Further emphasizes music listening skills and an introduction to resources in music history research.
**Prerequisites:** MUS F221.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F223X Alaska Native Music** (an, h)
3 Credits
Offered Spring
Introductory course devoted to the study of Indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles.
**Cross-listed with** ANS F223X; ACNS F223X.
**Attributes:** UAF GER Arts Req
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F231 Advanced Music Theory I** (h)
2 Credits
Offered Fall
This course is an intensive study of chromatic harmony and its functions in tonal music, with an introduction to musical form. The course emphasizes analytical techniques and score study.
**Prerequisites:** MUS F132; music majors must be concurrently enrolled in or have completed MUS F233.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F232 Advanced Music Theory II** (h)
2 Credits
Offered Spring
This course has an emphasis on chromatic harmony and its functions in music of the late 19th and early 20th centuries. Includes an introduction to techniques and concepts in post-tonal music.
**Prerequisites:** MUS F231; music majors must be concurrently enrolled in or have completed MUS F234.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F233 Advanced Ear Training I**
1 Credit
Offered Fall
This course emphasizes aural skills acquisition with advanced techniques in aural perception, sight-reading, dictation and chromatic materials. Includes computer-assisted instruction.
**Prerequisites:** MUS F134; MUS F231 (may be taken concurrently).
**Lecture + Lab + Other:** 1 + 0 + 0

**MUS F234 Advanced Ear Training II**
1 Credit
Offered Spring
This course emphasizes aural skills acquisition, with further development of advanced techniques involving chromaticism, rhythms, modality, sight-reading and dictation. Includes computer-assisted instruction.
**Prerequisites:** MUS F233; MUS F232 (may be taken concurrently).
**Lecture + Lab + Other:** 1 + 0 + 0

**MUS F245 Singer's Diction I: English and Italian** (h)
2 Credits
Offered Fall Odd-numbered Years
A systematic approach for singers through use of the International Phonetic Alphabet for the transcription and pronunciation of song texts in English and Italian. A singer's diction course would be valuable to radio announcers or anyone needing rules of pronunciation for names, titles, phrases, etc. in foreign languages.
**Recommended:** One year of private voice lessons.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F246 Singer's Diction II: French and German** (h)
2 Credits
Offered Spring Odd-numbered Years
A systematic approach for singers through use of the International Phonetic Alphabet for the transcription and pronunciation of song texts in French and German. A singer's diction course would be valuable to radio announcers or anyone needing rules of pronunciation for names, titles, phrases, etc. in foreign languages.
**Recommended:** One year of private voice lessons.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F253 Piano Proficiency**
0 Credit
Offered Fall and Spring
Final phase of piano proficiency requirement.
**Prerequisites:** MUS F155 or exam by instructor.
**Lecture + Lab + Other:** 0 + 0 + 0

**MUS F261 Private Lessons** (h)
2 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required.
**Prerequisites:** Admission by audition.
**Special Notes:** Course may not be audited; Credit-No Credit grading not permitted.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F262 Private Lessons** (h)
2 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required.
**Prerequisites:** Admission by audition.
**Special Notes:** Course may not be audited; Credit-No Credit grading not permitted.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F307 Chamber Music** (h)
1 Credit
Offered Fall and Spring
String, brass or woodwind chamber music; piano chamber music and accompanying; stage band; and Alaska Camerata.
**Prerequisites:** Permission of instructor.
**Special Notes:** Course may not be audited.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F313 Opera Workshop** (h)
1-3 Credits
Offered Fall and Spring
**Lecture + Lab + Other:** 0 + 3-9 + 0

**MUS F317 Arctic Chamber Orchestra** (h)
1 Credit
Offered Fall
The touring group of the Fairbanks Symphony Orchestra. Must be a member of the Fairbanks Symphony Orchestra. (MUS F203-EV1).
**Prerequisites:** By audition only.
**Lecture + Lab + Other:** 0 + 3 + 0

**MUS F331 Form and Analysis** (h)
3 Credits
Offered Spring Odd-numbered Years
This course emphasizes score study, analytical techniques and critical listening skills as applied to small and large forms in works from various musical genres and style periods.
**Prerequisites:** MUS F232.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F332 Introduction to Computer-based Music Technology** (h)
3 Credits
Offered Spring
An introduction to music notation software and audio equipment to enable students to create, arrange and edit music in digital formats. May be repeated for credit.
**Prerequisites:** MUS F232.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F341 Introduction to Film Music Analysis**
3 Credits
Offered As Demand Warrants
In this course students will survey the history of film music and observe the function of music in film; they will learn how to discuss and write about the music from a musical and cinematic perspective.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F351 Conducting** (h)
3 Credits
Offered As Demand Warrants
Principles of conducting; interpretation of vocal and instrumental ensemble music.
**Prerequisites:** COJO F131X or COJO F141X; MUS F232.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F361 Private Lessons** (h)
2,4 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required.
**Prerequisites:** Admission by audition.
**Special Notes:** Course may not be audited; Credit-No Credit grading not permitted.
**Lecture + Lab + Other:** 2,4 + 0 + 0

**MUS F362 Private Lessons** (h)
2,4 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special permission required.
**Prerequisites:** Admission by audition.
**Special Notes:** Course may not be audited; Credit-No Credit grading not permitted.
**Lecture + Lab + Other:** 2,4 + 0 + 0

**MUS F390 Junior Recital**
0 Credit
Offered Fall and Spring
Half-length solo music performance recital.
**Prerequisites:** MUS F222; MUS F232; MUS F262; permission of instructor.
**Lecture + Lab + Other:** 0 + 0 + 0

**MUS F410 Women in Music History** (h)
3 Credits
Offered As Demand Warrants
Lives and works of female musicians, composers and performers will be traced from the earliest days of the ancient and mythological periods through the medieval, Baroque, Classical and Romantic periods with special emphasis on composers of the 20th-century.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Cross-listed with** WGS F410.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F421 Music Before 1620** (h)
3 Credits
Offered Spring Even-numbered Years
A study of music in the Western European tradition from its origins in Greek antiquity through the Renaissance and the emergence of opera in early seventeenth century. The study includes prominent composers, early musical forms and genres, original sources in translation and developments in music notation and early musical instruments.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F422 Music in the 17th and 18th Centuries** (h)
3 Credits
Offered Fall Even-numbered Years
A study of style, form and performance practices in a variety of vocal and instrumental genres throughout the Baroque and Classical eras, emphasizing musical developments in Italy, England, France, Germany, Austria and cross-cultural influences.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F423 Music of the 19th Century** (h)
3 Credits
Offered Fall Odd-numbered Years
A study of musical and cultural trends in Western European art music of the nineteenth century emphasizing a variety of representative works by significant Romantic-era composers.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F424 Music Since 1900** (h)
3 Credits
Offered Spring Odd-numbered Years
A study of works by significant composers representative of modern and post-modern styles and perspectives.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUS F222.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F426 Music Literature** (h)
2 Credits
Music literature of brass, strings, keyboard, voice or winds, on a rotating basis as announced for the semester of offering. Course may be repeated four times for a total of 10 credits.
**Prerequisites:** MUS F261.
**Recommended:** MUS F221; MUS F222, and one course from the MUS F421-F424 Period Music History course sequence.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F431 Counterpoint** (h)
3 Credits
Offered As Demand Warrants
This course emphasizes score study, composition exercises and techniques for the analysis of contrapuntal practices prevalent in music of the late Baroque era.
**Prerequisite:** MUS F232.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F432 Orchestration and Arranging** (h)
3 Credits
Offered As Demand Warrants
This course has an emphasis on acquisition of techniques used in arranging and orchestrating music for a variety of instrumental and vocal ensembles. Includes score study, listening exercises and composition exercises.
**Prerequisite:** MUS F232.
**Recommended:** MUS F332.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F433 Seminar in Musical Composition** (h)
2-3 Credits
Offered As Demand Warrants
Development of compositional skills based upon the works of predominately 20th-century composers. May be repeated for credit.
**Prerequisites:** MUS F232.
**Lecture + Lab + Other:** 2-3 + 0 + 0

**MUS F434 Advanced Harmonic Analysis** (h)
3 Credits
Offered As Demand Warrants
This course emphasizes advanced score study analytical techniques in the study of tonal music from the Baroque, Classical, Romantic and early 20th century periods.
**Prerequisites:** MUS F232.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F435 Private Lessons in Music Composition** (h)
2-4 Credits
Offered As Demand Warrants
Private instruction in advanced music composition consisting of one private lesson per week. Repeatable for credit. Course may not be audited.
**Prerequisites:** MUS F433; audition.
**Lecture + Lab + Other:** 1-2 + 3 + 0

**MUS F436 Introduction to the Pedagogy of Music Theory**
3 Credits
Offered As Demand Warrants
This course is offered to music majors who want a brief introduction and overview of how to teach music theory. Relevant for those who want to teach music in public school, university or private lessons.
**Prerequisites:** MUS F232; MUS F234.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F461 Private Lessons** (h)
2,4 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. See accompanying box for private lesson fees.
**Prerequisites:** Admission by audition; special permission.
**Corequisites:** MUS F190.
**Special Notes:** Course may not be audited; credit-no credit grading not permitted; recital attendance required.
**Lecture + Lab + Other:** 2,4 + 0 + 0

**MUS F462 Private Lessons** (h)
2,4 Credits
Offered Fall and Spring
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Recital attendance required.
**Prerequisites:** Admission by audition; special permission.
**Corequisites:** MUS F190.
**Special Notes:** Course may not be audited; credit-no credit grading not permitted.
**Lecture + Lab + Other:** 2,4 + 0 + 0

**MUS F476 Senior Project**
3 Credits
Offered Fall and Spring
Preparation and presentation of senior project based on a topic of the student's choosing in consultation with the instructor. Project may take the form of a research paper, original music composition, music performance as a lecture-recital, or some combination of these as appropriate to the topic.
**Prerequisites:** Senior standing and permission of instructor.
**Lecture + Lab + Other:** 1 + 0 + 4

**MUS F490 Senior Recital**
0 Credit
Offered Fall and Spring
Full length music solo recital.
**Prerequisites:** MUS F362; MUS F390; music major; senior standing in music study; permission of instructor.
**Lecture + Lab + Other:** 0 + 0 + 0

**MUS F492 Seminar**
1-4 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 1-4 + 0 + 0

**MUS F492P Seminar**
1-4 Credits
Offered As Demand Warrants
**Lecture + Lab + Other:** 1-4 + 0 + 0

**MUS F601 Introduction to Graduate Study**
2 Credits
Offered Spring
Students will gain experience with materials, techniques bibliographic sources and procedures for conducting scholarly research and writing music.
**Prerequisites:** Graduate standing and permission of the instructor.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUS F625 Topics in Music History**
3 Credits
Offered As Demand Warrants
Detailed study of selected topics in music history and/or literature. Specific topic to be announced in advance of course offering.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F632 Topics in Music Theory**
3 Credits
Offered Spring
A detailed study of selected topics in music theory, including aspects of common-practice harmony, musical form, techniques for analysis, and historical perspectives on the evolution of theory concepts and constructs.
**Prerequisites:** Graduate standing and permission of the instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUS F698 Non-thesis Research/Project**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Music Education (MUED)

**College of Liberal Arts**
Department of Music (https://www.uaf.edu/music/)
907-474-7555

**MUED F110 Becoming a Music Teacher in the 21st Century**
2 Credits
Offered Spring
Introduction and exploration of the profession of music education. Focus on national educational policies and practices in education and music education. Opportunities for interaction with Alaska teachers, student teachers and students in the music education program.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 2 + 0 + 0

**MUED F201 Introduction to Music Education**
2 Credits
Offered Fall
Introduction to professional education with special emphasis on music education as practiced at the elementary, middle school and high school levels. Review of cultural, social, and current legal requirements that influence education and music education in the U.S. and Alaska.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; MUED F110.
**Lecture + Lab + Other:** 2 + 0 + 1

**MUED F309 Elementary School Music Methods**
3 Credits
Offered Spring
Principles, procedures and materials for teaching music to children at the elementary level.
**Lecture + Lab + Other:** 3 + 0 + 0

**MUED F310 Practicum in Elementary Music Methods**
1 Credit
Offered Spring
Students will observe and reflect upon weekly fieldwork in elementary public school classrooms, grades K-5. Additionally, students will assist with and lead live classroom activities. For preservice music educators.
**Prerequisites:** Recommended: ED F201.
**Corequisites:** MUED F309.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**MUED F315 Music Methods and Techniques**
2 Credits
Offered Fall and Spring
Instruction in voice and the basic instruments of band and orchestra. Emphasis on teaching methods. Course may be repeated for credit. See music department handbook.
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 1 + 2 + 0

**MUED F316 Practicum in Middle-level Music Methods**
1 Credit
Offered Fall and Spring
Students will observe and reflect upon weekly fieldwork in grades 4-6 beginning instrumental music classes. Additionally, students will assist with and lead live classroom activities. For preservice music educators.
**Prerequisites:** MUED F315; any music techniques/methods course plus concurrent enrollment in a second MUED F315 course.
**Recommended:** ED F201.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

**MUED F405 Secondary School Music Methods**
3 Credits
Offered Fall
Principles and methods of teaching music in junior and senior high school with emphasis on philosophies, management, objectives, teaching techniques, choral and general music programs. Includes use of teaching plans in classroom and rehearsal settings.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Special Notes:** Should be taken prior to ED F453.
**Lecture + Lab + Other:** 2 + 3 + 0

**MUED F406 Practicum in Secondary Music Methods**
1 Credit
Offered Fall
Students will observe and reflect upon weekly fieldwork in a local middle or high school. Additionally, students will assist with and lead live classroom activities. For preservice music educators. Taken concurrently with MUED F405, Secondary School Music Methods.
**Lecture + Lab + Other:** 0.5 + 1.5 + 0

# Natural Resources Management (NRM)

**College of Natural Science and Mathematics**
Department of Natural Resources and Environment (https://www.uaf.edu/nre/)

907-474-7188

**NRM F101 Natural Resources Conservation and Policy**
3 Credits
Offered Fall
History of natural resources conservation and policy in the United States, including the evolution of federal land and water management agencies and policies. Case studies of current natural resource conservation issues, both in the United States and internationally, that examine the interaction of society and the environment and explore solutions.
**Prerequisites:** Placement in WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F102 Practicum in Natural Resources Management**
1-2 Credits
Practical experience in natural resources management. Supervised individual study on a farm, in a greenhouse, managed forest, agency or business, or another approved location.
**Prerequisites:** Natural Resource Management majors only and permission of instructor.
**Lecture + Lab + Other:** 1-2 + 0 + 0

**NRM F111X Introduction to Sustainability Science**
3 Credits
Offered Spring
The field of sustainability science provides a useful framework for understanding and responding to complex environmental problems. This course introduces the theory and principles that form the basis of sustainability science, focusing on feedbacks between society and the environment with an emphasis on environmental and related change in Alaska.
**Prerequisite:** placement in WRTG F111X.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F125 Our Changing Climate: Past, Present, Future** (s)
3 Credits
Offered Spring
Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.
**Prerequisites:** Placement in WRTG F111X.
**Cross-listed with** ACNS F125, HONR F125, RD F125.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F161 Wilderness Leadership Education**
3 Credits
Offered As Demand Warrants
Introduction to outdoor education. Includes both theoretical and practical exposure to quality judgment and decision-making, environmental education techniques and leadership development in the wilderness setting. Provides detailed exposure to the Wilderness Education Association's 18 essential components of wilderness leadership and backcountry safety. Successful completion earns certification in the Wilderness Stewardship Program. Field program requires travel through rough un-trailed terrain with heavy packs and average strength and stamina. No use of alcohol, tobacco, illegal drugs or firearms.
**Prerequisites:** Permission of instructor.
**Recommended:** BIOL F104X, NRM F101 and physical geography.
**Special Notes:** the field portion of the course includes detailed instruction in and mentored experience with modern backcountry travel techniques.
**Lecture + Lab + Other:** 0.5 + 0 + 6

**NRM F204 Public Lands Law and Policy**
3 Credits
Offered Spring
Background on selected federal lands management legislation and agency policies affecting resources conservation, development and preservation.
**Prerequisites:** Sophomore class standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F210 Principles of Sustainable Agriculture**
3 Credits
Offered Spring
Basic principles of sustainable agriculture including economic, social, and environmental concepts. Agroecology is introduced as the basis for sustainable soil, plant, and animal agriculture techniques. Sustainable agriculture concepts will be related to current issues such as population growth, resource availability, and developing social structures and preferences.
**Prerequisites:** NRM F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F211 Introduction to Applied Plant Science**
3 Credits
Offered Fall
Basic principles and requirements for plant growth and development with special attention to the production and management of field and greenhouse grown crops.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F212 Greenhouse Management**
3 Credits
Offered Spring
The greenhouse as a controlled environment for research, education and commercial production of plants; the physical environment; environmental controls and monitors; plant cultivation techniques and crop scheduling useful in plant science and commercial production.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F240 Natural Resources Measurement and Inventory**
3 Credits
Offered Fall
Techniques and instrumentations used to measure and inventory natural resources, including land, timber, range, wildlife, water and recreation resources.
**Prerequisites:** MATH F151X.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F277 Introduction to Conservation Biology**
3 Credits
Offered Spring Even-numbered Years
Introduction to the basic ecological, genetic, management, legal and historical developments in conservation biology and focused efforts to manage biological diversity resources, with a status review of important habitats and endangered species.
**Prerequisites:** BIOL F115X; BIOL F116X.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F290 Field Course of Natural Resource Management Complexity in Alaska**
2 Credits
Offered Spring
A 10-day field course examining ecological and societal factors that create challenges to sustainable management of Alaska's natural resources. Topics include agriculture, forestry, fisheries, wildlife management, wildland fire response and management, energy development, recreation and tourism.
**Prerequisite:** Permission of instructor.
**Lecture + Lab + Other:** 1 + 0 + 3

**NRM F300 Internship in Natural Resources Management**
1-3 Credits
Offered As Demand Warrants
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in natural resources management only. Course may be repeated for credit up to a maximum of 6 credits.
**Prerequisites:** NRM F101; junior standing with 3.0 GPA; permission of instructor; an approved internship plan.
**Lecture + Lab + Other:** 0 + 0 + 3-10

**NRM F303X Environmental Ethics and Actions** (h)
3 Credits
Offered Spring
Exploration of the history of modern Western views of the relationship between people and nature, alternative foundations for an environmental ethic (utilitarianism, spiritual activity, rights-based and respect-based ethics) and practices of such ethics in business, profession and general lifestyle today.
**Prerequisites:** Junior standing; placement in WRTG F111X.
**Attributes:** UAF GER Ethics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F313 Introduction to Plant Pathology**
4 Credits
Offered As Demand Warrants
Plant pathology; non-parasitic and parasitic causes of plant diseases; methods of plant infestation and mechanism of plant defenses; epidemiology and disease control.
**Prerequisites:** BIOL F115X; BIOL F116X.
**Recommended:** BIOL F239.
**Lecture + Lab + Other:** 3 + 3 + 0

**NRM F338 Introduction to Geographic Information Systems**
3 Credits
Offered Fall
Geographic data concepts including mapping systems, data sources, editing data, GIS analysis and computer mapping. Introduction to global positioning systems. GIS applications in natural resources management.
**Prerequisites:** Knowledge of PCs or Unix workstations desirable.
**Cross-listed with** GEOG F338.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F361 Advanced Wilderness Leadership Education**
3 Credits
Offered Spring
Natural environment, concentrating on outdoor leadership, environmental ethics, minimum impact camping, forest and Arctic natural history, and adaptable judgment and decision-making. Includes boreal forest and along tundra-ridge hiking, river crossing, glacier ascent, and skills to do these activities safely. Other possible travel mediums include sea kayaks, canoes or rock climbing. No use of alcohol, tobacco, illegal drugs or firearms.
**Prerequisites:** NRM F101; NRM F161.
**Special Notes:** Three lecture sessions will preview a demanding educational field program of 5-15 days requires travel through rough un-trailed terrain with heavy packs or boats and average strength and stamina.
**Lecture + Lab + Other:** 0.5 + 0 + 6

**NRM F365 Principles of Outdoor Recreation Management**
3 Credits
Offered Fall Even-numbered Years
Theories, practices, economics and problems fundamental to the use of land and related natural resources for recreation. The course focuses on human dimension related issues faced by recreation managers and research to address those issues.
**Prerequisites:** NRM F101; STAT F200X; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F366 Survey Research in Natural Resources Management**
3 Credits
Offered Spring
Research methods to support research and planning in recreation and human dimensions of natural resources management. Course topics include quantitative theories and concepts that have been applied to study human dimensions of natural resource management, study design, survey development and administration, sampling and data analysis.
**Prerequisites:** NRM F101; STAT F200X.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F370 Introduction to Watershed Management**
3 Credits
Offered Fall Odd-numbered Years
The hydrologic cycle and the influence of land management techniques on water quantity, quality and timing. Water yield, soil erosion and non-point pollution, snowpack management, and land use alternatives.
**Prerequisites:** NRM F101.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F375 Natural Resource Ecology**
3 Credits
Offered Spring
Basic ecology concepts, including physical (wind, temperature, water, etc.), biotic (population and community dynamics), genetic successional and landscape dynamics will be covered. Basic physiological characteristics of trees, succession, vegetation classification, and related concepts. Stand structure, diversity, competition, growth, forest-soil interactions, biomass, nutrient distribution and dynamics, energy relations, ecology of disturbances.
**Prerequisites:** NRM F240.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F380 Soils and the Environment**
3 Credits
Offered Fall
Soil development and classification; physical and chemical properties; biological activity; water movement and nutrient cycling in natural and manipulated ecosystems.
**Prerequisites:** CHEM F105X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F403 Environmental Decision-Making**
3 Credits
Offered Fall
Analysis of philosophical/ethical, economic, scientific and political foundations of diverse natural resource management perspectives.
**Prerequisites:** COJO F131X or COJO F141X; NRM F101; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F407 Environmental Law**
3 Credits
Offered Spring Odd-numbered Years
The role of common law theory in regulatory, statutory and constitutional interpretation in the field of environmental protection, including air and water pollution, toxic/hazardous substances and land-use regulation.
**Prerequisites:** Junior or senior class standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F430 Resource Management Planning**
3 Credits
Offered Spring
Application of planning and conflict resolution principles to natural resources management. Examines plans prepared in response to current Alaska resource disputes, including wolf, brown bear, boreal forest and recreation river plans. Includes public involvement, consensus building, the basic steps in the planning process and resource dispute simulations. Review resource management plans and develop plans for a local resource management issue.
**Prerequisites:** Senior standing.
**Stacked with** NRM F630.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F435 GIS Analysis**
4 Credits
Offered Spring
GIS analysis of natural resources including spatial query, attribute query, vector, grid, image, topographic and network analysis techniques.
**Cross-listed with** GEOG F435.
**Lecture + Lab + Other:** 3 + 3 + 0

**NRM F453 Harvesting and Utilization of Forest Products**
3 Credits
Offered Fall Odd-numbered Years
Manual and mechanized timber harvesting systems including timber cutting, yarding and transport processes. Technology of processing wood into various products. Introduction to supply and demand of forest products from a world, state and local perspective. Labs include visits to local forest products companies, chainsaw safety and wood identification.
**Prerequisites:** NRM F101.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F461 Interpretive Services**
3 Credits
Offered As Demand Warrants
Naturalist and other visitor programs in outdoor recreation areas: philosophy, planning and development of interpretive programs; resources, agencies, users, interpretive media and program evaluation.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F466 Environmental Soil Chemistry**
3 Credits
Offered Spring Odd-numbered Years
Covers basic principles of soil chemical processes, including soil solution chemistry; precipitation/dissolution and soil colloids; soil solid phase; soil acidity/alkalinity; adsorption and ion exchange; reduction/oxidation reactions; and kinetics of soil chemical processes. Labs include soil chemical analyses, computer simulation models for soil chemistry, and experience writing technical reports.
**Prerequisites:** CHEM F105X; CHEM F106X; NRM F380.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F469 Survey Research in Human Dimensions of Natural Resources**
3 Credits
Offered Spring
Social science concepts applied to survey-based human dimensions research. Survey research methods including operationalizing research questions into measurable variables, designing survey instruments, assessing reliability and validity, developing a sampling plan, data management, data analysis, and reporting results.
**Prerequisites:** NRM F101; STAT F200X.
**Stacked with** NRM F669.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F480 Soil Management for Quality and Conservation**
3 Credits
Offered Fall Odd-numbered Years
Managing soil in disturbed and natural ecosystems to reduce soil losses and maintain or improve soil quality. Methods for maintaining soil quality, preserving soil against loss from erosion, remediating contaminated soil and reclaiming degraded soils.
**Prerequisites:** NRM F380.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F484 Senior Thesis in Natural Resources Management**
2 Credits
Problem-solving with emphasis on writing and analysis. Individual project under the guidance of faculty sponsor involving formulation of a question in natural resources management and preparation of a formal, comprehensive written report. Final thesis and presentation.
**Prerequisites:** GEOG F483 and permission of instructor.
**Lecture + Lab + Other:** 2 + 0 + 0

**NRM F485 Soil Biology** (n)
3 Credits
Offered Fall Even-numbered Years
Major groups of organisms in the soil and their interrelationships; the major biological processes which take place in the soil and their significance to soil productivity, plant growth and environmental quality; and methodology for studying soil organisms and soil biological processes.
**Prerequisites:** A course in biology or microbiology and a course in soils.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F489 Alaska Soil Geography Field Trip**
1 Credit
Offered Summer; As Demand Warrants
Soil geography transect from Pacific (Anchorage) to Arctic (Deadhorse) coast. Hands-on experience describing and sampling soils, with emphasis on how a variety of ecological factors and climate affect soil formation and classification.
**Prerequisites:** NRM F380, or a course in soils.
**Stacked with** NRM F689.
**Special Notes:** Students must provide their own camp gear, be able to walk on uneven or rocky ground and be physically fit for fieldwork.
**Lecture + Lab + Other:** 1 + 0 + 0

**NRM F601 Research Methods in Natural Resources Management**
2 Credits
Offered Fall
Introduction for graduate students to the research methods employed in the various fields of resource management, including agriculture, forestry, ecology and social sciences. Designed to acquaint students with the relationship between theory and research, the nature of scientific inquiry, approaches to research, the sequence of steps involved in scientific investigation and the presentation of research results.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**NRM F613 Resilience Internship**
2 Credits
Offered As Demand Warrants
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations.
**Prerequisites:** ANTH F667, BIOL F667, ECON F667 or NRM F667; ANTH F668, BIOL F668, ECON F668 or NRM F668.
**Cross-listed with** ANTH F617; BIOL F613; ECON F613.
**Lecture + Lab + Other:** 2 + 0 + 0

**NRM F616 Ecological Background for Resilience and Adaptation**
1 Credit
Offered Fall
Provides the ecological background that is necessary for understanding the role of ecology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology.
**Prerequisites:** Graduate standing.
**Cross-listed with** BIOL F616.
**Lecture + Lab + Other:** 1 + 0 + 0

**NRM F630 Resource Management Planning**
3 Credits
Offered Spring
Application of planning and conflict resolution principles to natural resources management. Examines plans prepared in response to current Alaska resource disputes, including wolf, brown bear, boreal forest and recreation river plans. Includes public involvement, consensus building, the basic steps in the planning process and resource dispute simulations. Review resource management plans and develop plans for a local resource management issue.
**Prerequisites:** Graduate standing.
**Stacked with** NRM F430.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F637 Evolution of Conservation Concepts and Policy**
3 Credits
Offered As Demand Warrants
Resource policy issues development and implementation including forestry, mining, fisheries, oil, wildlife and other topics as demand warrants. Focus on policy issues involved in management of Alaska's resources.
**Prerequisites:** Graduate standing.
**Cross-listed with** ECON F637.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F638 GIS Programming**
3 Credits
Offered Spring Odd-numbered Years
GIS programming for ArcView, Arc/Info and ArcGIS. Programming techniques for customizing GIS, efficient batch processing, and development of custom tools for GIS display and analysis.
**Prerequisites:** NRM F338.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F641 Natural Resource Applications of Remote Sensing**
3 Credits
Offered Spring Even-numbered Years
Application of remote sensing for inventory and analysis of natural resources. Topics include aerial photography applications and digital remote sensing, including image display, rectification, classification and accuracy assessment.
**Prerequisites:** NRM F338.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F647 Sustainability in the Changing North**
3 Credits
Offered As Demand Warrants
Explores the basic principles of sustainability of environmental and social systems. Principles are applied across a range of scales from local communities to the globe, with an emphasis on examples in Alaska and the Arctic. Specific attention to the theory and practice of boundary spanning and knowledge coproduction.
**Prerequisites:** Graduate standing.
**Cross-listed with** ANTH F647; BIOL F647; ECON F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F649 Integrated Assessment and Adaptive Management**
3 Credits
Offered As Demand Warrants
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management.
**Prerequisites:** Graduate student standing in a natural science, social science or interdisciplinary program at UAF or another university.
**Recommended:** ANTH F647, BIOL F647, ECON F647, NRM F647; ANTH F667, BIOL F667, ECON F667, NRM F667.
**Cross-listed with** ANTH F649; BIOL F649; ECON F649.
**Special Notes:** In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F656 Sustainable Livelihoods and Community Well-being**
3 Credits
Offered Fall
Review principles governing the sustainability of systems, cultural practices and behaviors that enhance or degrade sustainable livelihoods and community wellbeing. Emphasis is on historical context of sustainability, nature and magnitude of the social, economic and ecological dimensions of contemporary change, and "best practices" for communities to respond effectively to change.
**Prerequisites:** Graduate standing.
**Cross-listed with** CCS F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F665 Advanced Outdoor Recreation**
3 Credits
Offered Fall Even-numbered Years
Evaluation of contemporary outdoor recreation management models and the linkage between management programming and visitor response. Development of a synthesized model and testing with contemporary problems.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F667 Resilience Seminar I**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor.
**Prerequisites:** Enrolled in Resilience and Adaptation Graduate Program.
**Recommended:** ANTH F647, BIOL F647, ECON F647 or NRM F647 (taken concurrently).
**Cross-listed with** ANTH F667; BIOL F667; ECON F667.
**Lecture + Lab + Other:** 2 + 0 + 0

**NRM F668 Interdisciplinary Research Methods-Resilience Seminar II**
1 Credit
Offered As Demand Warrants
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus.
**Prerequisites:** ANTH F647, BIOL F647, ECON F647 or NRM F647; ANTH F667, BIOL F667, ECON F667 or NRM F667.
**Cross-listed with** ANTH F668; BIOL F668; ECON F668.
**Lecture + Lab + Other:** 2 + 0 + 0

**NRM F669 Survey Research in Human Dimensions of Natural Resources**
3 Credits
Offered Spring
Social science concepts applied to survey-based human dimensions research. Survey research methods including operationalizing research questions into measurable variables, designing survey instruments, assessing reliability and validity, developing a sampling plan, data management, data analysis, and reporting results.
**Prerequisites:** Graduate standing.
**Stacked with** NRM F469.
**Lecture + Lab + Other:** 2 + 3 + 0

**NRM F670 Biometeorology**
3 Credits
Offered Fall Odd-numbered Years
Radiation and energy balance relationships for natural and modified surfaces; physical environment in relation to biology and ecology of plants and animals; implications for resource and environmental management.
**Prerequisites:** Biological or physical science background; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F672 Nutrient Cycling**
3 Credits
Offered Spring Odd-numbered Years
Examination of physical, chemical and biological processes controlling nutrient element recycling, availability and retention in natural and managed ecosystems.
**Prerequisites:** CHEM F106X; NRM F375 or BIOL F371; NRM F380.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F685 Soil Microbiology and Biochemistry**
3 Credits
Offered As Demand Warrants
Current topics in soil microbiology and biochemistry. Based on readings from the primary literature and discussions in class. Each student will be expected to lead at least one discussion, write a research proposal and present the proposal to class.
**Prerequisites:** At least one course in soil science; one course in microbiology.
**Lecture + Lab + Other:** 3 + 0 + 0

**NRM F689 Alaska Soil Geography Field Trip**
1 Credit
Offered Summer As Demand Warrants
Soil geography transect from Pacific (Anchorage) to Arctic (Deadhorse) coast. Hands-on experience describing and sampling soils, with emphasis on how a variety of ecological factors and climate affect soil formation and classification.
**Prerequisites:** NRM F380, or a course in soils.
**Stacked with** NRM F489.
**Special Notes:** Students must provide their own camp gear, be able to walk on uneven or rocky ground and be physically fit for fieldwork.
**Lecture + Lab + Other:** 1 + 0 + 0

**NRM F692 Graduate Seminar**
1-3 Credits
Topics in natural resources management and geography explored through readings, student presentations, group discussions and guest speakers.
**Prerequisites:** Graduate standing.
**Cross-listed with** GEOG F692.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**NRM F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**NRM F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**NRM F699A Thesis**
1-12 Credits
**Lecture + Lab + Other:** 1-12 + 0 + 0

**NRM F699B Thesis**
1-12 Credits
**Lecture + Lab + Other:** 1-12 + 0 + 0

**NRM F699C Thesis**
1-12 Credits
**Lecture + Lab + Other:** 1-12 + 0 + 0

# Paralegal Studies (PLS)

**Community and Technical College**
Department of Paralegal Studies (https://www.ctc.uaf.edu/programs/paralegal-studies/)
907-455-2800

**PLS F102 Introduction to Paralegal Studies**
3 Credits
Offered Fall and Spring
Sources of law in the American tripartite system of government, with emphasis on state and federal court systems. Substantive law is studied, including business organization, civil procedure, contract, criminal, family, probate, real estate and tort law. Introductory instruction in legal writing and legal research using online legal research databases.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F105 Ethics for Paralegals**
3 Credits
Offered Spring
Examination of the ethical obligations owed by both lawyers and paralegals to their clients, other lawyers, the court systems where they work and the general public through the study of the ABA Model Rules of Professional Conduct and the canons of ethics promulgated by the two nationwide paralegal associations.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F201 Practical Paralegal Skills**
3 Credits
Offered Spring
The practical skills required of a paralegal in the job market, including drafting legal documents, pleadings and office correspondence, fact gathering through interviewing and investigating, use of the Internet for legal research, pretrial procedures, focusing primarily on civil rules 30, 33, 34, 35 and 36, and assisting at trial.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F203 Torts**
3 Credits
Offered Spring
Study of the essentials needed to effectively assist an attorney in the filing or defense of claims based on personal injury and property damage. A basic vocabulary of legal terminology associated with tort law is studied together with important statutes and case law. Emphasis on Alaska law.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F210 Civil Procedure**
3 Credits
Offered Fall
Basic vocabulary and concepts essential to effectively assist an attorney with the procedural aspects of civil litigation. Covers the rules of pleading and process, discovery and motion practice. Applies practical skills from initial investigation through trial and post-trial proceedings.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F213 Criminal Law for Paralegals**
3 Credits
Offered Spring Odd-numbered Years
Study of both the substantive criminal law and the rudiments of criminal procedure, focusing on both Alaska law and procedure and important constitutional considerations associated with due process, search and seizure and Fifth Amendment rights. Learn and work with a basic vocabulary unique to criminal law and procedure.
**Prerequisites:** PLS F102.
**Special Notes:** Does not substitute for JUST F352.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F215 Contracts/Real Property**
3 Credits
Offered Spring Even-numbered Years
Basic vocabulary and concepts essential to effectively assist an attorney with the preparation of contracts and real property transactions.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F240 Family Law**
3 Credits
Offered Fall
Basic vocabulary and concepts essential to understanding family law and assisting a practicing attorney in matters involving marriage issues, premarital contracts, annulment, divorce, dissolution, property division, child custody, support and visitation.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F241 Applied Business Law I**
3 Credits
Offered Fall and Spring
Legal aspects of business problems. Principles, institutions and administration of law in contracts, agency, employment, personal sales and property ownership.
**Crosslisted with** ABUS F241.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F242 Employment and Administrative Law**
3 Credits
Offered Fall
Legal principles which define the relationship between employers and employees. Includes obligations imposed by Federal and Alaska state statutes and administrative regulations. Includes how administrative agencies are created and how they provide administrative law through promulgation of rules and regulations and through quasi-judicial decisions.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F250 Probate Law**
3 Credits
Offered Spring
Basics of probate law and the uniform probate code. Includes the preparation and interpretation of wills, administration of decedent's estates, intestate succession laws, guardianships and other related probate matters. Focus on Alaska statutes and probate rules.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F260 Legal Technology**
3 Credits
Offered Fall
Examination of technology used in the law office. Includes computer hardware and software. This course focuses on producing word-processed documents and spreadsheets, creating databases, and using computer-assisted legal research, the Internet, electronic mail, litigation support, case management, electronic discovery and bookkeeping/billing software in the legal field.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F270 Constitutional Law for Paralegals**
3 Credits
Offered Fall
Exploration of constitutional law as it applies to the day-to-day work of a paralegal. Examination of the separation of powers among the branches of the federal government; federalism and states' rights; economic and property rights; and individual freedoms and protections under the Constitution, with an emphasis on due process.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F280 Legal Research and Writing for Paralegals**
3 Credits
Offered Fall
Legal research skills using law library methods, computer-assisted legal research and the Internet. Read and understand authorities from three branches of government: executive, legislative and judicial. Emphasis on precedent from Alaska and federal court systems. Includes writing skills from drafting of law office correspondence to preparation of court pleadings and briefs.
**Prerequisites:** PLS F102.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F285 Advanced Legal Writing**
3 Credits
Offered Spring
Expand on writing skills previously learned by drafting documents regularly assigned to practicing paralegals, such as pleadings to be filed in court, motion practice, office correspondence, and interoffice legal memorandums. Focus on issue identification, legal analysis and critical thinking skills.
**Prerequisites:** PLS F102; PLS F280.
**Lecture + Lab + Other:** 3 + 0 + 0

**PLS F299 Paralegal Studies Internship**
3 Credits
An internship involving a minimum of 150 hours of work under the supervision of an attorney, and, when available, a practicing paralegal for that attorney in a local law office or law-related situation. Must seek approval of faculty advisor for admittance.
**Prerequisites:** Must have completed at least 75% of paralegal studies degree requirements with a minimum 2.8 cumulative GPA or approval of UAF faculty advisor.
**Special Notes:** Students meet as a class only once; All subsequent classes or meetings with UAF faculty advisor are arranged by individual student(s) and advisor.
**Lecture + Lab + Other:** 0 + 0 + 10

# Petroleum Engineering (PETE)

**College of Engineering and Mines**
Department of Petroleum Engineering (https://cem.uaf.edu/pete/)
907-474-7734

**PETE F101 Fundamentals of Petroleum, Drilling and Production**
2 Credits
Offered Fall
Fundamental principles of origin, migration, accumulation and exploration of petroleum. Principles of drilling, drilling practices, and drilling fluids. Overview of production practices, surface production equipment. Influence of rock and fluid properties on the principles of petroleum recovery, petroleum transportation.
**Prerequisites:** Freshman standing in Petroleum Engineering program.
**Lecture + Lab + Other:** 2 + 0 + 0

**PETE F201 Future Trends in the Oil and Gas Industry**
1 Credit
Offered Fall
Overview of the rapidly changing landscape of the oil and gas industry. Introduction to technically challenged resources with special emphasis on Alaska North Slope heavy oil and methane hydrates. Coexistence with renewables and alternative energy. Diversification of the petroleum industry, and emergence of data sciences, HSE, climate issues and sustainability.
**Prerequisites:** Sophomore Standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**PETE F301 Reservoir Rock and Fluid Properties**
4 Credits
Offered Fall
Fundamental concepts of reservoir rock and fluid properties including porosity, permeability, fluid saturations, capillary pressure, relative permeabilities, classification of petroleum reservoirs by fluid phase contents, oil, gas and water properties, fluid sampling, and PVT analysis.
**Prerequisites:** ES F346 (may be taken concurrently); MATH F252X; GEOS F101X or GE F261.
**Lecture + Lab + Other:** 4 + 0 + 0

**PETE F302 Well Logging**
3 Credits
Offered Spring
Comprehensive treatment of modern well logging methods including formation and production logging tools, and techniques and basic concepts of open hole log interpretation.
**Prerequisites:** PETE F301; PETE F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F303 Reservoir Rock and Fluid Properties Laboratory**
1 Credit
Offered Spring
Measurement of properties of reservoir rock and reservoir fluids. Determination of porosity, permeability, fluid saturations, capillary pressures, specific gravity density, viscosity, surface tension, PVT properties and interpretation of PVT reports for reservoir fluid samples.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PETE F301.
**Lecture + Lab + Other:** 0 + 3 + 0

**PETE F370 Sedimentology and Structural Geology for Petroleum Engineers** (n)
4 Credits
Offered Fall
Origin and distribution of sedimentary rocks including depositional environments, stratigraphic relationships and structures. Emphasis on the relationship to petroleum occurrences and petroleum exploration. Laboratory exercises on mapping, structural problems and facies relationships in petroleum exploration.
**Prerequisites:** GEOS F101X or GE F261.
**Cross-listed with** GEOS F370.
**Lecture + Lab + Other:** 3 + 3 + 0

**PETE F407 Petroleum Production Engineering**
3 Credits
Offered Fall
Production system analysis, inflow performance analysis, gas lift design, sucker rod pumping and production decline analysis.
**Prerequisites:** PETE F476; ES F341 and ES F346.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F411 Drilling Fluids Laboratory**
1 Credit
Offered Spring
Design, composition and measurement of drilling fluid properties, evaluation of mud activities and chemical treatment of contaminated drilling fluid.
**Prerequisites:** PETE F426 (may be taken concurrently); WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 0 + 3 + 0

**PETE F421 Reservoir Characterization**
3 Credits
Offered Spring
Review of reservoir rock properties and their spatial variations; estimation of reserves; introduction to theory and application of geostatistics to reservoir characterization; presentation of fundamental geostatistical concepts including: variogram analysis, estimation variance, kriging and stochastic simulations and some data analytics concepts. Impact of geologic structure on oil recovery. Use of computer software for reservoir characterization and class project.
**Prerequisites:** PETE F301; PETE F302; GEOS F370.
**Stacked with** PETE F621.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F426 Drilling Engineering**
3 Credits
Offered Spring
Principles of drilling, drilling fluids and rheology, drilling problems, drilling hydraulics, well control techniques and casing seat selection.
**Prerequisites:** ES F331; ES F341.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F431 Natural Gas Engineering**
2 Credits
Offered Spring
Natural gas production and condensate reservoirs. Design of processing, transportation, distribution and flow measurement systems.
**Prerequisites:** PETE F301.
**Lecture + Lab + Other:** 2 + 0 + 0

**PETE F456 Petroleum Evaluation and Economic Decisions**
3 Credits
Offered Spring
Economic appraisal methods for oil field developmental project evaluations including risk analysis, probability and statistics in decision making and evaluations. Case studies.
**Prerequisites:** MATH F253X; PETE F476; STAT F300 (may be taken concurrently).
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F458 Petroleum Engineering Internship**
1 Credit
Offered As Demand Warrants
Practical experience in a supervised petroleum engineering environment. Participation in professional petroleum operations including drilling, production, formation evaluation, reservoir engineering, petroleum property evaluation, management and economics. Written and oral presentation of technical report describing experience is required. Course may be repeated for up to 4 credits.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 0 + 0 + 1

**PETE F466 Petroleum Recovery Methods**
3 Credits
Offered Fall
Flow and physicochemical principles of oil recovery by water, chemical, thermal and miscible floods. Prediction of recovery for each of these methods.
**Prerequisites:** PETE F301 and PETE F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F469 Enhanced Oil Recovery and Reservoir Simulation**
3 Credits
Offered Fall
This course will discuss the principles of enhanced oil recovery (EOR) methods. Enhanced recovery calculations for water flood using analytical and empirical methods will be covered. The principles and practice of reservoir simulation using numerical models will be discussed. Reservoir simulation will be used for EOR calculations.
**Prerequisites:** ES F301, MATH F426; PETE F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F476 Petroleum Reservoir Engineering**
3 Credits
Offered Spring
Quantitative study and prediction of the behavior of oil and gas reservoirs under primary, secondary and tertiary recovery mechanisms.
**Prerequisites:** PETE F301; MATH F253X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F478 Well Test Analysis**
2 Credits
Offered Spring
Transient flow of fluids through porous media, application of solutions of the diffusivity equation to pressure buildup, drawdown, interference testing and log-log type curve analysis and effect of reservoir heterogeneities on pressure behavior.
**Prerequisites:** PETE F407; PETE F476; MATH F302.
**Lecture + Lab + Other:** 2 + 0 + 0

**PETE F481 Well Completions and Stimulation Design**
3 Credits
Offered Fall
Design of casing programs, cementing, open-hole and set-through completions, well stimulation; completion and workover fluids; and evaluation of sand control and workover operations.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ES F341; PETE F426.
**Lecture + Lab + Other:** 2 + 3 + 0

**PETE F487A Petroleum Project Design**
1 Credit
Offered Fall
Two-semester course with emphasis on design and analysis of petroleum exploration, production and reservoir engineering systems by analytical, experimental and computer methods. Identification of requirements, conceptual and detailed project design and cost analysis. Completion of an engineering project.
**Prerequisites:** Senior standing; PETE F407 or PETE F426; PETE F476.
**Lecture + Lab + Other:** 2 + 0 + 0

**PETE F487B Petroleum Project Design**
1 Credit
Offered Spring
Two-semester course with emphasis on design and analysis of petroleum exploration, production and reservoir engineering systems by analytical, experimental and computer methods. Identification of requirements, conceptual and detailed project design and cost analysis. Completion of an engineering project.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; senior standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**PETE F489 Reservoir Simulation**
2 Credits
Offered Fall
The theory and application of computer reservoir simulation in petroleum reservoir and production engineering.
**Prerequisites:** PETE F476; MATH F426 or ES F301.
**Lecture + Lab + Other:** 2 + 0 + 0

**PETE F607 Advanced Production Engineering**
3 Credits
Offered As Demand Warrants
Production system analysis, production optimization, downhole equipment design, surface facilities design, oil and gas processing, gas and oil treating systems, disposal well systems, project organization and field development.
**Prerequisites:** Graduate standing; PETE F407.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F608 Flow Assurance in the Petroleum Industry**
3 Credits
Offered As Demand Warrants
Study of the thermodynamics of gas hydrates; paraffin waxes; asphaltenes; scale and chemistry of corrosion and erosion processes. Study of chemical and physical methods used for mitigation of solid phase formation. Experimental analysis and modeling of solid phase formation envelopes. Analysis of flow regimes resulting from the presence of solid phases in oil and gas flow lines.
**Prerequisites:** Permission of the instructor.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F610 Advanced Reservoir Engineering**
3 Credits
Offered As Demand Warrants
Concepts and tools for solving petroleum reservoir engineering problems; advances in petroleum reservoir engineering. Emphasis on material balance methods and their application to estimate reserves and calculate water influx; diversity equations and solutions; gas and water coning; streamline tracking; and decline curve analysis, productivity index and well performance models for vertical, horizontal and multilateral wells.
**Prerequisites:** PETE F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F621 Applied Reservoir Characterization**
3 Credits
Offered Spring
Review of reservoir rock properties and their spatial variations; estimation of reserves; introduction to theory and application of geostatistics to reservoir characterization; presentation of fundamental geostatistical concepts including: variogram analysis, estimation variance, kriging and stochastic simulations and some data analytics concepts. Impact of geologic structure on oil recovery. Use of computer software for reservoir characterization and class project.
**Prerequisites:** Graduate standing in Petroleum Engineering.
**Stacked with** PETE F421.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F630 Waterflooding**
3 Credits
Offered As Demand Warrants
A study of the fundamental concepts and procedures for the design of waterflooding processes in petroleum reservoirs.
**Prerequisites:** PETE F301; PETE F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F656 Advanced Petroleum Economic Analysis**
3 Credits
Offered As Demand Warrants
Economic analysis of petroleum production leading towards increasing cost efficiency in the petroleum and related industries. Qualitative and quantitative description of production forecasts and reserve estimation; oil and gas pricing; cash flow analysis; risk and uncertainty of operation of oil and gas production (financing, debt/equity ratio, depreciation and taxation).
**Prerequisites:** PETE F407, PETE F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F661 Applied Well Testing**
3 Credits
Offered As Demand Warrants
Equations for transient flow of single phase fluids through porous media, extension to sample multiphase flow, isolated and developed multi-well flow, conventional drawdown and buildup analysis, log-log type curve analysis, interference testing, fractured wells, pulse tests, and drill stem tests.
**Prerequisites:** PETE F476; PETE F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F662 Enhanced Oil Recovery**
3 Credits
Offered As Demand Warrants
Secondary and tertiary oil recovery processes, including waterflooding and chemical and thermal recovery methods.
**Prerequisites:** PETE F476 or PETE F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F663 Applied Reservoir Simulation**
3 Credits
Offered As Demand Warrants
Mathematical description of the reservoir, organization of reservoir simulation study, history matching and prediction for several published case studies of reservoir simulations.
**Prerequisites:** Reservoir Engineering course, such as PETE F476 or PETE F610.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F665 Advanced Phase Behavior**
3 Credits
Offered As Demand Warrants
The development and application of phase equilibrium simulators to predict fluid properties for reservoir fluids.
**Prerequisites:** PETE F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F666 Drilling Optimization**
3 Credits
Offered As Demand Warrants
Principles of drilling optimization: drilling cost analysis and control; rheological properties of drilling fluid for optimum hole cleaning; planning an optimum mud program for vertical, directional and horizontal wellbores; optimizing bit hydraulics. Use of software packages in optimized hydraulics.
**Prerequisites:** Graduate standing in engineering discipline.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F670 Fluid Flow Through Porous Media**
3 Credits
Offered As Demand Warrants
The study of transport phenomena in porous media and application to petroleum engineering.
**Prerequisites:** PETE F301; PETE F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F680 Horizontal Well Technology**
3 Credits
Offered As Demand Warrants
Review of the state of the art of horizontal well technology covering recent advances in drilling and completion of horizontal wells. Emphasis on field practices, reservoir engineering aspects including well testing and well performance estimation, application of horizontal wells to gas and water coning problems as well as enhanced oil recovery.
**Prerequisites:** PETE F426; PETE F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F683 Natural Gas Processing and Engineering**
3 Credits
Offered As Demand Warrants
Natural gas reservoir engineering and gas production practices. Transient flow of real gases, gas field development, gas well testing, transportation and gas storage reservoirs.
**Prerequisites:** PETE F431; PETE F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F685 Non-Newtonian Fluid Mechanics**
3 Credits
Offered As Demand Warrants
Characteristics of stress in fluids, flow models of non-Newtonian fluids (Bingham plastic fluids, fluids without yield stress), couette flow analysis of non-Newtonian fluids, surge and swab pressure models for plugged and open-end pipes.
**Prerequisites:** ES F341; PETE F426.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F687 Experimental and Data Analytics Methods in Petroleum Engineering**
3 Credits
Offered As Demand Warrants
Application of statistical methods to develop empirical models in petroleum engineering. Topics covered include dimensional analysis, fundamental statistical concepts, regression analysis, neural networks, time series analysis and analysis of factorial and fractional factorial designed experiments.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F689 Multiphase Fluid Flow in Pipes**
3 Credits
Offered As Demand Warrants
Multiphase flow in pipes, modeling of fluid flow of complex mixtures in pipes, empirical correlations developed in the literature, and calculation of pressure gradients and flow rates during the flow of multiphase fluids through vertical, inclined and horizontal pipes.
**Prerequisites:** ES F341; MATH F426 or ES F301; PETE F407.
**Lecture + Lab + Other:** 3 + 0 + 0

**PETE F692 Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PETE F692P Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PETE F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PETE F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Philosophy (PHIL)

**College of Liberal Arts**
Philosophy and Humanities Department (https://www.uaf.edu/philo/)
907-474-7007

**PHIL F102X Introduction to Philosophy** (h)
3 Credits
Offered Fall, Spring and Summer
Survey of philosophers and problems in the Western tradition beginning with the ancient Greeks (Plato, Aristotle) and continuing with medieval (Anselm, Augustine, Aquinas) and modern European thinkers (Descartes, Hume, Kant, Nietzsche). Themes and topics may vary.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F104X Logic and Reasoning** (h)
3 Credits
Offered Fall
Principles of deductive and inductive logic and application of the principles to critical thinking in logic and its application.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F108 Symbolic Logic** (h)
3 Credits
Offered Spring
This course provides a thorough and in-depth introduction into the structures that underlie critical, quantitative thinking. Students will learn the language, concepts, and system of formal first-order logic and natural deduction.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F110 Introduction to Political Philosophy** (h)
3 Credits
Offered Fall Odd-numbered Years
Introduction to historical and contemporary issues in political thought. Topics and themes vary, but include questions such as: Should we consent to be governed? What is civil society? What does it mean to be a citizen? What are the basic forms of government?
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F202 Introduction to Eastern Philosophy** (h)
3 Credits
Offered Spring Even-numbered Years
Basic assumptions, problems and systems of the major philosophical traditions of the Far East.
**Prerequisites:** PHIL F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F322X Ethics** (h)
3 Credits
Offered Fall, Spring and Summer
"Ethic,"--from the Greek "ethos" meaning character, custom, usage--is the study of value distinctions. Examination of the nature of value judgments--their historical origins and philosophical assumptions--and exploration of the application of value distinctions to contemporary social, religious and scientific/technical.
**Prerequisites:** Placement in WRTG F111X; junior standing.
**Recommended:** Two courses in the Perspectives on the Human Condition baccalaureate core.
**Attributes:** UAF GER Ethics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F341 Theories of Knowledge** (h)
3 Credits
Offered Fall Even-numbered Years
The nature of knowledge, truth and certainty.
**Prerequisites:** COJO F131X or COJO F141X; PHIL F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F342 Theories of Reality** (h)
3 Credits
Offered Spring Even-numbered Years
Theories of reality and their relationship to science, philosophy and religion.
**Prerequisites:** PHIL F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F351 History of Ancient Greek Philosophy** (h)
3 Credits
Offered Fall
Review of the philosophy of Plato and Aristotle; minor attention to Presocratics.
**Prerequisites:** PHIL F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F352 History of Modern Philosophy: Descartes to Kant** (h)
3 Credits
Offered Spring
Review of continental rationalist and British empiricist thought, 17th-19th centuries.
**Prerequisites:** PHIL F102X.
**Recommended:** PHIL F351.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F361 Philosophy in Literature** (h)
3 Credits
Offered As Demand Warrants
Examination of philosophical issues in literary works. Topics include the nature of free will, the effects of choice in building a character, the desirable (and undesirable) ways of confronting morality, and the nature of evil. Topics and readings vary.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F362 Feminist Philosophy** (h)
3 Credits
Offered As Demand Warrants
Examination of contemporary feminist philosophical positions. Emphasis on feminist ethics, social and political philosophy, and epistemology.
**Cross-listed with** WGS F362.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F363 Philosophy of Religion** (h)
3 Credits
Offered As Demand Warrants
Introduction to topics such as arguments for the existence and nature of God, the problem of evil, the relation of faith and reason, religious language and the connection of religion to the meaning of life.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Recommended:** PHIL F102X; upper-division status.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F402 Biomedical and Research Ethics** (h)
3 Credits
Offered Spring Odd-numbered Years
Issues in biomedical ethics. Topics will vary but include discussion of moral principles and problems of research ethics and medical ethics, such as: animal and human experimentation; data management; informed consent; therapeutic and non-therapeutic research; physician/patient relationship; autonomy; assisted reproductive technologies; euthanasia; organ transplantation; and allocation of scarce medical resources.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior or senior standing; a course in philosophy, science, or nursing.
**Cross-listed with** BIOL F402.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F411 Classical Political Theory** (h)
3 Credits
Offered As Demand Warrants
Political ideas from ancient Greece, Rome and the Judaeo-Christian tradition. Theories of Plato, Aristotle, Cicero, Augustine and Aquinas.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.
**Cross-listed with** PS F411.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F412 Modern Political Theory** (s)
3 Credits
Offered As Demand Warrants
Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx and Lenin.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.
**Cross-listed with** PS F412.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F414 Contemporary Political Philosophy**
3 Credits
Offered As Demand Warrants
This course takes stock of recent currents in contemporary political thought, including readings from Carl Schmitt, Hannah Arendt, Frantz Fanon, John Rawls, Leo Strauss, Michel Foucault, and Theodor Adorno. We ask how these canonical thinkers influence feminist, environmental, postcolonial, anti-essentialist, democratic and post-human political theory today.
**Prerequisites:** PS F101X, upper division standing.
**Cross-listed with** PS F414.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F421 Aesthetics** (h)
3 Credits
Offered As Demand Warrants
The nature of aesthetic experience in poetry, music, painting, sculpture, architecture and other arts; studies in relation to artistic production and the role of art in society.
**Prerequisites:** Junior/senior standing.
**Recommended:** PHIL F102X or HUM F201X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F436 Ethical Theory** (h)
3 Credits
Offered As Demand Warrants
Major ethical theories. Includes virtue theory, social contract theory, deontology and utilitarianism with major arguments for and against.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F471 Contemporary Philosophical Problems** (h)
3 Credits
Offered Fall Even-numbered Years
Ideological issues facing the modern world.
**Prerequisites:** PHIL F351; PHIL F352.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F472 Ethics in International Affairs** (h)
3 Credits
Offered Spring Odd-numbered Years
Examination of questions including: What is in the interest of the nation-state according to the logic of statecraft? How does the national interest relate to broader human interest? How does morality relate to the international legal order? Examination is through theory and case studies.
**Prerequisites:** PHIL F322X or PS F221X.
**Cross-listed with** PS F472.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F481 Philosophy of Science** (h)
3 Credits
Offered Spring Even-numbered Years
Comparison and discussion of various contemporary methodological positions.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F487 Conceptual Issues in Evolutionary Biology**
3 Credits
Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change, followed by consideration of the practical implications these models have on the study of biological phenomena in general.
**Cross-listed with** BIOL F487.
**Stacked with** BIOL F687; PHIL F687.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHIL F499 B.A. Thesis in Philosophy** (h)
3 Credits
Offered As Demand Warrants
Writing the senior thesis in philosophy.
**Prerequisites:** WRTG F111X; WRTG F211X or WRTG F213X.
**Lecture + Lab + Other:** 1 + 2 + 0

**PHIL F687 Conceptual Issues in Evolutionary Biology**
3 Credits
Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change followed by consideration of the practical implications these models have on the study of biological phenomena in general.
**Cross-listed with** BIOL F687.
**Stacked with** BIOL F487; PHIL F487.
**Lecture + Lab + Other:** 3 + 0 + 0

# Physics (PHYS)

**College of Natural Science and Mathematics**
Department of Physics (https://www.uaf.edu/physics/)
907-474-7339

**PHYS F102X Energy and Society** (n)
4 Credits
Offered Spring
Exploring the concept of energy. Investigation of the sources, conversion, distribution and ultimate dispersion of energy, as well as the consequences of its use in the development and maintenance of modern society. May be used to fulfill part of the natural science requirement. Designed for non-science majors.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F115L PHYS F115X Laboratory**
0 Credit
**Co-requisites:** PHYS F115X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F115X Physical Sciences** (n)
4 Credits
Offered Spring
Basic concepts and general overview in physics. Presents interrelatedness and interdependence within this scientific field.
**Prerequisites:** Placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** PHYS F115L.
**Recommended:** MATH F105.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F123L PHYS F123X Laboratory**
0 Credit
**Co-requisites:** PHYS F123X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F123X College Physics I** (n)
4 Credits
Offered Fall
Algebra-based introduction to classical physics, including: kinematics, Newton's laws, momentum, work, energy, gravity, rotational motion, fluids, heat, temperature, laws of thermodynamics. The laboratory part is integrated in the course.
**Prerequisites:** High school algebra, trigonometry and geometry; placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** PHYS F123L.
**Special Notes:** Additional topics include oscillations and waves.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F124L PHYS F124X Laboratory**
0 Credit
**Co-requisites:** PHYS F124X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F124X College Physics II** (n)
4 Credits
Offered Spring
Algebra-based introduction to classical physics, including: Coulomb's law, electrical potential, electric circuits, capacitance, Kirchhoff's laws, magnetic fields, Faraday's law, electromagnetic waves, physical and geometric optics, waves and particles. The laboratory part is integrated in the course.
**Prerequisites:** PHYS F123X; placement in WRTG F111X; placement in MATH F105.
**Co-requisites:** PHYS F124L.
**Special Notes:** Additional topics include atomic and nuclear physics.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F165L PHYS F165X Laboratory**
0 Credit
**Co-requisites:** PHYS F165X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F165X Introduction to Astronomy** (n)
4 Credits
Offered Fall
Examination of the science of astronomy and its social consequences, with an emphasis on the interrelationships between astronomy and other sciences. Topics include astronomical concepts and tools, earth-based and satellite observation of light, the solar system, stellar astronomy and cosmology.
**Prerequisites:** Placement in WRTG F111X; placement MATH F105.
**Co-requisites:** PHYS F165L.
**Special Notes:** A laboratory part is integrated into the course.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F211L PHYS F211X Laboratory**
0 Credit
**Co-requisites:** PHYS F211X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F211X General Physics I** (n)
4 Credits
Offered Fall and Spring
Calculus-based introduction to classical mechanics, including: kinematics, Newton's laws, momentum, work, energy, gravity, rotational motion, oscillations, and fluids. The laboratory part is integrated into the course.
**Prerequisites:** Concurrent enrollment in MATH F252X; placement in WRTG F111X.
**Co-requisites:** PHYS F211L.
**Recommended:** One year of high school physics.
**Special Notes:** Additional topics include waves.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F212L PHYS F212X Laboratory**
0 Credit
**Co-requisites:** PHYS F212X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F212X General Physics II** (n)
4 Credits
Offered Fall and Spring
Calculus-based introduction to classical physics, including: Coulomb's law, electrical potential, electric circuits, capacitance, Kirchhoff's laws, Biot-Savart law, Faraday's law, and electromagnetic waves. Additional topics include thermodynamics. The laboratory part is integrated into the course.
**Prerequisites:** Concurrent enrollment in MATH F253X; PHYS F211X or ES F208 or concurrent enrollment in ES F210; placement in WRTG F111X.
**Co-requisites:** PHYS F212L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F213L PHYS F213X Laboratory**
0 Credit
**Co-requisites:** PHYS F213X.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F213X Elementary Modern Physics** (n)
4 Credits
Offered Fall
Geometrical and physical optics, elementary-level modern physics including special relativity, atomic physics, nuclear physics, solid-state physics, elementary particles, simple transport theory, kinetic theory and concepts of wave mechanics.
**Prerequisites:** Placement in WRTG F111X; MATH F252X; MATH F253X; PHYS F211X; PHYS F212X.
**Co-requisites:** PHYS F213L.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F220 Introduction to Computational Physics** (n)
4 Credits
Offered Spring
Introduction to computational techniques for solving physics problems. The computer is used as a tool to provide insight into physical systems and their behavior in all areas of physics.
**Prerequisites:** MATH F253X; PHYS F211X; PHYS F212X; PHYS F213X.
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F301 Introduction to Mathematical Physics**
4 Credits
Offered Spring
Introduction to theoretical foundations of classical and modern physics. Includes calculus of vector fields, linear algebra, elementary tensor theory, complex analysis, ordinary and partial differential equations, fourier analysis and probability. Physical applications include planetary motion, rotating bodies, damped and driven harmonic oscillator, wave equation, Schroedinger's equation and diffusive systems.
**Prerequisites:** PHYS F211X; PHYS F212X; PHYS F213X; MATH F253X.
**Lecture + Lab + Other:** 4 + 0 + 0

**PHYS F341 Classical Physics I: Particle Mechanics**
4 Credits
Offered Fall
Newtonian mechanics, conserved mechanical quantities, motion of systems of particles, rigid body statics and dynamics, moving and accelerated coordinate systems, rigid body rotations and Lagrangian mechanics.
**Prerequisites:** PHYS F211X; PHYS F212X; PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 4 + 0 + 0

**PHYS F342 Classical Physics II: Electricity and Magnetism**
4 Credits
Offered Spring
Statics and dynamics of electric and magnetic fields in vacuum and in the presence of materials. Lorentz force law. Maxwell's equations.
**Prerequisites:** PHYS F341.
**Lecture + Lab + Other:** 4 + 0 + 0

**PHYS F343 Classical Physics III: Vibration and Waves**
4 Credits
Offered Fall
Normal modes and small vibrations, continuum systems, wave mechanics, electromagnetic waves and radiation. Relativistic mechanics and electromagnetism.
**Prerequisites:** PHYS F342.
**Lecture + Lab + Other:** 4 + 0 + 0

**PHYS F351 Thermal Physics**
2 Credits
Offered Spring
Classical macroscopic thermodynamics; systems and states, equations of state, the first and second laws of thermodynamics and their consequences, entropy, enthalpy, Helmholtz and Gibbs functions, equilibrium, Maxwell's relations.
**Prerequisites:** PHYS F212X, PHYS F220, PHYS F301, PHYS F341.
**Lecture + Lab + Other:** 2 + 0 + 0

**PHYS F381 Physics Laboratory** (n)
3 Credits
Offered Fall
Laboratory experiments in classical and modern physics.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHYS F213X.
**Lecture + Lab + Other:** 1 + 6 + 0

**PHYS F382 Physics Laboratory** (n)
3 Credits
Offered As Demand Warrants
Laboratory experiments in classical and modern physics.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHYS F381.
**Lecture + Lab + Other:** 1 + 6 + 0

**PHYS F400 Capstone Project**
0 Credit
Offered Fall and Spring
Course to be taken during semester of initiating a capstone project. Project must include communication of study intent, methods, results, interpretation and conclusions. It may consist of undergraduate research, independent study with a faculty member, or participation in the international University Physics Competition. Course duration may exceed one semester.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F413 Atmospheric Radiation**
3 Credits
Offered Fall Odd-numbered Years
Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology.
**Prerequisites:** ATM F401 (may be taken concurrently).
**Cross-listed with** ATM F413.
**Stacked with** PHYS F613; ATM F613.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F421 Quantum Mechanics** (n)
4 Credits
Offered Fall
Schrodinger's equation, Born interpretation, operator formalism, measurement and projection, stationary states, one-dimensional systems, hydrogen atom, states of definite angular momentum, perturbation theory.
**Prerequisites:** PHYS F213X; PHYS F220; PHYS F301; PHYS F341.
**Lecture + Lab + Other:** 4 + 0 + 0

**PHYS F451 Statistical Physics**
2 Credits
Offered Spring
The canonical ensemble; maximizing entropy, the partition function and Helmholtz free energy, the harmonic oscillator, Einstein and Debye solids, classical systems and the ideal gas, diatomic molecules, equipartition theorem, the photon gas and the blackbody spectrum, the grand canonical ensemble, quantum statistics, Fermion and Boson systems.
**Prerequisites:** PHYS F342, F351, F421.
**Lecture + Lab + Other:** 2 + 0 + 0

**PHYS F462 Geometrical and Physical Optics** (n)
4 Credits
Offered Spring
Geometrical optics, interference and diffraction theory, nonlinear optics, Fourier optics, and coherent wave theory.
**Prerequisites:** PHYS F213X; PHYS F301.
**Lecture + Lab + Other:** 3 + 3 + 0

**PHYS F471A Advanced Topics in Physics I: Condensed Matter Physics I** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471B Advanced Topics in Physics I: Condensed Matter Physics II** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471C Advanced Topics in Physics I: Space and Auroral Physics** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471D Advanced Topics in Physics I: Nonlinear Dynamics** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471E Advanced Topics in Physics I: Biophysics** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471F Advanced Topics in Physics I: Nuclear and Particle Physics** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471G Advanced Topics in Physics I: General Relativity** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471H Advanced Topics in Physics I: Astrophysics** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471I Advanced Topics in Physics I: Topics in Modern Mathematical Physics** (n)
1 Credit
Offered As Demand Warrants
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471J Advanced Topics in Physics I: Order of Magnitude Physics**
1 Credit
Offered As Demand Warrants
By avoiding mathematical complexity, order-of-magnitude techniques increase our physical understanding and allow us to study difficult or intractable problems. Students will learn how to do so and apply these techniques to problems in fluid mechanics, biophysics, astrophysics, and/or other applications.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F471M Advanced Topics in Physics I: Machine Learning and Applications**
1 Credit
Offered As Demand Warrants
Introduction to machine learning and applications. 14-lecture, one-credit courses. Python knowledge is required for taking this class.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472A Advanced Topics in Physics II: Planetary Atmospheres** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472B Advanced Topics in Physics II: Fluid Dynamics** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472C Advanced Topics in Physics II: Plasma Physics** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472D Advanced Topics in Physics II: Hamiltonian Mechanics** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472E Advanced Topics in Physics II: Physics of Glaciers** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472F Advanced Topics in Physics II: Remote Sensing** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472G Advanced Topics in Physics II: Solar Physics** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472H Advanced Topics in Physics II: Advanced Laboratory** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472I Advanced Topics in Physics II: Spectroscopy** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472J Advanced Topics in Physics II: Cosmology** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472K Advanced Topics in Physics II: Quantum Computation** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472L Advanced Topics in Physics II: Covariant Kinematics/ Dynamics** (n)
1 Credit
Offered As Demand Warrants
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F472Z Advanced Topics in Physics II: Current Topics in Physics**
1 Credit
Offered As Demand Warrants
Advanced topics modules provide expanded exposure to modern subjects in physics. Three topics are offered each semester, providing breadth beyond the core subjects of the physics undergraduate curriculum. This course will present most current material from one particular topic in physics, to be determined at the time of the offering.
**Prerequisites:** PHYS F220; PHYS F301.
**Lecture + Lab + Other:** 1 + 0 + 0

**PHYS F488 Undergraduate Research**
1-3 Credits
Offered Fall, Spring and Summer
Advanced research topics from outside the usual undergraduate requirements.
**Prerequisites:** Permission of instructor.
**Recommended:** A substantial level of technical/scientific background.
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F605 Physics Teaching Seminar/Practicum**
1 Credit
Offered Fall and Spring
This course will give science graduate students both lectures and hands-on training in dealing with all aspects of teaching, focused on but not exclusive to the Teaching Assistant level. Course topics include teaching pedagogy, preparation strategies, student management, time management and learning assessment.
**Prerequisites:** Graduate standing in a science discipline.
**Lecture + Lab + Other:** 1 + 0 + 1

**PHYS F608 Core Skills for Computational Science**
3 Credits
Offered Fall
This course provides students of computational sciences, an introduction to the basic skills required to operate in the modern high performance computing (HPC) environment offered at the Arctic Regional Supercomputing Center (ARSC). Topics include an introduction to HPC, basic Unix/batch/scripting skills, performance programming, shared and distributed memory parallelism, code validation and debugging, data storage and management and data visualization. Each of these topics will be presented in lecture form. To provide additional applied knowledge, either a thorough case study by a guest speaker and/or a hands-on lab session will be given in support of each.
**Prerequisites:** Graduate standing in physical sciences, experience with FORTAN or C programming language.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F611 Mathematical Physics I**
3 Credits
Offered Fall
Mathematical tools and theory for classical and modern physics. Core topics: Linear algebra including eigenvalues, eigenvectors and inner products in finite dimensional spaces. Infinite series. Hilbert spaces and generalized functions. Complex analysis, including Laurent series and contour methods. Applications to problems arising in physics. Selected additional topics, which may include operator and spectral theory, groups, tensor fields, hypercomplex numbers.
**Prerequisites:** graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F612 Mathematical Physics II**
3 Credits
Offered Spring
Continuation of Mathematical Physics I; mathematical tools and theory for classical and modern physics. Core topics: classical solutions to the principal linear partial differential equations of electromagnetism, classical and quantum mechanics. Boundary value problems and Sturm-Liouville theory. Green's functions and eigenfunction expansions. Integral transforms. Orthogonal polynomials and special functions. Applications to problems arising in physics. Selected additional topics, which may include integral equations and Hilbert-Schmidt theory, perturbation methods, probability theory.
**Prerequisites:** PHYS F611.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F613 Atmospheric Radiation**
3 Credits
Offered Fall Odd-numbered Years
Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology.
**Prerequisites:** ATM F601 (may be taken concurrently); graduate standing.
**Cross-listed with** ATM F613.
**Stacked with** PHYS F413; ATM F413.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F614 Ice Physics**
3 Credits
Offered Spring Even-numbered Years
A survey of the physics of ice. Topics will include the crystal structure and properties of ice, high pressure phases, hydrogen bonding, mechanical, thermal, electrical and acoustic properties, nucleation and growth, and optical and surface properties (adhesion, friction).
**Prerequisites:** Graduate standing.
**Cross-listed with** GEOS F614.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F621 Classical Mechanics**
3 Credits
Offered Fall Odd-numbered Years
Lagrange's equations, two-body problem, rigid body motion, special relativity, canonical equations, transformation theory, and Hamilton-Jacobi method.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F622 Statistical Mechanics**
3 Credits
Offered Spring Even-numbered Years
Classical and quantum statistics of independent particles, ensemble theory and applications.
**Prerequisites:** PHYS F621; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F625 Inverse Problems and Parameter Estimation**
3 Credits
Offered Spring Even-numbered Years
An inverse problem uses observations to infer properties of an unknown physical model. This course covers methods for solving inverse problems, including numerous examples arising in the natural sciences. Topics include linear regression, method of least squares, estimation of uncertainties, iterative optimization, and probabilistic (Bayesian) and sampling approaches.
**Prerequisites:** MATH F253X; MATH F314.
**Cross-listed with** GEOS F627.
**Stacked with** PHYS F625.
**Lecture + Lab + Other:** 2 + 3 + 0

**PHYS F626 Fundamentals of Plasma Physics**
3 Credits
Offered Fall
Single charge particle motion in the electromagnetic fields, plasma kinetic theory, Vlasov equations for collisionless plasmas, magnetohydrodynamic equations, linear plasma waves and instabilities, nonlinear plasma waves and instabilities.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F627 Advanced Plasma Physics**
3 Credits
Vlasov description of small amplitude waves in magnetized plasmas, advanced particle orbit theory, fluctuation and incoherent scattering theory, plasma discontinuities and collisionless shocks, weak turbulent theory, statistical theory of turbulence.
**Prerequisites:** PHYS F626; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F628 Digital Time Series Analysis**
3 Credits
Offered Spring Even-numbered Years
Applied time series analysis, including correlation, convolution, filtering and spectral estimation of multivariate data. The statistical properties of estimators; signal detection; and array processing.
**Prerequisites:** experience in programming; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F629 Methods of Numerical Simulation in Fluids and Plasma**
3 Credits
Offered Spring Odd-numbered Years
The fundamentals of computer simulation for fluids and multi-particle systems. Topics include methods for the discretization of numerical solutions, and boundary and initial conditions. Methods will be applied to convection, diffusion, and steady states in fluids and plasmas.
**Prerequisites:** Experience in programming; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F631 Electromagnetic Theory**
3 Credits
Offered Fall Even-numbered Years
Electrostatics, magnetostatics, Maxwell's equations, and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation and tensor formulations.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F632 Electromagnetic Theory**
3 Credits
Offered Spring Odd-numbered Years
Electrostatics, magnetostatics, Maxwell's equations and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation and tensor formulations.
**Prerequisites:** PHYS F631; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F639 InSar and Its Applications**
3 Credits
Offered As Demand Warrants
Introduction to the concepts of repeat-pass spaceborne SAR interferometry. Practical use of the technique to derive displacements of the solid earth, glaciers and ice sheets to a precision of a few centimeters and accurate digital elevation models of the Earth's surface.
**Prerequisites:** Basic remote sensing course.
**Cross-listed with** GEOS F639.
**Lecture + Lab + Other:** 2 + 2 + 0

**PHYS F640 Auroral Physics**
3 Credits
Offered Spring Odd-numbered Years
Survey of aurora phenomena, the associated physical processes, and techniques used to investigate the aurora. Includes electron and proton impact spectra; physical processes that accelerate and precipitate electrons and protons; auroral currents; ionospheric effects of auroral activity; and principles for ground-based satellite spectroscopy and imaging and the measurements of magnetic and electric fields.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F647 Fundamentals of Geophysical Fluid Dynamics**
3 Credits
Offered Fall Odd-numbered Years
Introduction to the mechanics of fluid systems, the fundamental processes, Navier-Stokes' equations in rotating and stratified fluids, kinematics, conservation laws, vortex motion, irrotational flow, laminar flow, boundary layer phenomena, waves, instabilities, turbulent flows and mixing.
**Prerequisites:** Graduate standing.
**Cross-listed with** ATM F647.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F648 Nonlinear Dynamics**
3 Credits
Offered Spring Even-numbered Years
Introduction into the dynamics of nonlinear systems. Continuous and discrete dynamical systems, stability analysis, bifurcations, limit cycle, chaos and strange attractors, fractals and dimension algorithms, controlling chaos, synchronization processes, and stochastic dynamical systems.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F650 Aeronomy**
3 Credits
Offered Fall Even-numbered Years
The physical and chemical processes that govern the response of planetary atmospheres to solar radiation and energetic particles. Formation of and characteristic processes in the layers within the ionosphere and basic magneto-ionic theory. Includes principles of remote sensing by lidar and radar techniques.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F651 Quantum Mechanics**
3 Credits
Offered Fall Even-numbered Years
Schrodinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum statistical mechanics, and applications of quantum mechanics to collision problems, radiation and spectroscopy.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F652 Quantum Mechanics**
3 Credits
Offered Spring Odd-numbered Years
Schrodinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum statistical mechanics, and applications of quantum mechanics to collision problems, radiation and spectroscopy.
**Prerequisites:** PHYS F651; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F672 Magnetospheric Physics**
3 Credits
Offered Spring Even-numbered Years
The physics and dynamics of Earth's magnetosphere. Discusses the magnetosphere as a test bed for microscopic plasma processes equilibrium configurations, plasma instabilities, highly nonlinear eruptive plasma processes, and global dynamics which involve the interaction of various regions of the magnetosphere. Introduction to various aspects of magnetospheric physics with a systematic discussion of the various elements of the magnetosphere, their structure and dynamics, and a discussion of the relevant plasma physics.
**Prerequisites:** PHYS F626; graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F673 Space Physics**
3 Credits
Offered Fall Odd-numbered Years
Plasma physics of the heliosphere from the solar core to the interstellar medium. Includes coronal structure, interplanetary magnetic field and solar wind, shocks, interactions with planets, planetary magnetospheres, cosmic rays, solar-terrestrial relations and instrumentation.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PHYS F692P Seminar**
1 Credit
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F698 Non-thesis Research/Project**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PHYS F699 Thesis**
1-12 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Political Science (PS)

**College of Liberal Arts**
Department of Political Science (https://www.uaf.edu/polisci/)
907-474-7609

**PS F100X Political Economy** (s)
3 Credits
Offered Fall and Spring
Evolution and operation of the American domestic political economy with consideration of market failures and government responses. Review of major issues in political economy such as inflation, poverty and budget deficits. Exploration of linkages between American and global systems.
**Prerequisites:** Placement in WRTG F111X.
**Attributes:** UAF Core Political Economy, UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F101X Introduction to American Government and Politics** (s)
3 Credits
Offered Fall, Spring and Summer
This is a broad survey course that exposes students to the key theories, methods and data used to describe and explain the U.S. political system. We examine the principles of governance, institutions and practices of American national government; the Constitution, federalism, interest groups, parties, public opinion and elections.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F201X Comparative Politics** (s)
3 Credits
Offered Fall
Introduction to the systematic study of government and politics in countries other than the U.S. Students will explore such questions as why some countries are democracies and other countries dictatorships; why some remain stable and peaceful, while others seem in constant turmoil. This is a prerequisite for other courses in comparative politics.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F202 Democracy and Global Society** (s)
3 Credits
Offered Spring
Examination of the various definitions and types of democracy and the global contexts within which they develop. Cases used draw from a wide range of states, societies and world-historical contexts, and allow comparisons among developed and developing countries.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F205 Leadership, Citizenship and Choice**
3 Credits
Offered Spring
History of democratic principles in America and how people can contribute to political and community life in the local, state and national arenas, as leaders and citizens. Examines ethical dilemmas of leadership, and political and social issues facing Alaska and American societies. Course includes an experiential learning component.
**Cross-listed with** ACNS F205.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F212 Introduction to Public Administration** (s)
3 Credits
Offered As Demand Warrants
Theories and practice of public administration, especially as applied to federal agencies. Study of organization, planning and decision making in implementing public policy.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F221X International Politics** (s)
3 Credits
Offered Fall
Introduction to the problems, literature, theory and terminology of international relations. Provides a basis for understanding current international events and introduces the three subfields of international relations: international security, international political economy and international organization. Examines relations between nations, regions and groups, as well as ideas of conflict, security, trade, technology, negotiation, cooperation, revolution, modernization and community.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F222 Political Science Research Methods** (s)
3 Credits
Offered Fall
Familiarizes students with the research methods that have been used to produce political knowledge about significant political phenomena. Includes both qualitative and quantitative research methods.
**Prerequisites:** PS F101X; must be completed before a student advances to senior standing in the discipline.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F263 Alaska Native Politics** (s)
3 Credits
Offered As Demand Warrants
This course addresses the political development, organization, interests and activities of Alaska Natives; treatment of ethnic leadership issues, history of federal Indian policy, evolution of Native leadership, village and regional government, land claims, and community politics from the Alaska Native brotherhood to ANCSA to the Alaska Native Coalition.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F300X Ethics and Society** (h)
3 Credits
Offered Fall, Spring and Summer
What is the right thing to do? A presentation of important theories of values, morality and ethics. Application of theories to dilemmas of choice in the public world, such as euthanasia, abortion, animal rights, sexual morality and environmental ethics.
**Prerequisites:** Placement in WRTG F111X; junior standing.
**Attributes:** UAF GER Ethics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F301 American Presidency** (s)
3 Credits
Offered Fall Even-numbered Years
The institution of the presidency in the American political system.
**Prerequisites:** PS F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F302 Congress and Public Policy** (s)
3 Credits
Offered As Demand Warrants
The American Congress in the political system.
**Prerequisites:** PS F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F303 Politics and the Judicial Process** (s)
3 Credits
Offered Fall Odd-numbered Years
The role of federal courts as political institutions. The politics of judicial selection, the nature of judicial decision-making and intracourt politics, litigations as a policy making device, changes in the nature and scope of judicial power, governmental attorneys, the legal bureaucracy, and judicial agenda setting.
**Prerequisites:** PS F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F304 International Security** (s)
3 Credits
Offered Fall Odd-numbered Years
Introduction to the major challenges of maintaining a peaceful and secure world. Considers the major threats to our security and how they are managed. Analyzes political, institutional, cultural, moral and legal norms surrounding war and other security concerns and different means of organizing for peace and security.
**Prerequisites:** PS F221X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F314 Political Ideologies** (s)
3 Credits
Offered As Demand Warrants
An examination of the purpose of ideology as an orienting set of political ideas with mass appeal. Analysis of 20th century ideologies, including anarchism, communism, liberalism, socialism, environmentalism and feminism.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F315 American Political Thought** (s)
3 Credits
Offered As Demand Warrants
Political ideas in the U.S. from colonial times to the present: Puritanism, revolutionary ideas, Constitutionalism, nature of the Union, Progressive movement and pragmatism.
**Prerequisites:** PS F101X.
**Recommended:** HIST F131; HIST F132X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F322 International Law and Organization** (s)
3 Credits
Offered As Demand Warrants
Case studies in international law (rights and duties of states, jurisdiction and sovereignty, treaties, use of force and adjudication processes); development of regional organizations and integration; the United Nations.
**Prerequisites:** COJO F131X or COJO F141X; PS F221X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F323 International Political Economy** (s)
3 Credits
Offered Spring Odd-numbered Years
Exploration of the manner in which political and economic forces interact to affect international flows of goods, money, investments and technology. International political economic relations are examined in several contexts.
**Prerequisites:** PS F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F325 Alaska Native and Comparative Tribal Self-Government** (an, s)
3 Credits
Offered Spring Odd-numbered Years
Indigenous political systems, customary law and justice in Alaska emphasizing the organization of Alaska Native governance under federal Indian law and Alaska state-chartered local government. Comparisons between Alaska Native political development and those of tribes in the contiguous 48 states and northern hemisphere tribal people.
**Prerequisites:** ANS F111X, PS F263, TG F201.
**Cross-listed with** ANS F325.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F340 Gender, Sex and Politics** (s)
3 Credits
Offered As Demand Warrants
In-depth examination of the relevance of gender in political thought and action. Topics vary and may include: an historical perspective of political ideas on the nature and status of women; women's involvement in national and/or international political movements and organizations; feminist approaches to the social sciences; feminism as a political ideology.
**Prerequisites:** One political science course.
**Recommended:** WGS F201X.
**Cross-listed with** WGS F340.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F401 Political Behavior** (s)
3 Credits
Offered As Demand Warrants
Attitudes, opinions and beliefs of the American electorate and the impact of these factors on political behavior; role of political organizations (parties and interest groups) in modern American politics.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F403 Public Policy** (s)
3 Credits
Offered As Demand Warrants
The processes of policy development, implementation and change are analyzed with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students develop expertise in specific policy area, completing oral presentations related their policy interests.
**Prerequisites:** PS F101X, upper division standing.
**Stacked with** PS F603; ACNS F603.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F411 Classical Political Theory** (h)
3 Credits
Offered As Demand Warrants
Political ideas from ancient Greece, Rome and the Judaeo-Christian tradition. Theories of Plato, Aristotle, Cicero, Augustine and Aquinas.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.
**Cross-listed with** PHIL F411.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F412 Modern Political Theory** (s)
3 Credits
Offered As Demand Warrants
Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx and Lenin.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PHIL F102X; PS F101X.
**Cross-listed with** PHIL F412.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F414 Contemporary Political Philosophy**
3 Credits
Offered As Demand Warrants
This course takes stock of recent currents in contemporary political thought, including readings from Carl Schmitt, Hannah Arendt, Frantz Fanon, John Rawls, Leo Strauss, Michel Foucault, and Theodor Adorno. We ask how these canonical thinkers influence feminist, environmental, postcolonial, anti-essentialist, democratic and post-human political theory today.
**Prerequisites:** PS F101X, upper division standing.
**Cross-listed with** PHIL F414.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F425 Federal Indian Law and Alaska Natives** (an, s)
3 Credits
Offered Fall Odd-numbered Years
The special relationship between the federal government and Native Americans based on land transactions and recognition of tribal sovereignty. Federal Indian law and policy evolving from this relationship. Legal rights and status of Alaska Natives.
**Prerequisites:** PS F101X, TG F112, TG F201 or HIST F110X.
**Recommended:** PS F263.
**Cross-listed with** ANS F425.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F435 Constitutional Law I: Federalism** (s)
3 Credits
Offered Spring Even-numbered Years
Constitutional doctrines and historical evolution of federalism and the separation of powers in the United States. Emphasis on the court's role in arbitering intergovernmental and interbranch disputes, the constitutional status of the administrative bureaucracy, and the control of war power and foreign policy.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F436 Constitutional Law II: Civil Rights and Liberties** (s)
3 Credits
Offered Spring Odd-numbered Years
Origin and development of civil rights and civil liberties in the U.S. Emphasis on the social, political and philosophical justifications of rights as expressed in judicial decision and constitutional doctrine.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F101X.
**Recommended:** PS F303.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F437 United States Foreign Policy** (s)
3 Credits
Offered Spring Even-numbered Years
This course addresses U.S. foreign policy in the post-World War II, post-Cold War, and post-9/11 periods; the U.S. presence and influence in the world; the development, administration, institutions, instruments, and evaluation of U.S. foreign policy; and key people in U.S. foreign policy.
**Prerequisites:** PS F221X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F447 U.S. Environmental Politics** (s)
3 Credits
Offered Spring Even-numbered Years
U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth and other topics.
**Prerequisites:** Upper-division standing.
**Recommended:** PS F101X.
**Stacked with** ACNS F647; PS F647.
**Special Notes:** Course is also available online.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F450 Comparative Indigenous Rights and Policies** (s)
3 Credits
Offered Spring Odd-numbered Years
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination.
**Prerequisites:** Upper division standing.
**Cross-listed with** ANS F450.
**Stacked with** PS F650; ACNS F657.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F452 International Relations of the North** (s)
3 Credits
Offered As Demand Warrants
This course examines the international relations of Arctic states and topics related to the circumpolar north. It covers environmental changes and their effects on human security and Indigenous lives, energy exploration and development, northern security and emerging shipping routes. It also addresses national Arctic strategies and the Arctic Council.
**Prerequisites:** Upper-division standing.
**Stacked with** ACNS F652.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F454 International Law and the Environment** (s)
3 Credits
Offered As Demand Warrants
This course addresses international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment; and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment.
**Prerequisites:** Upper-division standing.
**Recommended:** Undergraduate course in international law, organization, or politics.
**Stacked with** ACNS F654; PS F654.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F455 Political Economy of the Global Environment** (s)
3 Credits
Offered Fall Even-numbered Years
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations and development assistance by organizations such as the World Bank.
**Prerequisites:** COJO F131X or COJO F141X; upper-division standing.
**Stacked with** ACNS F655; PS F655.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F456 Science, Technology and Politics** (s)
3 Credits
Offered As Demand Warrants
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of Western science. Both historical and comparative aspects are included. Course is also available online.
**Prerequisites:** COJO F131X or COJO F141X; upper-division standing.
**Recommended:** PS F101X.
**Stacked with** ACNS F656; PS F656.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F458 Comparative Environmental Politics** (s)
3 Credits
Offered Fall Odd-numbered Years
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution capacity, political processes and organizations, and international commitments all potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online.
**Prerequisites:** Upper-division standing.
**Recommended:** PS F201X.
**Stacked with** ACNS F658; PS F658.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F460 Government and Politics of Canada** (s)
3 Credits
Offered As Demand Warrants
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations).
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F201X; upper-division standing.
**Stacked with** ACNS F660; PS F660.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F462 Alaska Government and Politics** (s)
3 Credits
Offered Spring Odd-numbered Years
This course examines Alaska's government and politics, as a case of American state and local government, and governance in the circumpolar North. It covers topics such as the state's political history, constitution, political parties, interest groups, elections, governorship, legislature, judiciary, bureaucracy and local governments.
**Prerequisites:** Upper-division standing.
**Stacked with** ACNS F662; PS F662.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F464 East Asian Governments and Politics** (s)
3 Credits
Offered As Demand Warrants
Modern East Asia (including China, Taiwan, Japan, North and South Korea) politics and society, including governmental institutions, political processes and regional and global foreign relations.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F201X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F466 African Politics** (s)
3 Credits
Offered As Demand Warrants
This course provides students with an introduction to contemporary African politics. In doing so, this class addresses a number of core interrelated themes related to politics across the African continent including: state-building, political order and violence, democratization, economic development and African's evolving relationship with the international system.
**Prerequisites:** PS F100X, PS F201X, PS F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F467 Political Development in Latin America and the Caribbean** (s)
3 Credits
Offered As Demand Warrants
Exploration of major issues and concepts in development and governances of modern Latin America and the Caribbean region, including legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of region and cases drawn from the Caribbean, Mexico, Central and South America.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F275.
**Cross-listed with** HIST F467.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F468 Government and Politics of Russia** (s)
3 Credits
Offered As Demand Warrants
This course examines the history, politics, economics and geography of Russia, with focus on changes in Russian government, society, and domestic and foreign policy over time. Students will learn the nature of the evolving Russian regime, leadership, economic forces and the political struggles in governance and democracy.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PS F201X.
**Stacked with** ACNS F668; PS F668.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F469 Arctic Politics and Governance**
3 Credits
Offered Fall
This course traces current developments in Arctic politics and governance from multiple perspectives, including exploring interests, processes, and behaviors of Arctic governments and non-state actors, individually and collectively. The course surveys the formal and informal institutions that govern resource development, pollution, shipping, state-indigenous relations and security.
**Prerequisites:** Junior-level standing.
**Recommended:** PS F221X; PS F450 or ANS F450.
**Stacked with** PS F669, ACNS F669.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F472 Ethics in International Affairs** (h)
3 Credits
Offered Spring Odd-numbered Years
Examination of questions including: What is in the interest of the nation-state according to the logic of statecraft? How does the national interest relate to broader human interest? How does morality relate to the international legal order? Examination is through theory and case studies.
**Prerequisites:** PHIL F322X or PS F221X.
**Cross-listed with** PHIL F472.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F473 Politics and Film** (s)
3 Credits
Offered As Demand Warrants
Engage film with a critical political perspective. Concepts related to political power, society, and nature are surveyed through political science literature and politics-themed films. Quests for political power, difficulties of governance, politics of campaigns and elections, privacy and government surveillance, and political violence are concepts explored in this course.
**Prerequisites:** PS F101X.
**Cross-listed with** FLPA F473.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F475 Internship in Public Affairs** (s)
3 Credits
Offered Fall, Spring and Summer
Study of public agencies or organizations through actual experience. May be repeated for credit for a maximum of 12 credits.
**Prerequisites:** Upper-division standing and permission of instructor.
**Lecture + Lab + Other:** 0 + 0 + 10

**PS F499 Senior Thesis**
3 Credits
Thesis will draw from the literature in at least two sub-fields of political science (U.S. government/politics, political theory, public law, comparative politics, international relations) in its analysis.
**Prerequisites:** WRTG F111X; WRTG F211X or WRTG F213X; PS F101X; PS F222; senior standing; permission of instructor.
**Lecture + Lab + Other:** 1.5 + 0 + 7.5

**PS F603 Public Policy**
3 Credits
Offered As Demand Warrants
The processes of policy development, implementation and change are analyzed with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students develop expertise in specific policy area, completing oral presentations related their policy interests.
**Prerequisites:** Graduate Standing.
**Cross-listed with** ACNS F603.
**Stacked with** PS F403.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F647 U.S. Environmental Politics**
3 Credits
Offered Spring Even-numbered Years
U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth and other topics.
**Prerequisites:** Graduate Standing.
**Cross-listed with** ACNS F647.
**Stacked with:** PS F447.
**Special Notes:** Course is also available online.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F650 Comparative Indigenous Rights and Policies**
3 Credits
Offered Spring Odd-numbered Years
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination.
**Prerequisites:** Graduate Standing.
**Cross-listed with** ACNS F657.
**Stacked with** PS F450; ANS F450.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F652 International Relations of the North**
3 Credits
Offered As Demand Warrants
This course examines the international relations of Arctic states and topics related to the circumpolar north. It covers environmental changes and their effects on human security and Indigenous lives, energy exploration and development, northern security and emerging shipping routes. It also addresses national Arctic strategies and the Arctic Council.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F652.
**Stacked with** PS F452.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F654 International Law and the Environment**
3 Credits
Offered As Demand Warrants
This course addresses international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment; and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment.
**Prerequisites:** Graduate standing.
**Recommended:** Undergraduate course in international law, organization or politics.
**Cross-listed with** ACNS F654.
**Stacked with** PS F454.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F655 Political Economy of the Global Environment**
3 Credits
Offered Fall Even-numbered Years
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations and development assistance by organizations such as the World Bank.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F655.
**Stacked with** PS F455.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F656 Science, Technology and Politics**
3 Credits
Offered As Demand Warrants
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of Western science. Both historical and comparative aspects are included. Course is also available online.
**Prerequisites:** Graduate standing.
**Recommended:** PS F101X.
**Cross-listed with** ACNS F656.
**Stacked with** PS F456.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F658 Comparative Environmental Politics**
3 Credits
Offered Fall Odd-numbered Years
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution capacity, political processes and organizations, and international commitments all potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online.
**Prerequisites:** Graduate standing.
**Recommended:** PS F201X.
**Cross-listed with** ACNS F658.
**Stacked with** PS F458.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F660 Government and Politics of Canada**
3 Credits
Offered As Demand Warrants
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations).
**Prerequisites:** PS F201X; graduate standing.
**Cross-listed with** ACNS F660.
**Stacked with** PS F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F662 Alaska Government and Politics**
3 Credits
Offered Spring Odd-numbered Years
This course examines Alaska's government and politics, as a case of American state and local government, and governance in the circumpolar North. It covers topics such as the state's political history, constitution, political parties, interest groups, elections, governorship, legislature, judiciary, bureaucracy and local governments.
**Prerequisites:** Graduate standing.
**Cross-listed with** ACNS F662.
**Stacked with** PS F462.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F668 Government and Politics of Russia**
3 Credits
Offered As Demand Warrants
This course examines the history, politics, economics and geography of Russia, with focus on changes in Russian government, society, and domestic and foreign policy over time. Students will learn the nature of the evolving Russian regime, leadership, economic forces and the political struggles in governance and democracy.
**Prerequisites:** PS F201X; graduate standing.
**Cross-listed with** ACNS F668.
**Stacked with** PS F468.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F669 Arctic Politics and Governance**
3 Credits
Offered Fall
This course traces current developments in Arctic politics and governance from multiple perspectives, including exploring interests, processes, and behaviors of Arctic governments and non-state actors, individually and collectively. The course surveys the formal and informal institutions that govern resource development, pollution, shipping, state-indigenous relations and security. A background in comparative politics and/or international relations is also recommended.
**Prerequisites:** PS F450, PS F452 or PS F454; graduate standing.
**Cross-listed with** ACNS F669.
**Stacked with** PS F469.
**Lecture + Lab + Other:** 3 + 0 + 0

**PS F692 Graduate Seminar**
1-6 Credits
Offered As Demand Warrants
Intensive study of selected topics in the discipline.
**Lecture + Lab + Other:** 1-6 + 0 + 0

**PS F692P Graduate Seminar**
1-6 Credits
Offered As Demand Warrants
Intensive study of selected topics in the discipline.
**Lecture + Lab + Other:** 1-6 + 0 + 0

**PS F699 MA Thesis**
1-9 Credits
**Prerequisites:** Permission of instructor.
**Lecture + Lab + Other:** 0 + 0 + 0

# Process Technology (PRT)

**Community and Technical College**
Process Technology
907-455-2800

**PRT F101 Introduction to Process Technology**
3 Credits
Offered As Demand Warrants
Introduction to process operations in industry. Non-mathematical overview of general information, processes, procedures and equipment a process operator would be expected to know and use.
**Lecture + Lab + Other:** 3 + 0 + 0

**PRT F110 Introduction to Occupational Safety, Health and Environmental Awareness**
3 Credits
Offered As Demand Warrants
Overview of the field of safety, health and environment within the process industry. Covers plant hazards, safety, and environmental systems and equipment, and applicable government regulations and industry standards.
**Lecture + Lab + Other:** 3 + 0 + 0

**PRT F117 Drafting for Technicians**
3 Credits
Offered As Demand Warrants
Skills and techniques needed to produce process piping and instrumentation drawings.
**Lecture + Lab + Other:** 2 + 2 + 0

**PRT F120 Water Quality Management for Process Industries**
4 Credits
Offered As Demand Warrants
Overview of the chemistry, biology, hydraulics and hydrology related to water management in industries. Water distribution systems, water processing, operation of water works, wastewater processing, advanced wastewater treatment and water reuse.
**Lecture + Lab + Other:** 3 + 3 + 0

**PRT F130 Process Technology I: Equipment**
4 Credits
Offered As Demand Warrants
Selected process equipment including rotating machinery and process units. Emphasis on equipment components, construction, preventative maintenance and safety. Includes hands-on experience.
**Prerequisites:** PRT F101.
**Lecture + Lab + Other:** 3 + 2 + 0

**PRT F135 Stationary Equipment**
4 Credits
Offered As Demand Warrants
A detailed hands-on lecture/lab course covering stationary equipment used in a variety of process industries. Piping, valves, vessels, tanks, exchangers, heaters, boilers, mineral processing, mill equipment and distillation equipment are covered.
**Lecture + Lab + Other:** 3 + 2 + 0

**PRT F140 Industrial Process Instrumentation I**
3 Credits
Offered As Demand Warrants
Physics of pressure, temperature, level and flow measurement; mechanical and electrical aspects of instruments used to control dynamics of processes. Dynamics of automatic control including proportional control, automatic reset, derivative action and integral timing.
**Prerequisites:** MATH F105.
**Lecture + Lab + Other:** 2 + 2 + 0

**PRT F144 Industrial Process Instrumentation II**
3 Credits
Offered As Demand Warrants
Continuation of PRT F140. Emphasis on repair, maintenance and calibration, including hands-on physical training on a wide variety of process instruments.
**Prerequisites:** PRT F140.
**Lecture + Lab + Other:** 2 + 2 + 0

**PRT F160 Oil and Gas Exploration and Production I**
3 Credits
Offered As Demand Warrants
Surveys oil and gas exploration and production issues including marketing, geology, reservoir economics, legal aspects of resource ownership, drilling and production technologies, product separation, safety and environmental issues. Course may not be audited.
**Prerequisites:** Must be enrolled in the PRT program or permission of Program Chair.
**Lecture + Lab + Other:** 3 + 0 + 0

**PRT F230 Process Technology II: Systems**
4 Credits
Offered As Demand Warrants
Integration of equipment concepts to show how the individual components interact as part of a system and how each system works within an entire processing facility. Emphasis on the common systems found in each Alaska process industry. Systems topics include upstream oil and gas productions, petrochemicals and refinery processes, refrigeration, power generation, milling, boilers and heaters, coolers and heat exchangers.
**Prerequisites:** PRT F130.
**Lecture + Lab + Other:** 3 + 2 + 0

**PRT F231 Process Technology III: Operations**
4 Credits
Offered As Demand Warrants
Duties and responsibilities of the process operator on the job. Includes the details of normal operation, upset conditions, emergency action plans, startups, shutdowns, operating modes, turnarounds and routing maintenance activity.
**Prerequisites:** PRT F230.
**Lecture + Lab + Other:** 3 + 2 + 0

**PRT F240 Industrial Process Instrumentation III**
3 Credits
Offered As Demand Warrants
A study of digital and analog industrial measurement and control instrumentation, including continuous analog control loops, relay logic and programmable logic controllers. Emphasis is on commonly used process measurement devices, control methods and strategies, and the proper selection, identification, design, installation and operation of instrumentation.
**Prerequisites:** PRT F140; PRT F144.
**Recommended:** MATH F113X or higher.
**Lecture + Lab + Other:** 2 + 2 + 0

**PRT F248 Valve Maintenance and Instrumentation**
3 Credits
Offered As Demand Warrants
Covers maintenance and operation of gate, globe, ball, plug, check and special-purpose valves. Details of actuators and various accessories related to valve maintenance and control will be explained and related to valve selection based on application. Industrial process control valve maintenance and basic calibrations.
**Recommended:** PRT F130.
**Lecture + Lab + Other:** 3 + 1 + 0

**PRT F250 Process Troubleshooting**
3 Credits
Offered As Demand Warrants
Troubleshooting process operations and problems. Using indicators, variables and controllers along with a formalized process of troubleshooting. Troubleshooting examples will reflect current needs of industry.
**Prerequisites:** PRT F230.
**Lecture + Lab + Other:** 3 + 0 + 0

**PRT F255 Quality Concepts for the Process Industry**
1 Credit
Introduction to current quality concepts applied to role of process technician. Includes quality concepts with respect to the client and the role of statistical processes used by the operator in achieving quality.
**Lecture + Lab + Other:** 1 + 0 + 0

**PRT F275 Process Technology Internship**
1-9 Credits
Offered As Demand Warrants
Working experience in and exposure to various stages and settings within the process industry. Endorsed and promoted by Alaska Process Industry Careers Consortium, the internship is an intensive exposure to the various duties and responsibilities of the process operator in Alaska. A maximum of 9 credits may be earned.
**Prerequisites:** Permission of instructor.
**Recommended:** PRT F101, PRT F110, PRT F140.
**Lecture + Lab + Other:** 0 + 5-45 + 0

# Psychology (PSY)

**College of Liberal Arts**
Department of Psychology (https://www.uaf.edu/psych/)
907-474-7007

**PSY F101X Introduction to Psychology** (s)
3 Credits
Principles of general psychology emphasizing natural science and social science orientation. Cultural, environment, heredity and psychological basis for integrated behavior; visual, audition and the other senses; motivation and emotion; basic processes in learning, problem solving, and thinking; personality; psychological disorders -- their prevention and treatment, and therapeutic strategies.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F123X Sleepless in Alaska: Sleep, Health and You**
3 Credits
Offered Fall and Spring
Sleep is essential! Health and well-being are compromised greatly without adequate sleep. This broad survey course will explore factors that affect sleep quality, sleep disorders, sleep research, the biological mechanisms of sleep, the unique role of Arctic light conditions, how sleep influences daily life, and students' own sleep habits.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F240 Psychology of Development** (s)
3 Credits
Offered Fall and Spring
The psychology of human development from conception to death. Critical emphasis on theory and research within the field of developmental psychology with the role of culture as an influencing factor.
**Prerequisites:** PSY F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F245 Child Development** (s)
3 Credits
Offered Fall and Spring
A study of the physical, cultural, emotional, cognitive and social aspects of a child's development from prenatal period through early adolescence. Focus on developmental theories including Erickson, Gardner, Gilligan, Kagen, Sternberg, Vygotsky and other contemporary theories of child and adolescent development.
**Prerequisites:** WRTG F111X.
**Cross-listed with** ED F245.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F250 Introductory Statistics for Social Sciences**
3 Credits
Offered Fall and Spring
Statistics applied to social scientific topics. Includes descriptive statistics, frequency distributions, sampling distributions, elementary probability, estimation of population parameters, hypothesis testing (one and two sample problems), correlation, simple linear regression and one-way analysis of variance.
**Prerequisites:** MATH F113X, MATH F122X, MATH F151X, ALEKS score of 30 or higher; PSY F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F275 Introduction to Social Science Research Methods** (s)
3 Credits
Offered Fall and Spring
Introduction to research methods in psychology. Includes the scientific process, developing research ideas, experimental and non-experimental designs, sampling, surveys and data analysis.
**Prerequisites:** PSY F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F298 Undergraduate Research**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-6

**PSY F301 Culture and Psychology** (s)
3 Credits
Examines cultural influences on human thought behavior; interactions of culture and self; multicultural experiences and intercultural relations. Presents a survey of historic and contemporary psychological research and theory on culture with a consideration of unique methodological challenges presented by cross-cultural psychological research.
**Prerequisites:** PSY F101X; PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F304 Personality** (s)
3 Credits
Offered Spring Even-numbered Years
Psychological and social/cultural determinants of personality formation including appropriate theories in both areas.
**Prerequisites:** PSY F101X; PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F309 Psychology of Stress** (s)
3 Credits
Offered As Demand Warrants
This course examines major theories and research describing how stress affects human health and well-being. Students will examine psychological and biological models detailing the interactive nature of stress effects, and explore biological, psychological, social, emotional, and environmental influences of the stress response. Stress management techniques and applications will be investigated.
**Prerequisites:** PSY F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F315 Positive Psychology**
3 Credits
Offered As Demand Warrants
Positive psychology includes theoretical and practical applications of the psychological concepts and issues that prevent and enable human flourishing. This course specifically explores the well-being domains of positivity, engagement, relationships, meaning, achievement and vitality.
**Prerequisites:** PSY F101X; PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F318 Psychology of Play**
3 Credits
Offered As Demand Warrants
Examines the influence of play on human behavior throughout the lifespan. Students investigate why people play, play's relationship to mood and learning, effects of restricting play, and differences between adult and childhood play. This course supports understanding through critical inquiry of existing research, application and reflection.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F320 History and Systems of Psychology** (s)
3 Credits
Offered As Demand Warrants
The history of present psychology from associationism to humanism with attention to both the philosophical and physiological foundations of psychology, the most important theorists and movements, and paradigmatic shifts in the evolution of contemporary psychological systems.
**Prerequisites:** PSY F101X.
**Recommended:** previous or current enrollment in PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F330 Social Psychology** (s)
3 Credits
Offered Fall and Spring
Analysis of intergroup relationships in terms of process and value orientation, their influences on the personality, and aspects of collective behavior on group and person. Aspects of social interaction that have cultural and intercultural variation. Also available online via UAF eCampus.
**Prerequisites:** PSY F101X; PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F333 Human Sexualities Across Cultures** (s)
3 Credits
Offered Fall, Spring and Summer
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies and related fields, with particular focus determined by which department is offering the course.
**Prerequisites:** PSY F101X, WGS F201X.
**Recommended:** PSY F275.
**Cross-listed with** WGS F332.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F335 Brain and Behavior** (n)
3 Credits
Offered Alternate Fall Odd-numbered Years
Study of the biological bases of human behavior. Emphasis on functional anatomy of the nervous system to understand normal behavior and behavioral disorders in terms of their psychology, development, evolution and function. Meets one-half of core upper division oral communication intensive requirement.
**Prerequisites:** COJO F131X or COJO F141X; PSY F101X; PSY F275.
**Special Notes:** Recommended BIOL F112X or BIOL F116X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F337 Sport Psychology**
3 Credits
Offered As Demand Warrants
Theoretical and practical applications of psychological issues related to participation in physical activities, including exercise adherence, performance enhancement, group dynamics, leadership and coaching behaviors, arousal/anxiety, intervention strategies and lifespan participation.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F345 Abnormal Psychology** (s)
3 Credits
Offered Fall
A study of abnormal behavior, its causes, treatment and social impact. The major classifications of disorders are presented.
**Prerequisites:** PSY F101X.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F360 Psychology of Women Across Cultures** (s)
3 Credits
Offered As Demand Warrants
Major theories, research and empirical data which describes the psychology of women as a discrete field, philosophical values of feminism and history of women's roles in society. The impact of culture on women interpersonally and intrapsychically examined across cultures.
**Prerequisites:** COJO F131X or COJO F141X; PSY F101X or WGS F201X.
**Cross-listed with** WGS F360.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F365 Forensic Psychology** (s)
3 Credits
Offered As Demand Warrants
Forensic Psychology examines the relationship between psychology (application, theory, research) and the criminal justice system, through the role of the forensic psychologist.
**Prerequisites:** WRTG F111X; PSY F101X.
**Recommended:** PSY F275 or any undergraduate research methods course.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F370 Drugs and Behavior** (s)
3 Credits
Offered as Demand Warrants
Explores the effects of licit, illicit, therapeutic, and non-therapeutic drugs on behaviors, physiology, emotions, and thought processes. Includes introduction to factors impacting these effects, such as cultural, environmental, and societal influences. Topics covered also include alcoholism, law enforcement and legal aspects of drug use and abuse, drug education alternatives, and treatment and rehabilitation of drug users.
**Prerequisites:** PSY F101X.
**Recommended:** PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F390 Psychology of Work** (s)
3 Credits
Offered As Demand Warrants
Application of psychological principles, theories and methods to issues related to work processes and work organizations. Includes employee selection, motivation, performance appraisal, decision-making, group dynamics, power and leadership, job design, and organizational change and development.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F250; PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F392 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PSY F426 Environmental Psychology and Human Well-being** (s)
3 Credits
Offered As Demand Warrants
This course explores the effects of the environment on human behavior, health, and well-being. Critical evaluation of human interactions with nature and consideration of arctic environments are emphasized. Students will explore the unique relationships between humans and nature while examining the role of nature on health, mental health, and behavior.
**Prerequisites:** PSY F101X; WRTG F111X; WRTG F211X, WRTG F213X.
**Crosslisted with** ACNS F426.
**Stacked with** PSY F626; ACNS F626.
**Special Notes:** Research Methods such as PSY F275 is recommended prior to taking this course.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F430 Rural and Alaska Native Psychology** (an)
3 Credits
Offered As Demand Warrants
Introduces rural psychology, including diversity of rural communities, with emphasis on Alaska Native populations and the rural circumpolar North. Introduces rural research collaborations, health promotion, prevention and behavioral health, including cultural and contextual considerations affecting research and services, and the significance of Alaska Native values, knowledge and ways of life.
**Prerequisites:** PSY F101X, SOC F101X, ANTH F100X; PSY F275, (may be taken concurrently), PS F222, JUST F222, SWK F375 (may be taken concurrently).
**Stacked with** ACNS F630.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F440 Learning and Cognition** (s)
3 Credits
Offered Spring Odd-numbered Years
Theory and research on the fundamentals of learning. Topics include information processing, attention and consciousness, learning processes, memory structures, retrieval, and the biological and cultural considerations relevant to each.
**Prerequisites:** PSY F101X; PSY F275; nine credits of psychology courses with a grade of C- or higher.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F445 Community Psychology** (s)
3 Credits
Offered Fall
Survey of principles and applications of community psychology, emphasizing person-environment interactions and societal and cultural impacts upon individual and community functioning. Attention given to interventions which facilitate psychological competence and empowerment, prevent disorder, and promote social change.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F275; 9 credits of psychology courses with a grade of C- or higher.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F448 Understanding FASD: Diagnosis, Intervention and Strategies**
3 Credits
Offered Spring and Summer
This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting.
**Cross-listed with** EDSE F448.
**Stacked with** PSY F648; EDSE F648.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F450 Comparative Psychology** (n, s)
3 Credits
Offered As Demand Warrants
This course presents an integrated multidisciplinary exploration of animal behavior, cognition, and emotion presented from perspectives in psychology, ethology, and biology. It includes topics such as adaption, play, social behaviors, learning, intelligence, and emotions in a variety of species.
**Prerequisites:** PSY F101X and PSY F275.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F455 Clinical Psychology**
3 Credits
Offered As Demand Warrants
Survey course in clinical psychology. Clinical psychologists specialize in mental and behavioral healthcare, as well as consulting, training, education, supervision, and research. This course explores several common therapy approaches. It addresses ethics in clinical practice, cross-cultural counseling, and issues in psychological assessment and treatment. Basic psychotherapy skills are explored experientially.
**Prerequisites:** Nine credit hours of PSY courses to include PSY F101X and PSY F345.
**Lecture + Lab + Other:** 2 + 3 + 0

**PSY F469 Health Psychology**
3 Credits
Offered Fall
Scientific study of behaviors relating to health enhancement, disease and injury prevention, safety and rehabilitation. While mental health is included, the emphasis is on physical health.
**Prerequisites:** PSY F101X; PSY F275; and junior standing.
**Stacked with** PSY F669.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F470 Sensation and Perception** (s)
3 Credits
Offered As Demand Warrants
An integrated psychological and physiological approach to sensation, including the fundamental mechanisms of vision, hearing, taste, smell and movement. Emphasis will include theoretical models and systems of perception, and how they are influenced by cultural, developmental, hereditary, physiological, psychological and social factors. Meets core upper division writing/oral intensive requirements.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; nine credit hours of PSY courses (which must include PSY F101X and PSY F275).
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F475 Research Design and Analysis in Psychology** (s)
3 Credits
Offered As Demand Warrants
An integrated approach to the study of research design and analysis in psychology. Emphasis on research methodologies and techniques. Design, execution and analysis of social science research.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; PSY F101X; PSY F250 or STAT F200X; PSY F275.
**Lecture + Lab + Other:** 2 + 3 + 0

**PSY F480 Qualitative Social Science Research** (s)
3 Credits
Offered Spring
Introduction to classical and contemporary research within the qualitative (or interpretive) paradigm of social science. Discusses the theoretical frameworks, historical traditions, epistemological and ethical issues of qualitative approaches. Uses hands-on experience in the practicalities and excitement of a variety of methods for gathering qualitative data and conducting qualitative analysis.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; one lower-division social science research methods course.
**Cross-listed with** SOC F480.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F485 Senior Seminar** (s)
3 Credits
Offered Spring
Synthesis and integration of knowledge and skills developed by psychology majors. Includes a general knowledge of psychology, a basic knowledge of the research process and methods, insights into the way culture, gender, ethnicity, social class, and other diversity issues influence research and practice in psychology.
**Prerequisites:** PSY F275; Psychology major with senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F488 Practicum in Psychology**
1-6 Credits
Individual practice and training to work in a setting or experience the work of a psychologist. Faculty supervision on campus or on site. Requires 50 clock hours per credit hour. Placement must be arranged during the prior semester before registering for this course.
**Prerequisites:** PSY F101X; psychology major with junior or senior standing; with minimum 12 credits of psychology.
**Recommended:** PSY F275.
**Lecture + Lab + Other:** 1 + 0 + 0

**PSY F492 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PSY F498 Research**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PSY F499 Thesis**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PSY F603 Alaska and Rural Psychology**
3 Credits
Offered Spring
Introduces rural community psychology, including the diversity of rural communities, with emphasis on Alaska and the rural circumpolar North. Provides an introduction to rural health promotion, prevention and behavioral health care, and a basis for understanding many of the issues of services planning and delivery in rural areas.
**Prerequisites:** PSY F632; graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F605 History and Systems of Psychology**
1 Credit
Offered Fall
A brief philosophically oriented overview of the history of psychology. Compares Western psychology in the 19th and 20th centuries and selected indigenous psychologies of Asia and North America. Special attention is given to systems of thought that have emerged since the founding of psychology as an empirical science. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 1 + 0 + 0

**PSY F606 Indigenous Ways of Healing**
3 Credits
Offered As Demand Warrants
Explores healing from a variety of Indigenous perspectives, particularly from an Alaska Native perspective. Emphasizes the preparation and education of healers, their roles and work and integration within the community. Students will have the opportunity to examine the possible integration of clinical and community psychology with indigenous approaches to healing.
**Prerequisites:** Graduate standing in Psychology.
**Crosslisted with** CCS F606.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F607 Cognition, Affect and Culture**
3 Credits
Offered Spring
Presents an overview of attention, memory, appraisal and emotion with applications to clinical psychology in a cultural context. Cultural influences on emotional experience and cognition are explored. The etiology and treatment of psychological disorders with significant cognitive and affective disturbance are explored. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F611 Ethics and Professional Practice**
3 Credits
Offered Spring
Comprehensive overview of ethical principles and legal statutes involved in clinical and community practice and research. Designed as a forum for discussion of ethical issues and other concerns relevant to professionals in psychology, with particular emphasis given to ethical issues in cross cultural and rural contexts in Alaska. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Admittance to the Psychology Ph.D. program.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F612 Human Development in a Cultural Context**
3 Credits
Offered Spring
Study of development theory, research and substantive applied issues across the life span. Particular emphasis on understanding how culture and sociocultural context impact the interplay of biology and environment in development of essential qualities and characteristics of individuals.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F616 Program Evaluation and Community Consultation I**
3 Credits
Offered Fall
The first in a two-course series, providing an overview of theories, methods and applications of program evaluation and community consultation as tools for facilitating systemic and programmatic changes in community and clinical settings. Seminar covers techniques of entry into various settings and designing program evaluations in collaboration with various community organizations. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** PSY F639; graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F617 Program Evaluation and Community Consultation II**
3 Credits
Offered Spring
The second in a two-course series, introducing the principles and dynamics involved in various types of consultative relationships in community and clinical settings, with a focus on cross-cultural and ethical issues. Covers methods of program evaluation implementation and use of program evaluation findings for consulting with relevant stakeholders. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** PSY F616; graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F621 Indigenous Ways of Knowing**
3 Credits
Offered Fall
Covers the appropriate and valid ways of describing and explaining human behavior by using the social context, culture and history of Indigenous groups. Includes Indigenous approaches to values, health, the interconnection of family and community; the nature of spirituality and Indigenous healing; and the importance of Elders and spiritual healers.
**Prerequisites:** Admittance to the Indigenous Studies or the Psychology Ph.D. program.
**Cross-listed with** CCS F621.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F622 Multicultural Psychopathology**
3 Credits
Offered Fall
An overview of contemporary views on child and adult psychopathology from a multicultural perspective. The fundamentals of clinical interviewing and diagnostics. Includes training in the DSM-IV diagnostic system. The role of culture, ethnicity, gender and social class in symptom formation and the experience of psychological disorders will be examined. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F623 Intervention I**
3 Credits
Offered Fall
Increases knowledge and skills related to traditional and nontraditional therapeutic interventions. Students are provided with a range of theoretical perspectives, a conceptual understanding of and an opportunity to practice a wide range of culturally relevant and appropriate techniques that are applicable in traditional and non-traditional community mental health settings. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F626 Environmental Psychology and Human Well-being**
3 Credits
Offered As Demand Warrants
This course explores the effects of the environment on human behavior, health, and well-being. Critical evaluation of human interactions with nature and consideration of arctic environments are emphasized. Students will explore the unique relationships between humans and nature while examining the role of nature on health, mental health, and behavior.
**Prerequisites:** PSY F101X; WRTG F111X; WRTG F211X, WRTG F213X; graduate standing.
**Crosslisted with** ACNS F626.
**Stacked with** PSY F426; ACNS F426.
**Special Notes:** Research Methods such as PSY F275 is recommended prior to taking this course.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F629 Intervention II**
3 Credits
Offered Spring
Deepens understanding of the variety and application of intervention techniques in diverse settings. Directs students to explore the efficacy of specific interventions in a range of settings and with a variety of populations. Shapes critical thinking and basic intervention evaluation skills. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** PSY F623; admittance to Psychology Ph.D. program.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F632 Community Psychology Across Cultures**
3 Credits
Offered Fall
An overview of theory, research and practice of community psychology with particular emphasis on cross-cultural themes, design and evaluation of interventions in remote and rural community settings, prevention and health promotion, and social change. Particular emphasis will be on issues relevant to Alaska Native communities. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F633 Tests and Measurement in Multi-cultural Context**
3 Credits
Offered Fall
Principles of construction, analysis and evaluation of psychological tests in a multicultural context. Emphasizes culturally sensitive application of psychological tests and measurements. Focuses on the history, theory and methods of psychological testing by examining intelligence, personality and vocation. Discusses widely-used intelligence and personality tests and procedures. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F639 Research Methods**
3 Credits
Offered Spring
Methods used for research in community, clinical and cross-cultural settings. Introduces epistemologies and ethics relevant to research with rural and indigenous people. Includes a variety of designs and data-gathering methods to improve understanding of behavior in social settings. Quantitative, qualitative and mixed method approaches will be presented. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Admittance to Psychology Ph.D. program.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F648 Understanding FASD: Diagnosis, Intervention and Strategies**
3 Credits
Offered Spring and Summer
This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Research project required.
**Prerequisites:** Graduate standing.
**Cross-listed with** EDSE F648.
**Stacked with** PSY F448; EDSE F448.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F650 Multicultural Psychopathology**
3 Credits
Offered Fall
Overview of child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in clinical application of the DSM-IV diagnostic system. Examination of the role of culture, ethnicity, gender and social class in symptom formation and the experience of illness.
**Prerequisites:** PSY F345; COUN F623; Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Cross-listed with** COUN F650.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F652 Practicum Placement: Clinical I**
1-3 Credits
Offered Fall
Supervised clinical practicum experience in psychological interviewing, diagnosis and psychotherapy. Applied techniques focusing on delivery of clinical services in traditional or non-traditional clinical settings. Cultural factors are considered in each of these areas. May be repeated for a maximum of 9 credits.
**Prerequisites:** PSY F611; PSY F622; PSY F623; admittance to the Psychology Ph.D. program.
**Lecture + Lab + Other:** 1-3 + 0 + 7-20

**PSY F653 Practicum Placement: Clinical II**
1-3 Credits
Offered Spring
Advanced clinical practicum experience designed to provide increased depth in applying theory to the practice and improving skills as a clinician. Covers application of psychological assessment principles. Impact of cultural factors continues as a major aspect of the practicum experience. May be repeated for a maximum of 9 credits.
**Prerequisites:** PSY F652; admittance to Psychology Ph.D. program.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**PSY F657 Quantitative Analysis**
3 Credits
Offered Fall
The underlying principles of statistics, including the logic of statistical inference, probability, power, effect size, and type one and two errors. Uses statistics for designs including the description of groups (data reduction), correlation, predictive models (regression), inferential statistics, analysis of mixed- method designs, and common nonparametric techniques. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** PSY F639; admittance to Psychology Ph.D. program.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F658 Qualitative Analysis**
3 Credits
Offered Fall
Introduction to the theory of qualitative inquiry, qualitative methodologies and basic techniques of qualitative research. Enables the student to use qualitative methods in research. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** PSY F639; graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F661 Multicultural Counseling**
3 Credits
Offered Spring
An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Focus on the nature and function of culture, universal- and culture-specific aspects of the counseling process, barriers to effective cross-cultural counseling, and methods of intellectual training with emphasis on Alaskan applications.
**Prerequisites:** Admittance to Master of Education Counseling or School Counselor Graduate Certification program.
**Cross-listed with** COUN F660.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F669 Health Psychology**
3 Credits
Offered Fall
Scientific study of behaviors relating to health enhancement, disease and injury prevention, safety and rehabilitation. While mental health is included, the emphasis is on physical health.
**Prerequisites:** Graduate standing.
**Stacked with** PSY F469.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F672 Practicum Placement: Community I**
3 Credits
Offered Fall
Community practicum experience designed to provide increased depth in applying theory to practice and improving skills as a community psychologist. Impact of cultural factors will be a major aspect of the practicum experience. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. Students will also be under close supervision with a community organization. May be repeated for a maximum of 9 credits.
**Prerequisites:** Graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F673 Practicum Placement: Community II**
3 Credits
Offered Spring
An advanced community practicum experience designed to provide increased depth in applying theory to practice and improving skills as a community psychologist. Impact of cultural factors will be a major aspect of the practicum experience. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. Students will also be under close supervision with a community organization. Second phase of PSY F672.
**Prerequisites:** PSY F672; graduate standing in Psychology.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F679 Multicultural Psychological Assessment I**
3 Credits
Offered Spring
Introduces administration, scoring and interpretation of various intellectual and objective personality assessment instruments, as well as their psychometric properties, for children and adults. Emphasis on the meaningful integration of test results into a culturally sensitive assessment report. Highlights professional and ethical issues related to multicultural assessment practices emphasizing Alaska Natives. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** PSY F633; admittance to the Psychology Ph.D. program.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F681 Substances of Abuse in Alaska**
1 Credit
Offered Fall
Overview of the most prevalent substances of abuse in Alaska including physical, psychological, social and medical consequences of use and abuse. First in the sequence PSY F681, PSY F682, and PSY F683. For doctoral students in the program. In exceptional cases to students not in the doctoral program, but with appropriate background and training will be given special permission to take the course.
**Prerequisites:** Admittance into the Psychology Ph.D. program.
**Lecture + Lab + Other:** 1 + 0 + 0

**PSY F682 Substance Abuse Assessment and Treatment Planning**
1 Credit
Offered Fall
Specialized tests, measurement and treatment planning for substance abuse. Emphasis on integrating results into culturally relevant treatment plans following the American Society for Addiction Medicine dimensional criteria. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. PSY F682 is the second in a continuing series that includes PSY F681 and PSY F683. For doctoral students in the program, it is to be taken as a series. In exceptional cases, students not in the doctoral program but with the appropriate background and training will be given special permission to take the course.
**Prerequisites:** Admittance to Psychology Ph.D. program.
**Lecture + Lab + Other:** 1 + 0 + 0

**PSY F683 Clinical Interventions in Substance Abuse**
1 Credit
Offered Fall
Conceptualizing substance abuse as a continuum from intervention to after-care. Relevant evidence-based interventions and therapeutic communities are addressed within the context of rural Alaska Native communities. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** Admittance to the Psychology Ph.D. program.
**Special Notes:** PSY F683 is the third in a continuing series that includes PSY F681 and PSY F682; For doctoral students in the program, it is to be taken as a series; In exceptional cases, students not in the doctoral program but with the appropriate background and training will be given special permission to take the course.
**Lecture + Lab + Other:** 1 + 0 + 0

**PSY F684 Clinical Supervision**
3 Credits
The clinical, ethical and cultural issues involved in supervision. Contemporary, empirically supported information regarding various approaches to supervision will be examined. Covers both the relationship inherent in clinical supervision and training in leadership and supervision of employees in other work settings. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery.
**Prerequisites:** PSY F653; admittance to Psychology Ph.D. program.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F686 Predoctoral Internship**
6 Credits
Understanding and application of assessment and intervention techniques in diverse settings. Students are placed in clinical or community settings for 40 hours per week to apply and sharpen skills. Students work under a local supervisor who manages student caseloads and assignments in collaboration with the course instructor.Approval contingent upon approval of Dissertation proposal and of DCTs (Directors of Clinical Training).
**Lecture + Lab + Other:** 6 + 0 + 0

**PSY F687 Multicultural Psychological Assessment II**
3 Credits
Advanced psychological assessment tools including interviews, projective techniques and neurocognitive assessment. Emphasis on the integration of cognitive personality and other test results derived from an assessment battery into a meaningful and culturally sensitive psychological assessment report. Course will be video-conference between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery
**Prerequisites:** PSY F679; admittance to Psychology Ph.D. program.
**Lecture + Lab + Other:** 3 + 0 + 0

**PSY F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PSY F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**PSY F699E Thesis**
1-9 Credits
**Lecture + Lab + Other:** 1-9 + 0 + 0

**PSY F699F Thesis**
1-6 Credits
**Lecture + Lab + Other:** 1-6 + 0 + 0

# Recreation (RECR)

**Community & Technical College**
907-455-2800

**RECR F110A Beginning Swimming**
1 Credit
Offered As Demand Warrants
Beginning level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F110B Intermediate Swimming**
1 Credit
Offered As Demand Warrants
Intermediate-level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F110C Advanced Swimming**
1 Credit
Offered As Demand Warrants
Advanced-level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F110D Conditioning Swimming**
1 Credit
Offered As Demand Warrants
Covers proper warm-up and warm-down techniques, lap swim etiquette, and proper use of workout equipment.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F110E Beginning Scuba**
1 Credit
Offered As Demand Warrants
Instruction and practice in beginning underwater aquatic activities.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F110J Fundamentals of Competitive Water Polo**
1 Credit
Offered As Demand Warrants
Introduction to the game of water polo. Students will learn techniques used in water polo, as well as the basic rules and regulations of the sport.
**Prerequisites:** RECR F110D.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120A Aerobics**
1 Credit
Offered As Demand Warrants
Moderate to high impact dance routines set to music designed to increase cardiovascular strength, promote coordination, and increase overall body strength and flexibility.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120C Beginning Yoga**
1 Credit
Offered As Demand Warrants
Beginning concepts and philosophy of yoga, breathing, postures, meditation, Sanskrit names of exercises, increased muscle tone and flexibility.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120D Intermediate Yoga**
1 Credit
Offered As Demand Warrants
Intermediate concepts and philosophy of yoga, breathing, postures, meditation, Sanskrit names of exercises, increased muscle tone and flexibility.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120F Exercise And Fitness**
1 Credit
Offered As Demand Warrants
Instruction and practice in activities at beginning through advanced levels including (but not limited to) multi-fitness conditioning, recreational fitness activities, running, cycling, walking, weight training, aerobics, power lifting, tai chi chuan and yoga.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120G Military Fitness Training**
1 Credit
Offered As Demand Warrants
Instruction and practice in fitness activities concentrating on flexibility, strength, and muscular and cardiovascular endurance.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120H Multi Fitness Conditioning**
1 Credit
Offered As Demand Warrants
An overview of medium to high intensity aerobic exercise and muscle strengthening, conditioning and toning.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120J Weight Training**
1 Credit
Offered As Demand Warrants
Design and perform strength training routines using resistance to achieve overall fitness.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120K Advanced Weight Training**
1 Credit
Offered As Demand Warrants
Design and perform strength training routines using resistance to achieve overall fitness.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F120L Zumba Fitness**
1 Credit
Offered As Demand Warrants
Introduction to basic Zumba Fitness/Latin dance steps from salsa, meringue, cumbia, reggaeton, and belly dance along with other international rhythms. Students will learn to identify the music, as well as a brief history of the dance.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130A Beginning Jazz Dance**
1 Credit
Offered As Demand Warrants
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130B Intermediate Jazz Dance**
1 Credit
Offered As Demand Warrants
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130C Advanced Jazz Dance**
1 Credit
Offered As Demand Warrants
Develop a repertoire of a jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130D Modern Dance**
1 Credit
Offered As Demand Warrants
Develop a repertoire of modern dance movement and terminology including contraction and release, swings, triplets, fall and recovery, rolls and improvisations.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130E Beginning Ballroom Dance**
1 Credit
Offered As Demand Warrants
Students with little or no background in social dance. Our aim is to have a good time and build a strong foundation for future learning. Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130F Intermediate Ballroom Dance**
1 Credit
Offered As Demand Warrants
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build a strong foundation for future learning. This course is for students with a beginning background in social dance.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130G Advanced Ballroom Dance**
1 Credit
Offered As Demand Warrants
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build an even stronger foundation for future learning. This course is for students with an intermediate background in social dance.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130H Beginning Ballet**
1 Credit
Offered As Demand Warrants
Instruction and practice in ballet at beginning levels.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130J Intermediate Ballet**
1 Credit
Offered As Demand Warrants
Instruction and practice in ballet at intermediate levels.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130K Advanced Ballet**
1 Credit
Offered As Demand Warrants
Instruction and practice in ballet at advanced levels.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130N Middle Eastern Dance**
1 Credit
Offered As Demand Warrants
Designed for students with some or no background in Middle Eastern dance or anyone who wants to refine their technique and gain a deeper understanding of the different styles, history and evolution of Middle Eastern dance from social dance to performance art. Majority of semester will focus on basic dance vocabulary and choreography as well as dancing with props such as veils and finger cymbals.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130Q Beginning Hip Hop**
1 Credit
Offered As Demand Warrants
Introduction to basic movements and terminology of hip hop dances and associated body movements. Students will gain these principles and ability to execute maneuvers presented in class.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130R Beginning Break Dance**
1 Credit
Offered As Demand Warrants
Introduction to basic movements and terminology of break dancing, and an understanding of associated body movements. Students will gain an understanding of these principles and an ability to execute maneuvers presented in class.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130S Beginning Contemporary Dance**
1 Credit
Offered As Demand Warrants
Contemporary dance is an opportunity for students to explore contemporary dance movement, and gain strength and flexibility to improve their ability to dance. Designed to introduce students to contemporary dance, the course will be a combination of stretching, conditioning, and dancing. Students will be expected to demonstrate an understanding of basic contemporary dance principles and interpretation upon completion.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130T Beginning Lyrical Dance**
1 Credit
Offered As Demand Warrants
Instruction and practice in lyrical dance at the beginning level. Students will gain an understanding of body movements and choreographic styles of lyrical dance, as well as an understanding of one's physical self as a dancer.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130U Hot Hula Fitness**
1 Credit
Offered As Demand Warrants
Hula Fitness incorporates traditional Polynesian drum beats as well as Hip Hop and Reggae music while performing dance movements from the South Pacific Islands. These movements give emphasis to core training and strengthening of the larger muscle groups. This unique and exciting exercise class encourages positive well-being and physical health.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130V Beginning Swing Dance**
1 Credit
Offered As Demand Warrants
Introduction to several forms of swing dance. Learn swing dance principles, techniques and steps to build a foundation for future learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, West Coast Swing, and Hustle among others.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130Y Beginning Tap Dance**
1 Credit
Offered As Demand Warrants
An opportunity for students to explore tap dance and develop an understanding and practice of movement skills basic to tap dance of America. Students will learn the basic steps while focusing on rhythm and coordination. A variety of tap styles will be introduced.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F130Z Intermediate Swing Dance**
1 Credit
Offered As Demand Warrants
Instruction at the intermediate level of swing dance. Learn intermediate level swing dance techniques and steps, and prepare for more advanced future dance learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, Single Count Swing, West Coast Swing and Hustle.
**Prerequisites:** RECR F130V; or RECR F130E.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140A Beginning Fencing**
1 Credit
Offered As Demand Warrants
Beginning classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140B Intermediate Fencing**
1 Credit
Offered As Demand Warrants
Intermediate classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140C Advanced Fencing**
1 Credit
Offered As Demand Warrants
Advanced classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140E Beginning Pistol Marksmanship**
1 Credit
Offered As Demand Warrants
Knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts, operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140F Intermediate Pistol Marksmanship**
1 Credit
Offered As Demand Warrants
Intermediate knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts and their operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140G Advanced Pistol Marksmanship**
1 Credit
Offered As Demand Warrants
Advanced knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts and their operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140H Beginning Rock Climbing**
1 Credit
Offered As Demand Warrants
Introduction to rock climbing, knots, risk evaluation, gear, rope skills, belaying, rappelling, jumaring, prusiking and top rope techniques.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140J Intermediate Rock Climbing**
1 Credit
Offered As Demand Warrants
Intermediate rock climbing, knots, risk evaluation, gear, rope skills, belaying, rappelling, jumaring, prusiking and top rope techniques.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140K Advanced Rock Climbing**
1 Credit
Offered As Demand Warrants
An extension of beginning rock climbing. Hauling, aid climbing, advanced Jumar techniques, lead climbing, porta-ledge set up and taping.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140L Introduction to Ice Climbing**
1 Credit
Offered As Demand Warrants
Introduction to ice climbing, top-rope ice skills, movement and technique on ice, rope work, anchor systems, climbing gear, climbing ethics as well as risk assessment and management. No experience required.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140M Introduction to Fly Fishing and Fly Tying**
1 Credit
Offered As Demand Warrants
Fundamentals of fly casting, fishing and tying. Students will learn how to use a fly rod to place a fly with accuracy, tie fishing knots, construct their own leaders, learn where fish live and how best to catch (and release) them. Fish anatomy, behavior and habitat will be discussed.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140N Alaskan Fly Fishing and Tying**
1 Credit
Offered As Demand Warrants
The art and science of fly casting, fishing and tying.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140Q Tennis**
1 Credit
Offered As Demand Warrants
Instruction and practice activities in tennis.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140R Billiards**
1 Credit
Offered As Demand Warrants
Basic billiards skill set, strokes and using "English" on the cue ball. Focus on cutthroat, eight ball and nine ball using BCA rules.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140T Beginning Golf**
1 Credit
Offered As Demand Warrants
Instruction and practice activities at beginning golf.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140U Intermediate Golf**
1 Credit
Offered As Demand Warrants
Instruction and practice activities in intermediate golf.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140V Bowling**
1 Credit
Offered As Demand Warrants
Instruction and practice activities in bowling.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140Y Kayaking**
1 Credit
Offered As Demand Warrants
Instruction and practice activities at beginning through advanced kayaking.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F140Z Canoeing**
1 Credit
Offered As Demand Warrants
Instruction and practice activities at beginning through advanced canoeing.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150A Beginning Aikido**
1 Credit
Offered As Demand Warrants
Aikido is a modern Japanese martial art that teaches coordination of mind and body to develop calmness in action and the strongest human condition. Includes KI extension exercises, basic rolling and falling, KI testing, and basic arts of self defense.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150B Intermediate Aikido**
1 Credit
Offered As Demand Warrants
Concentrates on learning to lead the KI development exercises. Breathing, movement, visualization techniques and moving meditation to teach how mind and body are interconnected. Advanced variations of the six basic self defense arts, advanced rolling and falling, Jo kata and individual and paired Bokken movements.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150C Advanced Aikido**
1 Credit
Offered As Demand Warrants
Instruction and practice in martial arts and combative activities at beginning through advanced levels including (but not limited to) boxing, aikido, karate and tae kwon do.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150D Beginning Karate**
1 Credit
Offered As Demand Warrants
Introduction to Shotokan karate, learning basic blocks, kicks and punches and defenses moves. Kata and kumite introduced. History and philosophy discussed.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150E Intermediate Karate**
1 Credit
Offered As Demand Warrants
Instruction and practice in intermediate karate.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150F Advanced Karate**
1 Credit
Offered As Demand Warrants
Instruction and practice in advanced karate.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150G Beginning Kung Fu/Jiujitsu/Tae Kwon Do**
1 Credit
Offered As Demand Warrants
Emphasis on technique and conditioning. Beginning stances and etiquette. The three basic katas. Partner work, training in stretching, conditioning, and breath control. Both self-defense and sporting applications. Course will cover the eight Kung Fu animal systems. Activities will include but are not limited to: warm-ups, stretching, kicking, punching, kata, and partner work.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150H Intermediate Kung Fu/Jiujitsu/Tae Kwon Do**
1 Credit
Offered As Demand Warrants
Emphasis on technique and conditioning. Intermediate stances and etiquette will be covered, along with an understanding of intermediate techniques and some of their applications. Partner work will be taught, along with training in stretching, conditioning, and breath control. Both self-defense and sporting applications. Will cover the eight Kung Fu animal systems. Activities will include but are not limited to: warm-ups, stretching, kicking, punching, kata, and partner work.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150J Advanced Kung Fu/Jiujitsu/Tae Kwon Do**
1 Credit
Offered As Demand Warrants
Instruction and practice in advanced movements, weapons and martial arts certificate promotions.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150K Beginning Tai Chi**
1 Credit
Offered As Demand Warrants
Instruction and practice in beginning tai chi.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150L Intermediate Tai Chi**
1 Credit
Offered As Demand Warrants
Instruction and practice in intermediate tai chi.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150M Advanced Tai Chi**
1 Credit
Offered As Demand Warrants
Instruction and practice in advanced tai chi.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150N Beginning Japanese Iaido and Swordsmanship**
1 Credit
Offered as Demand Warrants
The curriculum is based on the Muso Jikiden Eishin Ryu style of Iaido. This particular curriculum follows the techniques and teachings and Iwata Norikazu Sensei, as administered by the Roshukai organization of Japan, and promoted and taught by the British Eikoku Rosh branch in the UK.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F150Q Intermediate Tennis**
1 Credit
Offered As Demand Warrants
Instruction and practice in tennis at the intermediate level, building improved consistency and increasing confidence with strokes.
**Prerequisites:** RECR F140Q.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F160B Varsity Athletics**
1 Credit
Offered As Demand Warrants
Instruction and practice in varsity athletics.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F160C Ultimate Frisbee**
1 Credit
Offered As Demand Warrants
Ultimate Frisbee, including catching and throwing the disc as well as both offensive and defensive strategies.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F160D Volleyball**
1 Credit
Offered As Demand Warrants
Skills of volleyball, game rules, plays and terminology.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F160E Beginning Archery**
1 Credit
Offered As Demand Warrants
Designed for the beginning through the intermediate archer. Use of re-curve or compound bows. Current Olympic-style shooting methods along with different styles of target and field archery.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F160F Introduction to Mountaineering**
2 Credits
Offered As Demand Warrants
This course is designed to introduce the student to the sport of mountaineering.
**Lecture + Lab + Other:** 0 + 6 + 0

**RECR F160M Advanced Fly Fishing and Fly Tying**
1 Credit
Offered As Demand Warrants
Building on RECR F140M, students will learn how to more accurately use a fly rod, tie big-game fishing knots, construct furled leaders, and plan fly fishing trips, as well as how build and create fishing flies using advanced techniques. Information on Alaskan freshwater fish, habitat, entomology, and stream ecology will be covered as applicable.
**Prerequisites:** RECR F140M or RECR F140N.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170A Beginning Ice Hockey**
1 Credit
Offered As Demand Warrants
Beginning skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170B Intermediate Ice Hockey**
1 Credit
Offered As Demand Warrants
Intermediate skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170C Advanced Ice Hockey**
1 Credit
Offered As Demand Warrants
Advanced skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170D Beginning Cross-country Skiing**
1 Credit
Offered As Demand Warrants
Instruction and practice in beginning cross-country skiing.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170E Intermediate Cross-country Skiing**
1 Credit
Offered As Demand Warrants
Instruction and practice in intermediate cross-country skiing.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170G Introduction to Ski Mountaineering**
1 Credit
Offered As Demand Warrants
Safe methods of winter travel in Alaska. Snowshoeing, skiing, gear and clothing, avalanche safety, climbing crevasse rescue skills, glaciers, winter camping skills, first aid.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170M Curling**
1 Credit
Offered As Demand Warrants
Instruction and practice in curling.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F170N Introduction to Winter Camping**
1 Credit
Offered As Demand Warrants
This course introduces students to outdoor adventure, travel and camping in Alaska while teaching fundamental outdoor survival skills. This course is designed to equip students with the necessary skills and knowledge to effectively and safely navigate with a map and compass, snowshoe, cross country ski, and camp in a wide variety of Alaskan conditions.
**Prerequisites:** Instructor permission required.
**Lecture + Lab + Other:** 1 + 0 + 0

**RECR F170P Introduction to Arctic Backpacking**
1 Credit
Offered As Demand Warrants
Designed to introduce students to the art of backpacking the Arctic: route planning, food preparation, gear choices, and emergency preparedness leading to a week-long Arctic backpacking trip. Many of the Leave No Trace camping ethics that are important while backpacking in the Arctic will be addressed.
**Lecture + Lab + Other:** 0 + 0 + 3

**RECR F170Q Introduction to Dog Mushing**
1 Credit
Offered As Demand Warrants
This course is designed for students who have little to no experience in dog mushing and are interested in learning the basics of dog sledding in Alaska. Topics to be covered include: Techniques for operating a sled dog kennel; Introduction to sled dog management and maintenance; Hands-On Instruction on how to hook up and drive a team of 3 to 4 sled dogs; and offers an extended mushing experience.Must be enrolled with the Black Spruce Dog Sledding.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F180A Expedition Rock Climbing**
1 Credit
Offered As Demand Warrants
This course is designed to take students who already have a grasp of the basics of rock climbing to the next level. Students will travel to a designated location in order to develop the ability to sport lead outside, and gain working knowledge of the fundamental concepts of placing removable rock protection (trad gear) and doing practice leads while placing trad gear in the rock. Students will also learn crack climbing movement techniques such as hand jams and foot jams.
**Prerequisites:** RECR F140H or RECR F140J.
**Lecture + Lab + Other:** 0 + 3 + 0

**RECR F180B Introduction to Expedition Kayaking**
1 Credit
Offered As Demand Warrants
Designed to introduce students to the art of expedition tripping with inflatable kayaks with a float on primarily Class I and II water. The students will be involved with all aspects of planning and executing this awesome wilderness trip. Food and transportation is included in the field fee.
**Lecture + Lab + Other:** 0 + 3 + 0

# Religion (RELG)

Community & Technical College (https://www.ctc.uaf.edu/)
907-455-2800

**RELG F110 Isaac v Ishmael: The Israeli-Palestinian Conflict** (s)
1 Credit
Offered As Demand Warrants
This course investigates the strife in its interlocking historical, political, religious, ethnic and archaeological dimensions. Competing claims to the land are scrutinized through the prisms of Judaism and Islam, the history, and other ideological movements.
**Lecture + Lab + Other:** 1 + 0 + 0

**RELG F111 Rebellious Women of the Bible** (h)
1 Credit
Offered As Demand Warrants
A literary and sociological exploration into negative portrayals of the feminine within the Old and New Testament texts, including their original Ancient Near Eastern and Mediterranean cultural contexts as well as key interpretive traditions throughout history.
**Lecture + Lab + Other:** 1 + 0 + 0

**RELG F112 Dealing with Demons and Death: Magic in Ancient Cultures** (h)
1 Credit
Offered as Demand Warrants
An exploration into ancient traditions of magic as evidence by Mesopotamian, Egyptian, Biblical and Graeco-Roman texts and artifacts, focusing upon their rationales, methods, efficacy and legitimacy with respect to variously preventing, mitigating or invoking harmful and destructive forces.
**Lecture + Lab + Other:** 1 + 0 + 0

**RELG F113 The Biblical Environment: Human Ecology in Ancient Israel** (s)
1 Credit
Offered As Demand Warrants
An integrative survey of Ancient Israel's geographic and ecological features with respect to how they influence and were impacted by human efforts and energies. This course will examine textual sources as well as archaeological materials on behalf of reconstructing and comprehending such cultural ecosystems.
**Lecture + Lab + Other:** 1 + 0 + 0

**RELG F114 The Bible in the Quran** (h)
1 Credit
Offered As Demand Warrants
An inquiry into the manners and motivations by which Islam appropriated and reconfigured biblical traditions in order to meet its own theological, political, economic, and social needs/interests. What did Muhammad and the earliest Muslims know about the Ahl al-Kitab (*People of the Book*)? From where and whom did they acquire their knowledge? This course also considers the ramifications (historical and contemporary) of scriptural traditions between Islam, Christianity, and Judaism.
**Lecture + Lab + Other:** 1 + 0 + 0

**RELG F115 End of Days: Apocalypse Across the Ages** (h)
1 Credit
Offered As Demand Warrants
A study into the origins and interpretive history of Abrahamic religious traditions dealing with the end-time. What were the ancient sociocultural circumstances out of which Jewish, Christian, and Muslim apocalypticism developed? In what manners do nonscriptural end-time narratives and images compare/contrast with those found in the Bible and the Quran? How and why have Biblical and Quranic apocalyptic traditions been (mis)appropriated during later eras, including our own?
**Lecture + Lab + Other:** 1 + 0 + 0

**RELG F205 Introduction to the Bible** (h)
3 Credits
Offered As Demand Warrants
A study of the Bible as literature of ancient Israel and the early Christian church.
**Lecture + Lab + Other:** 3 + 0 + 0

**RELG F221X Religions of the World** (h)
3 Credits
Offered As Demand Warrants
A survey of the development of major religions of the Eastern and Western world including contemporary world religions.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**RELG F231 Prophecy, Shamanism and Scripture** (h)
3 Credits
Offered As Demand Warrants
An introductory exploration into the phenomena of prophecy and shamanism as they are conceived and manifested within the textual and cultural traditions of Judaism and Christianity. Comparative evidence is considered from ancient Near Eastern and Mediterranean sources, and modern insights from cultural anthropology and cognitive psychology are brought to bear upon the Biblical materials, in efforts to situate their prophetic and/or shamanistic features within social scientific models of culture and mind.
**Lecture + Lab + Other:** 3 + 0 + 0

# Rural Development (RD)

**College of Rural and Community Development**
Department of Alaska Native Studies and Rural Development (https://www.uaf.edu/dansrd/)
907-474-6528

**RD F100 The University Experience**
3 Credits
Offered Fall
Designed to serve as an academic, cultural, and social transition to the UAF campus. Through learner-centered education emphasizing positive self-concept theories, RD F100 will build on personal strengths and skills. Overview of resources and support programs that serve rural and Alaska Native students for a successful transition to college life.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F110 Alaska Native Claims Settlement Act: Land Claims in the 21st Century** (an)
1 Credit
Offered Fall
Familiarize students with the land claims process and important Alaska Native Claims Settlement Act content, with focus on contemporary situations and explanation of land claims processes ongoing or recently completed in locations outside Alaska.
**Cross-listed with** ANS F112.
**Lecture + Lab + Other:** 1 + 0 + 0

**RD F113 Alaska Natives, Indigenous Peoples and International Laws** (an)
1 Credit
Offered Spring Odd-numbered Years
Familiarize students with international law and its importance for Indigenous Peoples. Special emphasis on international legal instruments of importance for Alaska Natives.
**Cross-listed with** ANS F113.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**RD F114 Alaska Natives, Indigenous Peoples and North American Legal Systems** (an)
1 Credit
Offered Spring Even-numbered Years
Familiarize students with domestic law and its effects on Indigenous Peoples' governance in the United States. Emphasis on Alaska Natives and the relationship between Tribal legal systems and state and federal governments. Examination of how law is made and why Tribal laws differ from those in neighboring jurisdictions.
**Cross-listed with** ANS F114.
**Lecture + Lab + Other:** 1.5 + 0 + 0

**RD F125 Our Changing Climate: Past, Present, Future** (s)
3 Credits
Offered Spring
Examines how the biophysical impacts of climate change define and intersect with social, ecological, economic, political and cultural dimensions of our lives. Provides a foundation in both Indigenous and Western science perspectives of the causes, impacts and feedbacks of a changing climate. Includes theoretical and project-based experience in climate change.
**Prerequisites:** Placement in WRTG F111X.
**Cross-listed with** ACNS F125, HONR F125, NRM F125.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F200X Rural Development in the North** (s)
3 Credits
Offered Fall
Examines sustainable community development efforts in Alaska and the circumpolar North. Provides an overview of community development processes and case studies with an emphasis on indigenous communities and peoples.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F225 Applied Communication Skills**
3 Credits
Offered Spring
Oral and written communications for rural development practitioners. In this course students will practice four types of oral and written communications: business presentations and business and technical writing; academic presentations and writing; policy presentations and legal and policy writing; and presenting and writing for community audiences.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X.
**Cross-listed with** ANS F225.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F245 Fisheries and Marine Wildlife Development in Rural Alaska** (an, s)
3 Credits
Offered Fall
Introduction to fisheries development issues in rural Alaska communities, including basic concepts, strategies and contemporary cases. Topics include management of salmon and other fisheries, community development quotas, and sustainable development efforts.
**Prerequisites:** WRTG F111X.
**Cross-listed with** ANS F245.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F250 Grant Writing for Community Development**
1-3 Credits
Offered As Demand Warrants
Basic elements of grant proposals and processes of preparing proposals for governmental and private funding sources. Emphasis on applied skills through preparation of actual grant proposals.
**Prerequisite:** WRTG F111X.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**RD F250P Grant Writing for Community Development**
1-3 Credits
Basic elements of grant proposals and processes of preparing proposals for governmental and private funding sources. Emphasis on applied skills through preparation of actual grant proposals.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**RD F255 Rural Alaska Land Issues** (an, s)
3 Credits
Offered Fall Odd-numbered Years
Provides a history of aboriginal use and occupancy of land and an overview of land provisions in the Alaska Native Claims Settlement Act (ANCSA) and the Alaska National Interest Lands Conservation Act (ANILCA). Topics include maps and land records, Native allotments, navigability, trespass and management of Native lands.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F265 Perspectives on Subsistence in Alaska** (an)
3 Credits
Offered Spring Even-numbered Years
The socioeconomic, cultural, legal and political dimensions of subsistence in Alaska.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F268 Rural Tourism: Planning and Principles**
1-3 Credits
Offered As Demand Warrants
Introduction to rural tourism planning and principles. Students examine rural tourism attractions and trends, tourism planning and policy formation, quality standards, and cultural and environmental impacts of tourism.
**Cross-listed with** ABUS F268.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**RD F280 Resource Management Research Techniques**
3 Credits
Offered As Demand Warrants
Overview of standard methods of field-based scientific research conducted by resource management agencies in rural Alaska including elementary statistical concepts, survey techniques and tools used in land and renewable resources research.
**Prerequisites:** NRM F101 and BIOL F104X.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F300 Rural Development in a Global Perspective** (s)
3 Credits
Offered Fall
In this introductory course, students explore topics tied to rural development worldwide. Students examine different perspectives and relationships that impact rural communities and the global economy by covering issues such as ethnicity and diversity, health, community development and the economy.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RD F225; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F315 Tribal People and Development** (an, s)
3 Credits
Offered Spring Odd-numbered Years
Impact of socioeconomic development processes on tribal peoples in less developed world societies. Implications of these processes for Alaska Native people.
**Prerequisites:** Junior standing.
**Cross-listed with** ANS F315.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F325 Rural Development Principles and Practices** (s)
3 Credits
Offered Fall
This course will expose students to key principles and practices in Rural Development and empower them to explore their own definition of rural development, including defining the purpose and objective of development and what role(s) they aspire to as part of the next generation of rural development leaders.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RD F225.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F340 Community Research Toolbox**
3 Credits
Offered Spring
Community research approaches and techniques. Emphasis on the role and need for community-based research and associated ethical issues. Students use a hands-on approach to learn about research techniques, including interviewing, surveying and utilizing existing data in support of community-based research. Emphasizes academic writing and communicating with community audiences.
**Prerequisites:** RD F225.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F351 Strategic Planning and Decision Making**
3 Credits
Offered Spring
Rural leaders must be adept at making strategic decisions about how to achieve desirable outcomes with limited human and financial resources. This course takes a practitioner approach to equipping students with basic knowledge of strategic planning processes as well as opportunities to engage with proven tools from the field.
**Prerequisites:** RD F300; RD F325; and junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F352 Rural Business Planning and Proposal Development**
3 Credits
Offered Spring
Provides undergraduate students with an understanding of the principles and processes involved in strategic planning, business planning and proposal development with the focus on applications in rural Alaska. Focus is on meeting the unique planning needs of rural Alaska communities and organizations. This course emphasizes business and technical writing.
**Prerequisites:** WRTG F111X; RD F225.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F400 Rural Development Internship**
3 Credits
Offered Summer
Structured experience in an appropriate agency or corporate setting. Intended to provide students with on-the-job experience to enhance skills acquired via coursework. Approved internship position required and student must discuss internship position with their advisor one full semester in advance of when they intend to take the course.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F401 Cultural Knowledge of Native Elders** (an, h)
3 Credits
Offered Fall
Study with prominent Native tradition-bearers in Native philosophies, values and oral traditions. Traditional knowledge elicited through the cultural heritage documentation process. Analysis of existing interactions between cultural traditions and contemporary American life as experienced by Native Elders.
**Prerequisites:** ANS F111X; ANS F242X; upper-division standing.
**Cross-listed with** ANS F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F425 Cultural Resource Issues** (s)
3 Credits
Offered Fall Even-numbered Years
An examination of the potential impacts of development projects on cultural systems. Explores data gathering, analytical techniques and use of impact data.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F427 Tribal Contracting and Compacting**
3 Credits
Offered Fall Even-numbered Years
Examines the history of federal Indian policy that led to self-determination tribal contracting and compacting. Public Law 93-638 will be studied and analyzed. Challenging issues that hampered tribal contracting will be identified. Case studies involving both tribal organizations and tribal governments will be studied.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F430 Indigenous Economic Development and Entrepreneurship** (an)
3 Credits
Offered Spring Odd-numbered Years
An understanding of the principles, strategies and practices of economic development and entrepreneurship with a focus on indigenous Alaska communities. Focus is on those sustainable economics, through culturally appropriate practices.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F435 Participatory Policy-making in Tribal, State and Federal Government**
3 Credits
Offered Spring Even-numbered Years
This course analyzes the policy-making and lobbying processes of the American political system, with a focus on the relationship between tribes, U.S. Congress, federal agencies and the U.S. Supreme Court. Uses comparative case studies of national, state of Alaska and tribal issues, policies and laws impacting rural Alaskans.
**Prerequisites:** RD F300; senior standing.
**Cross-listed with** ANS F435.
**Special Notes:** Recommended RD F110.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F450 Managing Rural Projects and Programs**
3 Credits
Offered Fall
Examines appropriate management and accountability approaches for community-based programs and projects, particularly those found in rural and/or cross-cultural contexts. This course emphasizes business and technical writing and oral and written communication with community audiences.
**Prerequisites:** RD F325; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F451 Human Resource Management for Indigenous Communities**
3 Credits
Offered As Demand Warrants
Provides an understanding of the principles and processes involved in human resource management especially as they apply within Indigenous communities. Focus is on the relevance of human resource management in every unit, project or team, and on the unique human resource management needs of rural Alaska communities and organizations.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F460 Women and Development** (s)
3 Credits
Offered As Demand Warrants
Explores interrelationships of gender roles and development in the global economy, emphasizing Alaska and the circumpolar north. Examines the historical marginalization of women, women in indigenous communities, and changing socio-economic and cultural gender roles in community development. Examines women's life histories that illustrate strategies for individual and community empowerment.
**Cross-listed with** WGS F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F462 Rural Health and Human Service Systems**
3 Credits
Offered As Demand Warrants
Examine U.S. federal and state rural health and human service systems with specific emphasis on the tribal system in Alaska. The history, organization, work force, service delivery and financing of the U.S. and Canadian and Alaska systems are examined. Circumpolar challenges and policy issues in rural health and human service systems are explored.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F465 Community Healing and Wellness** (an)
3 Credits
Offered Fall
The history of education and the impact of religion and assimilation policies on the emotional and physical health of Alaska Natives and their communities. Traditional wellness issues and systems will also be researched from a global perspective.
**Prerequisite:** Junior standing.
**Crosslisted with** ANS F465.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F468 Human Development and Social Justice**
3 Credits
Offered Spring Even-numbered Years
For many communities in the circumpolar North, the ultimate aim of development is to improve the overall quality of life for present and future generations. This course explores how rural communities can, and are, creating positive change in the areas of governance, natural resource management, cultural revitalization, education and health.
**Prerequisites:** RD F300, RD F325, senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F470 The Alaska Native Claims Settlement Act: Pre-1971 to Present** (an)
3 Credits
Offered Fall Even-numbered Years
Overview and analysis of the Alaska Native Claims Settlement Act. An in-depth examination of the land claims movement of the 1960s and resulting legislative process. Firsthand accounts from Native leaders will be featured. Case studies describing challenges of individual Native villages and regions. Contemporary issues facing ANCSA corporations will be examined.
**Prerequisites:** Junior standing.
**Stacked with** RD F670.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F471 Corporate Social Responsibility and Accountability in Rural and Indigenous Contexts**
3 Credits
Offered Fall Odd-numbered Years
Examination of corporate social responsibility and how CSR plays out in rural Alaska and other Indigenous contexts. Uses comparative case studies of international, national and rural Alaska organizational, economic and societal issues with a special emphasis on transnational corporations, ANCSA corporations, tribal enterprises and other businesses.
**Prerequisites:** RD F300; senior standing.
**Recommended:** RD F110.
**Stacked with** RD F671.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F474 Applied Community Research**
3 Credits
Offered Fall
Development and preliminary groundwork for the rural development senior project. Students will develop a full prospectus and conduct preliminary research for their senior project to be completed in RD F475 Rural Development Senior Project.
**Prerequisites:** RD F340; RD F352; senior standing.
**Crosslisted with** ANS F474.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F475 Rural Development Senior Project**
3 Credits
Offered Spring
Under faculty supervision, the student will complete a major theoretical, research and/or applied project which relates to the student's applied emphasis area. Students will utilize the appropriate writing and oral communication style for the type of research or project they choose.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RD F474; senior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F492 Rural Development Seminar**
1-3 Credits
Various topics of current interest and importance to the rural development majors. Topics announced prior to each offering. Topics may include: indigenous peoples leadership, legislative process, cultural documentation, National Park Service policies, climate change, and/or co-management of natural resources. Students may take up to three Rural Development seminars on different topics for credit with prior approval. Enrollment priority given to rural development majors.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**RD F492P Rural Development Seminar**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**RD F600 Indigenous Leadership Symposium**
3 Credits
Offered Fall
This course focuses on Indigenous models and perspectives on leadership. The seminar is delivered via a series of teleconferences as well as a weeklong face-to-face intensive. The location of the seminar changes each year. Rural development graduate students can repeat the course once as an elective.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F601 Political Economy of the Circumpolar North**
3 Credits
Offered Fall
Interrelationships among rural communities in the circumpolar North and global socioeconomic, political and ecological systems. Includes major theoretical advances in our understanding of development in the 20th century. Uses a comparative case study approach to understand rapid socioeconomically and cultural change in the north.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F608 Indigenous Knowledge Systems**
3 Credits
Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various Indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska.
**Prerequisites:** Graduate standing.
**Cross-listed with** CCS F608; ED F608; ANL F608.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F612 Traditional Ecological Knowledge**
3 Credits
Offered Spring
Examines the acquisition and utilization of knowledge associated with long-term inhabitation of particular ecological systems and adaptations that arise from the accumulation of such knowledge. Attention will be given to the contemporary significance of traditional ecological knowledge as a complement to academic fields of study.
**Prerequisites:** Graduate standing.
**Cross-listed with** CCS F612.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F625 Community Development Strategies: Principles and Practices**
3 Credits
Offered Fall
Provides graduate students with a detailed overview of principles and strategies of community development in rural Alaska and the circumpolar North. Explores how rural communities in diverse cultural, political and economic settings can build on local assets, skills and capacities to improve the lives of Indigenous and other Northern residents.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F630 Economic Development Policy and Entrepreneurship in Rural Alaska: Challenges and Opportunities**
3 Credits
Offered Spring Odd-numbered Years
This course explores the questions - what does/should economic development and entrepreneurship look like in rural and Native Alaska? What national, state and tribal policies and laws are desirable, given the history and experience of existing ANCSA corporations (and transnational corporations), tribal enterprises and ANCSA corporations?
**Prerequisites:** Graduate standing.
**Recommended:** RD F625.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F650 Community-based Research Methods**
3 Credits
Offered Spring
This graduate course provides students with opportunities for advanced exploration of community-based research principles and practices. Emphasis is placed on developing a thorough understanding of the community research process from conceptualization to implementation and evaluation. It includes skill development of skills applicable to both quantitative and qualitative research.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F651 Management Strategies for Rural Development**
3 Credits
Offered Spring
Overview of management and development within Indigenous communities in the Circumpolar North and looks closely at recent strategies such as co-management of renewable resources, land management of Alaska Native corporations, cultural resource management, and the management of Alaska Native tribal governments, corporations and other organizations.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F652 Indigenous Organization Management**
3 Credits
Offered Fall Even-numbered Years
Purposes, structure, and methods of management in Northern Indigenous organizations. Management of Alaska Native organizations will be compared with organizations established by Indigenous peoples in other regions of the Circumpolar North. "Indigenous management" will be explored, alongside perceptions of differences between leadership and management in western and indigenous settings.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F655 Circumpolar Health Issues**
3 Credits
Offered Summer Even-numbered Years
Comprehensive overview of major circumpolar health issues affecting Northern residents. Analysis of health and traditional healing practices prior to contact. Examines the emergence of chronic diseases, alcohol abuse and violence, efforts to combine traditional healing practices and Western medicine. Includes environmental health issues, including water, sewer, and food contamination.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F667 Tribal Responses to Violence: Safety, Justice and Advocacy**
3 Credits
Offered Fall Odd-numbered Years
This course examines the crisis of violence against Native people and within Native communities. The role of sexual and other violence will be explored, impacts of trauma, legal and jurisdictional barriers and developments in victim-centered and restorative justice. Students will investigate response systems, relevant policies and issues, and develop solutions.
**Prerequisites:** Graduate standing.
**Stacked with** ANS F467.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F670 The Alaska Native Claims Settlement Act: Pre-1971 to Present**
3 Credits
Offered Fall Even-numbered Years
Overview and analysis of the Alaska Native Claims Settlement Act. An in-depth examination of the land claims movement of the 1960s and resulting legislative process. Firsthand accounts from Native leaders will be featured. Case studies describing challenges of individual Native villages and regions. Contemporary issues facing ANCSA corporations will be examined.
**Prerequisite:** Graduate standing.
**Stacked with** RD F470.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F671 Corporate Social Responsibility and Accountability in Rural and Indigenous Contexts**
3 Credits
Offered Fall Odd-numbered Years
Examination of corporate social responsibility and how CSR plays out in rural Alaska and other Indigenous contexts. Uses comparative case studies of international, national and rural Alaska organizational, economic and societal issues with a special emphasis on transnational corporations, ANCSA corporations, tribal enterprises and other businesses.
**Prerequisites:** Graduate standing.
**Recommended:** RD F625.
**Stacked with** RD F471.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F675 Federal Indian Law: Land, Water and Subsistence**
3 Credits
Offered As Demand Warrants
Federal Indian law and its implementation in Alaska; including the Indian Reorganization Act, Alaska Native Claims Settlement Act, and the Alaska National Interest Lands Conservation Act. Students will explore the political landscape of Alaska and consider the future of subsistence, water rights and how these laws affect natural resource access.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F676 Federal Indian Law in Alaska: Tribal Self-governance - Business, Public Safety Protection of Family,**
3 Credits
Offered As Demand Warrants
Examination of the history of federal Indian law and its implementation in Alaska. Key laws including the Indian Reorganization Act (IRA), Public Law 83-280, Indian Child Welfare Act (ICWA), Indian Self-Determination and Education Assistance Act (ISDEAA), Indian Civil Rights Act (ICRA) and the Tribal Law and Order Act (TLOA) are examined in terms of how they have altered the political landscape in Alaska. Indian legislation is explored to determine how Native communities exercise self-governance in Alaska. Students consider the development of tribal judicial capacity and pressing issues such as public safety for Native communities in Alaska as well as tribal participation in business and contractual agreements.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F690 Seminar in Cross-Cultural Studies**
3 Credits
Offered Fall and Spring
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program.
**Prerequisites:** Advancement to candidacy; permission of student's graduate committee.
**Cross-listed with** CCS F690; ED F690; ANL F690.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F691 Seminar in Rural, Community and Indigenous Development Issues**
3 Credits
Offered Spring
Over the semester, students will review key concepts from the core courses in the M.A. program and develop a graduate portfolio illustrating their application in rural development contexts.
**Prerequisites:** RD F600; RD F601; RD F625; RD F650; RD F651.
**Lecture + Lab + Other:** 3 + 0 + 0

**RD F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 3-9

**RD F699 Thesis**
1-9 Credits
**Lecture + Lab + Other:** 0 + 0 + 1-9

# Rural Human Services (RHS)

**College of Rural and Community Development**
Rural Human Services (https://www.uaf.edu/rhs/)
907-474-7143

**RHS F110 Cross-cultural Bridging Skills**
1 Credit
Offered As Demand Warrants
Issues and impacts relevant to effective cross-cultural communication. Understanding barriers to effective cross-cultural communication in rural settings and development of effective cross-cultural communication skills from an Indigenous perspective. Development of bridging and networking skills that integrate Indigenous values and principles. Course taught on site/ intensive. Enrollment in RHS program required.
**Lecture + Lab + Other:** 1 + 0 + 0

**RHS F115 Issues of Personal Development** (a)
2 Credits
Dynamics and impacts of personal development issues relevant to the delivery of rural human services focusing on understanding types, application and processes of personal development. Facilitating personal development through processes that integrate or reflect Native values and principles. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F120 Family Systems I** (a)
2 Credits
Survey of historical forces that exerted influence on Alaska Native families, the impacts of those forces and discussion of their contemporary effects from a Native perspective. Focus on developing options and strategies for developing healthy Native families as the foundation for healthy Native communities. Emphasis on developing the understanding and skills necessary to facilitate development and maintenance of healthy families through healthy individuals. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F130 Processes of Community Change** (a)
2 Credits
Contemporary foundations of rural social development and relevant issues from a Native perspective. Developing the understanding and skills necessary for facilitating positive individual, family and community development based on an ecological systems approach. Emphasis on developing the skills necessary to identify, develop and mobilize individual, family and community resources in rural Native communities. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F140 Alaska Native Values and Principles** (a)
1 Credit
Traditional Native values and principles, their applicability to today's world and issues relevant to their integration into today's lifestyles. Developing understanding and skills necessary for facilitating formulation of positive world views within Native individuals, families and communities. Explores the role of spirituality in a variety of Alaska Native cultures. Student must spend three days in intensive study at selected delivery site.
**Lecture + Lab + Other:** 1 + 0 + 0

**RHS F150 Introduction to Rural Counseling** (a)
2 Credits
Identification and examination of issues relevant to the delivery of rural counseling services focusing on developing the understanding and skills necessary for the effective delivery of rural counseling services. Opportunities for development of basic rural counseling skills with emphasis on integration of Native values and principles and exploring strategies that facilitate positive individual, family, and community growth and development through enhancement of healthy lifestyles in rural Native communities. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F220 Family Systems II** (a)
2 Credits
The dynamics and issues relevant to personal healing and recovery from a Native perspective focusing on developing the understanding and skills necessary to healing and recovery in Native individuals, families and communities. Emphasis on achieving healthy lifestyles through self-understanding based on truth, grieving and positive proactive repositioning. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F250 Rural Counseling II** (a)
2 Credits
Differences and similarities between Native and Western counseling skills. Issues relevant to the development and delivery of basic rural counseling skills and services. Focuses on identifying and building on individual, family and community strengths as the foundation for development of intervention strategies. Addresses the importance of integrating Native traditional values and principles into intervention strategies and service delivery. Emphasis on developing and enhancing basic rural counseling skills and short- and long-term intervention strategies. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F260 Addictions: Intervention and Treatment** (a)
2 Credits
Dynamics, issues, impacts, treatment options and intervention strategies relevant to behavioral and chemical addictions. Understanding addictive processes and developing treatment options and intervention strategies from a Native perspective. Emphasis on development of treatment options and intervention strategies that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F265 Interpersonal Violence** (a)
2 Credits
Offered As Demand Warrants
Types, causes and impacts of interpersonal violence focusing on developing an understanding of interpersonal violence and development of treatment options and intervention strategies from a Native perspective. Emphasis on development of treatment options and intervention strategies that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F275 Introduction to Recovery and Mental Illness** (a)
2 Credits
Offered As Demand Warrants
Overview of mental illness and recovery issues. Emphasis on issues for practitioners in small, rural communities in Alaska.
**Prerequisites:** RHS F150.
**Recommended:** RHS F250, RHS F115.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F285 Case Management** (a)
2 Credits
Identification and discussion of issues, components, procedures, responsibilities, skills and processes for case management in rural settings with diverse populations. Emphasis on case management processes unique to rural and village Alaska and to the fields of mental health, addictions and interpersonal violence. Oral and written communication skills essential to effective case management explored. Student must be willing and able to work independently outside the classroom and in the community.
**Lecture + Lab + Other:** 2 + 1 + 0

**RHS F287 Rural Human Services Practicum** (a)
4 Credits
Personal and professional development, self-analysis and growth. Emphasis on developing the understanding and skills necessary to integrate Native healing theory and problem solving into the delivery of rural human services. Student must be willing and able to work independently outside the classroom and in the community. Taken as part of the final sequence of courses in the Rural Human Services certificate program, practicum provides students with 100 hours of supervised learning experience in an approved rural human service organization/agency.
**Lecture + Lab + Other:** 4 + 0 + 0

**RHS F290 Grief and Healing** (a)
2 Credits
Offered As Demand Warrants
Exploration of the dynamics of grief and healing from an Alaska Native perspective. Special emphasis on Native values and principles focused on developing culturally relevant, understandings, awarenesses and professional skills.
**Lecture + Lab + Other:** 2 + 1 + 0

# Russian (RUSS)

**College of Liberal Arts**
Department of Foreign Languages and Literatures (https://www.uaf.edu/language/)
907-474-7396

**RUSS F100A Elementary Russian 1A** (h)
3 Credits
Offered As Demand Warrants
An introductory course in the Russian language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F100B Elementary Russian 1B** (h)
3 Credits
Offered As Demand Warrants
An introductory course in the Russian language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Prerequisites:** RUSS F100A.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F101X Elementary Russian I** (h)
4 Credits
Offered Fall
Introduction to language and culture: development of proficiency in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 750 words; exploration of the cultural dimension, implicitly through language, and explicitly through texts and audiovisual materials.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 4 + 0 + 0

**RUSS F102X Elementary Russian II** (h)
4 Credits
Offered Spring
Introduction to Russian language and culture: Development of proficiency in the language through understanding, recognition and use of linguistic structures; emphasis on listening comprehension and speaking; building up to a working vocabulary of approximately 1,500 words; exploration of culture, implicitly through language, and explicitly through texts and audiovisual materials.
**Prerequisites:** RUSS F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 4 + 0 + 0

**RUSS F103 Conversational Russian I** (h)
3 Credits
Offered As Demand Warrants
Verbal skills improvement. Vocabulary is presented to improve speaking on specific topics.
**Prerequisites:** RUSS F101X; RUSS F102X.
**Special Notes:** Does not satisfy core curriculum or foreign language major requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F201 Intermediate Russian I** (h)
4 Credits
Offered Fall
Continuation of RUSS F102X. Increasing emphasis on reading ability and cultural materials. Conducted in Russian.
**Prerequisites:** RUSS F102X.
**Lecture + Lab + Other:** 4 + 0 + 0

**RUSS F202 Intermediate Russian II** (h)
4 Credits
Offered Spring
Continuation of RUSS F102X. Increasing emphasis on reading ability and cultural materials. Conducted in Russian.
**Prerequisites:** RUSS F201.
**Lecture + Lab + Other:** 4 + 0 + 0

**RUSS F203 Conversational Russian II** (h)
3 Credits
Offered As Demand Warrants
Oral skills improvement. Vocabulary is presented to improve speaking on specific topics. Does not satisfy core curriculum or foreign language major requirements.
**Prerequisites:** RUSS F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F292 Russian Seminar**
1-8 Credits
**Lecture + Lab + Other:** 1-8 + 0 + 0

**RUSS F301 Advanced Russian I** (h)
3 Credits
Offered Fall
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian.
**Prerequisites:** RUSS F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F302 Advanced Russian II** (h)
3 Credits
Offered Spring
Continuation of RUSS F301 Advanced Russian I. Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian.
**Prerequisites:** COJO F131X or COJO F141X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; RUSS F301.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F392 Russian Seminar**
1-8 Credits
**Lecture + Lab + Other:** 1-8 + 0 + 0

**RUSS F431 Studies in Russian Culture** (h)
3 Credits
Offered As Demand Warrants
Study of the cultures of the Russian-speaking world. May be repeated for credit if topic varies.
**Prerequisites:** RUSS F301; junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F432 Studies of Russian Literature** (h)
3 Credits
Offered As Demand Warrants
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. May be repeated for credit when topics vary.
**Prerequisites:** RUSS F302 or equivalent, and at least junior standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F476 Russian Culture and Society in the 21st Century** (h)
3 Credits
Offered As Demand Warrants
Study of contemporary Russian culture and society through selected literary texts and media representations; examination of the idea of the "Russian North" and its place in Russian culture; consideration of Russian politics and current events. Students will gain knowledge about present-day Russia and its peoples from perspectives, sources and media. Russian Studies majors must complete RUSS F202 and Arctic and Northern Studies majors must complete two ACNS courses.
**Prerequisite:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; COJO F131X or COJO F141X; junior standing.
**Cross-listed with** ACNS F476.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F484 Russian and Soviet Cinema** (h)
3 Credits
Offered As Demand Warrants
Study of Russian culture and society through the medium of film, focusing on the history of Russian cinema and genres. Designed to familiarize students with topics in film theory, and Russian history and culture from 1900s to the present. Readings and topics reflect issues of current interest.
**Prerequisites:** Junior standing.
**Cross-listed with** FLPA F484.
**Lecture + Lab + Other:** 3 + 0 + 0

**RUSS F488 Individual Study: Senior Project** (h)
3 Credits
Offered As Demand Warrants
Analysis and presentation, in the language, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the sixth week of the semester preceding the semester of graduation. Conducted in Russian.
**Prerequisites:** At least 10 credits in upper division Russian.
**Lecture + Lab + Other:** 3 + 0 + 0

# Science Applications (SCIA)

**College of Rural and Community Development**
College of Rural and Community Development Science (https://uaf.edu/rural/academics/departments/science.php)
907-474-5029

**SCIA F101L Natural Science Lab Course**
1 Credit
Offered Fall and Spring
Laboratory course in natural science. Students will complete two labs on applying the scientific method and 10 labs in any of the following study areas in natural science, Physics, Chemistry, Biology or Geoscience. For non-science majors. Special lab fees apply.
**Prerequisites:** A university-level natural science course.
**Attributes:** UAF GER Natural Science Req
**Lecture + Lab + Other:** 0 + 6 + 0

**SCIA F105 Field Biology**
2 Credits
Offered Summer
Students will learn some of the techniques that are employed by wildlife biologists to study plants, fish and animals in the field and establish use of the scientific method through a student research project.
**Lecture + Lab + Other:** 20 + 20 + 0

**SCIA F150 Subarctic Horticulture**
1 Credit
Offered As Demand Warrants
Soils, plant propagation, disease and insect control, variety selection, fertilization, greenhouse construction and care and gardening techniques. Emphasis on development and care of greenhouses and gardens in the Nome area.
**Lecture + Lab + Other:** 0 + 3 + 0

**SCIA F150P Subarctic Horticulture**
1 Credit
Soils, plant propagation, disease and insect control, variety selection, fertilization, greenhouse construction and care and gardening techniques. Emphasis on development and care of greenhouses and gardens in the Nome area.
**Lecture + Lab + Other:** 1 + 0 + 0

**SCIA F157 Alaska Plants** (n)
1 Credit
Offered As Demand Warrants
Introduction to the topics of plant taxonomy and identification with specific reference to common Alaskan plants and vegetation types.
**Lecture + Lab + Other:** 1 + 0 + 0

**SCIA F161 Birds of Alaska**
1 Credit
Offered As Demand Warrants
Biology of birds including behavior, anatomy, physiology, ecology, systematics and field identification.
**Lecture + Lab + Other:** 1 + 0 + 0

**SCIA F162 Mammals of Alaska** (n)
1 Credit
Offered As Demand Warrants
Introduction to the mammals of Alaska and their importance to the local ecology and economy from a scientific research standpoint. Emphasis on important and/or common species for study of classification, habitat, life cycle and economic importance.
**Prerequisites:** Background or interest in general science or natural history.
**Lecture + Lab + Other:** 1 + 0 + 0

# Science Teaching and Outreach (STO)

**College of Natural Science and Mathematics**
Department of Biology and Wildlife (https://www.bw.uaf.edu/)
907-474-7671

**STO F401 Communicating Science**
2 Credits
Offered Spring Even-numbered Years
This highly interactive course allows students to gain hands-on experience designing and practicing science communication for public audiences. Over the course of the semester, students will design three science communication efforts and present their own science to peers. Students will also explore relevant communication theories and current topics.
**Prerequisites:** Junior or Senior standing.
**Stacked with** STO F601.
**Lecture + Lab + Other:** 2 + 0 + 0

**STO F601 Communicating Science**
2 Credits
Offered Spring Even-numbered Years
This highly interactive course allows students to gain hands-on experience designing and practicing science communication for public audiences. Over the course of the semester, students will design three science communication efforts and present their own science to peers. Students will also explore relevant communication theories and current topics.
**Prerequisites:** Graduate standing.
**Stacked with** STO F401.
**Lecture + Lab + Other:** 2 + 0 + 0

**STO F602 Mentoring in the Sciences**
2 Credits
Offered Fall Even-numbered Years
Effective mentoring can be learned, but not taught. Good mentors are normally produced through years of practice, successes and failures, and no two mentoring situations are alike. This course provides a forum for graduate students to develop their mentoring philosophy and build effective mentoring skills.
**Prerequisites:** Graduate Standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**STO F603 Instructional Design**
1 Credit
Offered Spring Odd-numbered Years
This graduate seminar course will address important components of course planning and instructional design that reflect best practices in science teaching. This course focuses on the overall design of courses, the integration of the various components of a course, the development and implementation of objectives, assessments and syllabus construction.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 1 + 0 + 0

**STO F604 Science Teaching and Outreach Internship**
4 Credits
Offered As Demand Warrants
Under the supervision of a faculty member, students gain professional experience in science teaching or outreach by choosing one of the following strands: 1) higher education, 2) formal K-12 education, or 3) informal education. An internship plan is developed prior to enrollment and agreed upon by the instructor of record, faculty mentor or K-12 teacher mentor, and student.
**Prerequisites:** STO F666 for higher education strand or STO F601 for formal K-12 education or informal education strand.
**Lecture + Lab + Other:** 0 + 0 + 12

**STO F666 Scientific Teaching**
2 Credits
Offered Fall Odd-numbered Years
This course explores methods for teaching science at the university level. We emphasize methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in teaching methods.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 2 + 0 + 0

**STO F692 Current Topics in Scientific Teaching**
1 Credit
Offered Alternate Fall
This graduate seminar course explores current trends in science education at the pre-college and college levels. Topics may include diversity, technology, active learning, and others. The course will rely on readings from primary literature and discussion.
**Prerequisites:** Graduate standing.
**Recommended:** STO F666 or STO F601.
**Lecture + Lab + Other:** 1 + 0 + 0

**STO F692P Current Topics in Scientific Teaching**
1 Credit
Offered Alternate Fall
This graduate seminar course explores current trends in science education at the pre-college and college levels. Topics may include diversity, technology, active learning, and others. The course will rely on readings from primary literature and discussion.
**Prerequisites:** Graduate standing.
**Recommended:** STO F666 or STO F601.
**Lecture + Lab + Other:** 1 + 0 + 0

# Social Work (SWK)

**College of Liberal Arts**
Department of Social Work (https://www.uaf.edu/socwork/)
907-474-7240

**SWK F103X Introduction to Social Work** (s)
3 Credits
Offered Fall and Spring
Introduction to the profession of social work and the human services delivery system. Examines historical development of social work focusing on the knowledge, values and skills that characterize the social worker. Orientation to the context for social work, including the diversity of human needs, human services, social policy and legislation. Services, programs, and career opportunities within rural and urban Alaska, as well as nationally, are discussed.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F220 Ethics, Values and Social Work Practice** (s)
3 Credits
Offered Fall and Spring
The professional nature and meaning of generalist social work practice. Examines the NASW code of ethics. Introduces interpersonal communication and interviewing. Assists students in making decisions about a career in social work.
**Prerequisites:** SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F305 Social Welfare History** (s)
3 Credits
Offered Fall
Analysis of social inequality and the U.S. social welfare system by tracing the historical development of government response to social inequality and exploring historical and persisting dilemmas in the provision of social welfare services.
**Prerequisites:** COJO F131X or COJO F141X; SWK F103X or HIST F100X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F306 Social Welfare: Policies and Issues**
3 Credits
Offered Spring
Social policies and how they affect the delivery of social services. Factors influencing development of the current social service system. Analysis of dilemmas that develop in a welfare system attempting to deal with rapid social change. Alternative approaches to the solution of social problems and possible future developments.
**Prerequisites:** ECON F120X; PS F100X; SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F310 Fetal Alcohol Spectrum Disorders**
3 Credits
Offered As Demand Warrants
An overview of fetal alcohol spectrum disorders with a particular focus on the needs, issues and programs specific to Alaska.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F320 Rural Social Work**
3 Credits
Offered Fall and Spring
This course examines rural and small community life, its value systems, strengths and capacities, customs, political and economic structures and their implications for the lives of people in rural settings and for generalist social work practice. Special attention is given to differences in intervention and service provision in rural areas.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F330 Seminar in International Social Work**
3 Credits
Offered As Demand Warrants
International issues related to social work practice and social welfare policy. The focus of the seminar will be on global and international issues related to social and economic justice, distributive justice, and human and civil rights. Specific content is announced at registration. Course may be repeated once for credit when content varies.
**Prerequisites:** SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F341 Human Behavior in the Social Environment I** (s)
3 Credits
Offered Fall
HBSE is a sequence of two courses that focus on human development in the context of the social environment. Throughout the sequence, a person-in-environment perspective is utilized to interpret the situations of individuals, families and groups. These situations are evaluated in the light of social work values and ethics. The first course in the sequence focuses on the human life cycle viewed in the context of the social environment.
**Prerequisites:** PSY F101X; SOC F101X or ANTH F100X; SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F342 Human Behavior in the Social Environment II**
3 Credits
Offered Spring
HBSE is a sequence of two courses that focus on human development in the context of the social environment. Throughout the sequence, a person-in-environment perspective is utilized to interpret the situations of individuals, families and groups. These situations are evaluated in the light of social work values and ethics. The second course in the sequence pays attention to those features of culture, the political economy, families, groups, formal organizations and communities that encourage human development or constrain and thwart it.
**Prerequisites:** PSY F101X; SOC F101X or ANTH F100X; SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F350 Women's Issues in Social Welfare and Social Work Practices** (s)
3 Credits
Offered As Demand Warrants
Examination of theories and research concerning women's issues in the field of social work and in the social welfare system, with particular emphasis on women in poverty and women of color. Contemporary policy issues and strategies of empowerment will be covered.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X or SOC F101X.
**Cross-listed with** WGS F350.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F360 Child Abuse and Neglect**
3 Credits
Offered Summer Odd-numbered Years
Dynamics, implications and treatments of child abuse and neglect for individuals and families in rural and urban Alaska.
**Prerequisites:** Sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F370 Services and Support for an Aging Society** (s)
3 Credits
Offered As Demand Warrants
An examination of the aging process, theories, political processes, social work generalist intervention and strategies and agency support for the aging population. The rapidly changing social and health issues of older adults are addressed in a multi-disciplinary and multi-cultural approach.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F375 Research Methods in Social Work**
3 Credits
Offered Fall and Spring
Course has a two-fold objective: to help students become critical consumers of research in the social sciences and to allow students to carry out beginning research studies. Course sequentially covers phases of the research process, whether quantitative or qualitative.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F390 Trauma and Wellness: Historical and Contemporary Perspectives**
3 Credits
Offered Summer Even-numbered Years
This course explores and critically examines diverse ways of knowing about experiences related to the concepts of trauma and wellness, both individually and collectively, and builds upon wellness strategies that focus on context, culture and lived experience across the lifespan.
**Prerequisites:** Sophmore standing or higher.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F405 Mental Health and Wellness: A Social Work Approach**
3 Credits
Offered As Demand Warrants
This course will explore the history and treatment of individuals with mental health disorders in the United States. Students will explore the unique opportunities and challenges faced by social workers, and prepare them to provide case management and assessment services to people with mental health disorders.
**Prerequisites:** SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F440 Social Work Practice with Military Families**
3 Credits
Offered Spring Even-numbered Years
Explores the history and roles of social work with military families. Ethical concerns that emerge from social work practice with military families are addressed. Military social workers' roles in mental health programs, family advocacy, program administration, and policy making are examined. Addresses the issues that affect military families during times of deployment.
**Prerequisites:** SWK F220.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F460 Social Work Practice I**
3 Credits
Offered Fall
Development of beginning skills in interviewing and helping processes with individuals and families. Application of intervention strategies, interviewing techniques, case management and advocacy.
**Prerequisites:** acceptance to practicum; social work major; senior standing.
**Corequisites:** SWK F461.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F461 Practicum in Social Work I**
3,6 Credits
Offered Fall
Individual training and practice in a social service agency. Students signing up for 3 credits complete 100 hours; students signing up for 6 credits complete 200 hours of direct practice in an approved agency under the supervision of a field instructor.
**Prerequisites:** Social Work major; senior standing; approval from practicum coordinator.
**Lecture + Lab + Other:** 2 + 7,15 + 0

**SWK F463 Social Work Practice II**
3 Credits
Offered Spring
Further development of student's knowledge of direct practice and beginning skills in groups and community practice. Emphasis on aspects of rural practice.
**Prerequisites:** SWK F460; social work major; senior standing.
**Corequisites:** SWK F464.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F464 Practicum in Social Work II**
3,6 Credits
Offered Spring
Continuation of SWK F461; further direct practice experience in an agency. Students signing up for 3 credits complete 100 hours; students signing up for 6 credits complete 200 hours of practice in an approved agency under the supervision of a field instructor. Taken concurrently with SWK F463.
**Prerequisites:** SWK F460; SWK F461; Social Work major; senior standing.
**Lecture + Lab + Other:** 2 + 7,15 + 0

**SWK F466 Practicum in Social Work III**
3,6 Credits
Offered As Demand Warrants
Further direct practice experience in an approved agency under the supervision of a field instructor. Students enrolled in 3 credits must complete 100 hours of practicum. Students enrolled in 6 credits must complete 200 hours of practicum.
**Prerequisites:** SWK F460; SWK F461; SWK F463; SWK F464; Social Work major; senior standing.
**Lecture + Lab + Other:** 0 + 7,15 + 0

**SWK F470 Substance Abuse Theories and Treatment** (s)
3 Credits
Offered As Demand Warrants
Examination of research and theories of chemical dependency from a social work, systems/ecological framework. Critically examines current theory and practice in terms of effectiveness, cultural appropriateness and validity with vulnerable populations.
**Prerequisites:** SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SWK F484 Seminar in Social Work Practice Areas**
3 Credits
Offered As Demand Warrants
Problem areas in social work. Topics vary in different semesters, content announced in class schedule prior to each semester. Course may be repeated for credit when topic varies.
**Prerequisites:** SWK F103X.
**Lecture + Lab + Other:** 3 + 0 + 0

# Sociology (SOC)

**College of Liberal Arts**
Department of Psychology (https://www.uaf.edu/psych/undergraduate-resource-ce/)
907-474-7007

**SOC F101X Introduction to Sociology** (s)
3 Credits
Offered Fall, Spring and Summer
An introduction to the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts.
**Prerequisites:** Placement in WRTG F111X.
**Attributes:** UAF Core Indv, Soci Culture, UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**SOC F201X Social Problems and Solutions** (s)
3 Credits
Offered Fall
A study of major contemporary social problems, analysis of factors causing these problems, and discussion of potential solutions. Special emphasis is given to social problems and solutions in Alaska and the circumpolar North.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**SOC F280 Contemporary Topics in Sociology** (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on new and emerging social issues. Course may be repeated for credit when content varies.
**Prerequisites:** Placement into WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SOC F333 Human Sexualities Across Cultures** (s)
3 Credits
Offered Fall, Spring and Summer
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies and related fields, with particular focus determined by which department is offering the course.
**Prerequisites:** PSY F101X, WGS F201X.
**Recommended:** PSY F275.
**Cross-listed with** PSY F333; WGS F332.
**Lecture + Lab + Other:** 3 + 0 + 0

**SOC F480 Qualitative Social Science Research** (s)
3 Credits
Offered Spring
Introduction to classical and contemporary research within the qualitative (or interpretive) paradigm of social science. Discusses the theoretical frameworks, historical traditions, epistemological and ethical issues of qualitative approaches. Uses hands-on experience in the practicalities and excitement of a variety of methods for gathering qualitative data and conducting qualitative analysis.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; one lower-division social science research methods course.
**Cross-listed with** PSY F480.
**Lecture + Lab + Other:** 3 + 0 + 0

**SOC F698 Research**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**SOC F699 Thesis**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Spanish (SPAN)

**College of Liberal Arts**
Department of Foreign Languages and Literatures (https://www.uaf.edu/language/)
907-474-7396

**SPAN F100A Elementary Spanish 1A** (h)
3 Credits
Offered As Demand Warrants
Spanish language and culture with an emphasis on spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F100B Elementary Spanish 1B** (h)
3 Credits
Offered As Demand Warrants
Spanish language and culture with an emphasis on spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements.
**Prerequisites:** SPAN F100A.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F101X Elementary Spanish I** (h)
4 Credits
Offered Fall and Spring
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language and explicitly through texts and audiovisual materials.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 4 + 0 + 0

**SPAN F102X Elementary Spanish II** (h)
3 Credits
Offered Fall and Spring
Introduction to the language and culture: development of competence and performance in the language through understanding, recognition and use of linguistic structures; increasing emphasis on listening comprehension and speaking; basic vocabulary of approximately 1,000 words; exploration of the cultural dimension, implicitly through language and explicitly through texts and audiovisual materials.
**Prerequisites:** SPAN F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F103 Conversational Spanish I** (h)
3 Credits
Offered As Demand Warrants
Verbal skills improvement. Includes role-playing, problem-solving and situational conversation. Conducted entirely in Spanish.
**Prerequisites:** SPAN F102X.
**Special Notes:** Does not satisfy core curriculum or foreign language major requirements.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F201 Intermediate Spanish I** (h)
3 Credits
Offered Fall
Intermediate course designed for students with a basic knowledge of Spanish. SPAN F201 expands speaking, listening, reading, writing skills and broadens cultural understanding of the Spanish-speaking world for communicating at the intermediate level. Course conducted in Spanish.
**Prerequisites:** SPAN F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F202 Intermediate Spanish II** (h)
3 Credits
Offered Spring
Continuation of SPAN F201. Continues to develop speaking, listening, reading, writing skills and further broadens cultural understanding of the Spanish-speaking world in preparation for studies in advanced Spanish. Course conducted in Spanish.
**Prerequisites:** SPAN F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F203 SI SI! (Summer Intensive Spanish Immersion)** (h)
3 Credits
Offered Summer
Intensive two-week language immersion. Verbal skills improvement. Includes role-playing, problem-solving and situational conversation. Conducted entirely in Spanish.
**Prerequisites:** SPAN F201; SPAN F202.
**Special Notes:** Does not satisfy core curriculum.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F204 Intermediate Spanish Reading** (h)
3 Credits
Offered Spring
Spanish reading for the intermediate level with an emphasis on comprehension, fluency and vocabulary building rather than analysis. This course will prepare students for critical analysis of Spanish literature in upper-division courses.
**Prerequisites:** SPAN F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F222 Cultures and Civilizations of Spain** (h)
3 Credits
Offered As Demand Warrants
Designed to provide students of Spanish language and others interested in Hispanic culture with background in the geography, history, religions, cultures, and politics of Spain. Explores the changes and challenges facing contemporary Spanish society. Conducted in English.
**Recommended:** SPAN F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F301 Advanced Spanish Conversation and Comprehension** (h)
3 Credits
Offered Fall
Focus on increasing speaking and listening comprehension. Discussions, presentations and exercises to enhance verbal competence. Conducted in Spanish.
**Prerequisites:** COJO F131X or COJO F141X; SPAN F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F302 Advanced Spanish Reading and Literary Comprehension** (h)
3 Credits
Offered Spring
An introduction to the understanding and analysis of Hispanic literature, with particular emphasis on the forms of written Spanish. Conducted in Spanish.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SPAN F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F311 Advanced Spanish Composition** (h)
3 Credits
Offered As Demand Warrants
Practice of formal and informal writing styles in Spanish. Focus on vocabulary and stylistic issues.
**Prerequisites:** SPAN F202.
**Recommended:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F317 Advanced Spanish Grammar** (h)
3 Credits
Offered Fall
Grammatical concepts in Spanish. Focus on more difficult grammatical structures.
**Prerequisites:** SPAN F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F321 Cultures of Latin America**
3 Credits
Offered As Demand Warrants
Designed to provide students with background in the cultures, history and politics of Latin America, as well as continued practice in the target language. Conducted in Spanish.
**Prerequisites:** SPAN F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F322 Cultures of Spain** (h)
3 Credits
Offered Fall
Designed to provide students with background in the culture, history and politics of Spain, as well as continued practice in the target language. Explores the changes and challenges facing contemporary Spanish society. Conducted in Spanish.
**Prerequisites:** SPAN F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F431 Senior Seminar** (h)
3 Credits
Offered As Demand Warrants
Topics may include literature, arts and cultures of the Spanish-speaking world. Conducted in Spanish.
**Prerequisites:** COJO F131X or COJO F141X; SPAN F302; senior standing.
**Special Notes:** Students may repeat course for credit if topic varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F432 Studies of Hispanic Literature** (h)
3 Credits
Offered As Demand Warrants
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SPAN F302; junior standing.
**Special Notes:** Course may be repeated for credit if topic varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F482 Selected Topics in Spanish** (h)
3 Credits
Offered As Demand Warrants
Intensive course focusing on topics not covered in SPAN F431 or SPAN F432.
**Prerequisites:** SPAN F302; junior standing.
**Special Notes:** Course may be repeated for credit if topic varies.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPAN F488 Individual Study: Senior Project** (h)
3 Credits
Offered As Demand Warrants
Analysis and presentation, in Spanish, of a problem chosen by the student in consultation with the department. The student must apply for senior project and submit a project outline by the end of the sixth week of the semester preceding the semester of graduation. Offered normally in the semester preceding the student's graduation. Conducted in Spanish.
**Prerequisites:** At least 10 credits in upper-division Spanish.
**Lecture + Lab + Other:** 3 + 0 + 0

# Sport Management (SPRT)

College of Business and Security Management (https://www.uaf.edu/cbsm/)
907-474-7461

**SPRT F280 Sport Leadership**
3 Credits
Offered Fall
Provides leadership theory and develop leadership skills for application internal and external to their sport. Focus on the identification and development of leadership skills/abilities and application within the classroom, a sport and for an on-campus project.
**Cross-listed with** LEAD F280; BA F280.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F281X Introduction to Sport Management**
3 Credits
Offered Fall, Spring and Summer
Provides a basic understanding of the methods employed to manage amateur and professional sports organizations and the legal issues involved. Topics such as stadium financing, risk management contracts and human resource management, data collection, public versus private sector labor laws, collective bargaining and drug testing will be examined. Basic management techniques, theory and problems associated with the field sport management are discussed along with history and current trends in sport management.
**Cross-listed with** BA F281X.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F367 Huntology: The Science, Business and Philosophy of Hunting**
3 Credits
Offered Spring
The course is interdisciplinary, with perspectives from the disciplines of business, science and philosophy as related to the study and practice of hunting.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X.
**Cross-listed with** BA F367.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F375 Introduction to Esports Management**
3 Credits
Offered Fall
This course is designed to introduce students to business concepts related to the esports industry. Students will be exposed to topics including: the definition of esports, content marketing, event management, management, governance and legal aspects of esports.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** BA F375.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F480 Current Topics in Sport & Recreation Management**
3 Credits
Offered As Demand Warrants
This course examines current trends in critical areas of sport & recreation business from a management perspective. Topics of interest include corporate social responsibility, climate change, diversity, media relations, and technology.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X, WRTG F214X; SPRT F281X.
**Cross-listed with** BA F480.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F481 Event Management**
3 Credits
Offered Fall, Spring and Summer
This course is designed to provide the student with knowledge pertaining to the various aspects of managing a public sport and/or entertainment event and their production. Topics discussed include economic impact, sponsorship, risk management, staff and volunteers, customer service, concessions, crowd management and technology.
**Prerequisites:** BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with** BA F481.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F482 Sport Marketing**
3 Credits
Offered Spring
This course provides a decision-orientated overview of sport marketing management in sport organizations. This course is designed to acquaint students with comprehensive fundamental theories and issues in sport marketing, grounded within traditional marketing principles, and emphasizing unique application to the sport industry.
**Prerequisites:** BA F343; BA F281X or SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with** BA F482.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F483 Sport and Recreation Sales**
3 Credits
Offered Fall
This course is designed to provide the student with knowledge pertaining to the various aspects of sales and pricing techniques used within sport and recreation organizations. Some of the topics discussed include ticket distribution, customer service, software and real-life sales campaigns.
**Prerequisites:** BA F343, BA F281X/SPRT F281X; COJO F121X, COJO F131X or COJO F141X.
**Cross-listed with** BA F483.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F484 Legal Aspects of Sport and Recreation Management**
3 Credits
Offered As Demand Warrants
This course will focus on the three major areas of law that have a direct impact on the management of sport and recreation: tort liability and risk management; contract law; and constitutional law.
**Prerequisites:** SPRT F281X.
**Cross-listed with** BA F484.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F485 Sport and Recreation Facilities**
3 Credits
Offered Fall
This course provides a foundation for the planning process, operations, and specific design features for various park, recreation, and sport facilities. This course is designed to provide students the opportunity to learn multiple aspects of sports facilities and the management of events held at these facilities.
**Prerequisites:** SPRT F281X, BA F281X, SPRT F280 or BA F280.
**Cross-listed with** BA F485.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F486 Entrepreneurship in Outdoor Recreation Industries**
3 Credits
Offered Spring
This course is an introduction in the development and management of outdoor recreation businesses. Topics covered include business plan development, financial structures, and risk management specific to remote recreation businesses commonly found in Alaska, such as big-game commercial services, sport fishing operations, remote expediting, and aviation-related services.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; BA/SPRT F281X.
**Cross-listed with** BA F486.
**Lecture + Lab + Other:** 3 + 0 + 0

**SPRT F488 Sport Analytics**
3 Credits
Offered Fall, Spring and Summer
This course is an introduction to the application of analytical tools and techniques used within the sports industry. It will discuss theory, development, and application of analytics in the sports industry.
**Prerequisites:** SPRT F280 or SPRT F281X.
**Crosslisted with** BA F488.
**Lecture + Lab + Other:** 3 + 0 + 0

# Statistics (STAT)

**College of Natural Science and Mathematics**
Department of Mathematics and Statistics (https://www.uaf.edu/dms/)
907-474-7332

**STAT F200X Elementary Statistics** (m)
3 Credits
Offered Fall and Spring
Introduction to concepts and applications of elementary statistical methods. Topics include sampling and data analysis, descriptive statistics, elementary probability, probability and sampling distributions, confidence intervals, hypothesis testing, correlation, and simple linear regression.
**Prerequisites:** Appropriate placement score; or a grade of B or better in MATH F105 or MATH F105N or in all three of MATH F105G and MATH F105H and MATH F105J; or grade of C- or better in a math course numbered F122 or above.
**Attributes:** UAF GER Mathematics Req
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F300 Statistics**
3 Credits
Offered Fall and Spring
A calculus-based course emphasizing applications. Topics include probability, joint and conditional probability, expectation and variance, parameter estimation (method of moments and maximum likelihood), one and two sample hypothesis tests, simple linear regression and one-way analysis of variance.
**Prerequisites:** MATH F230X or MATH F251X or placement.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F401 Regression and Analysis of Variance**
4 Credits
Offered Fall and Spring
Multiple regression including multiple and partial correlation, extra sum of squares principle, indicator variables, polynomial models, model selection, and assessment of underlying assumptions. Analysis of variance and covariance for multifactor studies in completely random and randomized complete block designs, multiple comparisons and orthogonal contrasts. Matrix concepts are taught as needed.
**Prerequisites:** STAT F200X or STAT F300.
**Corequisites:** STAT F401L.
**Lecture + Lab + Other:** 3 + 3 + 0

**STAT F401L STAT F401 Laboratory**
0 Credit
Offered Fall and Spring
Computer laboratory section for STAT F401 Regression and Analysis of Variance. Activities may include case studies involving the application of lecture topics and methods in R software.
**Corequisites:** STAT F401.
**Lecture + Lab + Other:** 0 + 3 + 0

**STAT F402 Scientific Sampling**
3 Credits
Offered Fall
Sampling methods, including simple random, stratified and systematic and one- and two-stage cluster sampling; estimation procedures, including ratio and regression methods; special area and point sampling procedures; optimum allocation. Adaptive and probability sampling; bootstrapping and basic mark-and-recapture.
**Prerequisites:** STAT F200X or STAT F300.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F454 Statistical Consulting Seminar**
1 Credit
Offered Spring
Introduction to statistical consulting and data analysis. Emphasis on interaction with researchers and identification of scientific and statistical issues relevant to the research problem. Includes regular class meetings as well as supervised meetings with researchers. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. May be repeated for a total of three credits.
**Prerequisites:** STAT F200X or STAT F300; STAT F401; and MATH F408.
**Stacked with** STAT F654.
**Lecture + Lab + Other:** 1 + 0 + 0

**STAT F461 Applied Multivariate Statistics**
3 Credits
Offered Spring Even-numbered Years
Estimation and hypothesis testing, multivariate normality and its assessment, multivariate one and two sample tests, confidence regions, multivariate analysis of variance, discrimination and classification, principal components, factor analysis, clustering techniques and graphical presentation. Statistical computing packages utilized in assignments.
**Prerequisites:** STAT F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F602 Experimental Design**
3 Credits
Offered Fall Even-numbered Years
Constructing and analyzing designs for experimental investigations; completely randomized, randomized block and Latin-square designs, split-plot design, incomplete block design, confounded factorial designs, nested designs, treatment of missing data, comparison of designs.
**Prerequisites:** STAT F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F605 Spatial Statistics**
3 Credits
Offered Spring Even-numbered Years
Stochastic processes and variograms. Geostatistics including kriging and spatial design of experiments. Point processes including model selection and K-functions. Lattice process models and image analysis. Computer-intensive statistical methods.
**Prerequisites:** STAT F401; MATH F251X; MATH F252X; MATH F253X.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F611 Time Series**
3 Credits
Offered Spring Odd-numbered Years
An applied course in time series and repeated measure analysis. Autoregression and moving average models. Estimation of parameters and tests. Prediction. Spectral analysis. Analysis of repeated measures data.
**Prerequisites:** STAT F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F621 Nonparametric Statistics**
3 Credits
Offered Fall Odd-numbered Years
Traditional and modern nonparametric statistical techniques. Distribution-free methods for small samples including sign, rank and randomization tests, correlation estimators, and bootstrapping. Modern techniques including kernel density estimation, survival analysis models, kernel and spline regression, generalized additive models, classification methods, robust estimation, regression trees, and neural net models.
**Prerequisites:** STAT F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F631 Categorical Data Analysis**
3 Credits
Offered Fall Odd-numbered Years
Statistical methods designed for count and categorical data. Contingency tables. Logistic and related models. Log-linear models. Repeated categorical responses. Survival data.
**Prerequisites:** STAT F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F641 Bayesian Statistics**
3 Credits
Offered Fall Even-numbered Years
Bayes' Rule, Bayesian models for univariate data, prior selection (conjugate and non-conjugate, noninformative and objective priors). Single parameter and multiparameter models. Hierarchical, general linear and mixed models. Study of posterior simulation techniques including Markov chain Monte Carlo. Model validation and model selection. Emphasis on applications, using modern statistical software packages.
**Prerequisites:** MATH F252X; (MATH F371 and MATH F408) or STAT F651.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F642 Bayesian Decision Theory for Resource Management**
4 Credits
Offered Spring Even-numbered Years
Application of decision theory to problems in natural resources management. Students will learn to perform Bayesian calculations and uncomplicated decision analysis themselves.
**Prerequisites:** FISH F621.
**Cross-listed with** FISH F642.
**Lecture + Lab + Other:** 2 + 2 + 0

**STAT F651 Statistical Theory I**
3 Credits
Offered Fall
Probability and distribution of random variables. Conditional probability and stochastic independence. Distributions of functions of random variables. Expected values. Limiting distributions. Distributions derived from the normal distribution. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll.
**Prerequisites:** MATH F253X; MATH F314; previous statistics course.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F652 Statistical Theory II**
4 Credits
Offered Spring Odd-numbered Years
Estimation of parameters. Efficiency and sufficiency. Hypothesis testing. The Neyman-Pearson paradigm and likelihood ratio tests. Data summaries. Bootstrap. Comparison of two samples. Linear least squares. Analysis of categorical data. Bayesian inference. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll.
**Prerequisites:** STAT F651.
**Lecture + Lab + Other:** 4 + 0 + 0

**STAT F653 Statistical Theory III: Linear Models**
3 Credits
Offered Spring Even-numbered Years
Best linear unbiased estimation in the general linear model, Gauss-Markov theory and applications, maximum likelihood estimation for linear models, multivariate normal distributions, linear regression and analysis of variance, weighted regression, robust and nonlinear regression and generalized linear models. Designed to combine mathematical statistics with applications from a variety of fields. STAT F401 or equivalent course in applied linear regression modeling is strongly recommended.
**Prerequisites:** STAT F651 or MATH F371; MATH F253X; MATH F314.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F654 Statistical Consulting Seminar**
1 Credit
Offered Spring
Introduction to statistical consulting and data analysis. Emphasis on interaction with researchers and identification of scientific and statistical issues relevant to the research problem. Includes regular class meetings as well as supervised meetings with researchers. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. May be repeated for a total of three credits.
**Prerequisites:** STAT F200X or STAT F300; STAT F401; and MATH F408.
**Stacked with** STAT F454.
**Lecture + Lab + Other:** 1 + 0 + 0

**STAT F661 Sampling Theory**
3 Credits
Offered As Demand Warrants
Statistical theory for sampling and sample surveys. Choice of method, power and sample size considerations, treatment of sampling and non-sampling biases. Sampling methods based on detectability. Adaptive sampling. Spatial sampling. Mark and recapture methods. The jackknife, the bootstrap and resampling plans.
**Prerequisites:** STAT F200X; STAT F401.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F671 Statistical Computing**
3 Credits
Offered Spring Odd-numbered Years
Topics in statistical programming which may include Advanced R, program design, parallel processing, object oriented programming, functions, environments, debugging, loops and their replacements, C++ in R and code optimization. Optimizers, linear programming, random number generators including MCMC. Web applications. Writing R packages. Reproducible research. Text mining and relational databases.
**Prerequisites:** STAT F401; MATH F251X or MATH F230X; Knowledge of basic R highly recommended.
**Lecture + Lab + Other:** 3 + 0 + 0

**STAT F692 Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**STAT F692P Seminar**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**STAT F698 Non-thesis Research/Project**
1-6 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

# Trades And Technology (TTCH)

Community and Technical College (https://www.ctc.uaf.edu/)
907-455-2800

**TTCH F101 Machine Woodworking I**
2 Credits
Offered As Demand Warrants
Introduction to woodworking power machines (circular saw, jointer, radial arm saw), joints, fasteners, and different stains and finishes used on wood.
**Lecture + Lab + Other:** 2 + 0 + 0

**TTCH F105 Basic Electrical Wiring**
1 Credit
Offered As Demand Warrants
Fundamental skills and career opportunities in electrical wiring.
**Lecture + Lab + Other:** 1 + 0 + 0

**TTCH F110 Basic Safety Training for Building Maintenance and Repair**
2 Credits
Offered As Demand Warrants
How to care for tools and use them safely, properly and efficiently using HILTI standards, follow OSHA standards to maintain a safe workplace and identify unsafe workplace situations. These standards ensure safety in construction operations. Upon passing the HILTI and OSHA testing standards, certification will be given.
**Lecture + Lab + Other:** 2 + 0 + 0

**TTCH F113 Basic Plumbing**
3 Credits
Offered As Demand Warrants
Introduction to methods and materials used in household plumbing. Topics includes pipe fittings and valves, pipe hangers and brackets, copper and plastic pipe fitting and plumbing fixtures.
**Lecture + Lab + Other:** 3 + 0 + 0

**TTCH F117A Four-cycle Engine Repair**
1 Credit
Offered As Demand Warrants
Four-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly of a four-cycle engine.
**Lecture + Lab + Other:** 1 + 0 + 0

**TTCH F117B Two-cycle Engine Repair**
1 Credit
Offered As Demand Warrants
Two-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly as well as familiarization with tools used in small engine repair.
**Lecture + Lab + Other:** 1 + 0 + 0

**TTCH F120 Refrigeration and Air Conditioning**
4 Credits
Offered As Demand Warrants
Fundamentals of refrigeration and air conditioning theory in preparation for further study. Topics include compressors, condensers, evaporators, metering devices and related components. Assumes no previous knowledge.
**Lecture + Lab + Other:** 4 + 0 + 0

**TTCH F125 Introduction to Carpentry for Building Maintenance and Repair**
3 Credits
Offered As Demand Warrants
Uses of lumber, commonly used hardware fasteners, types of tools and their uses, how to care for tools and use them safely, properly and efficiently. Building projects are completed which apply what was learned in the classroom. These skills are needed in maintenance positions in private businesses, schools and hospitals and in residential construction and renovation.
**Lecture + Lab + Other:** 2 + 2 + 0

**TTCH F130 Blueprint and Schematic Reading**
3 Credits
Offered As Demand Warrants
Basic blueprint and schematic reading skills used by building maintenance personnel. Introduction to machine drawings, building drawings, hydraulic and pneumatic drawings, electrical schematics and symbols, air conditioning and refrigeration drawings, welding and joining symbols.
**Lecture + Lab + Other:** 3 + 0 + 0

**TTCH F131 Mathematics for the Trades**
3 Credits
Offered Spring
Practical application of mathematics for industry and preparation for union apprenticeship programs, including arithmetic review, ratios and proportion, powers and roots, algebra, geometry and trigonometry. Mathematical applications of basic physics with reference to units of measurement, use of precision measuring tools, measurement of forces, temperature, fluids and electricity.
**Lecture + Lab + Other:** 3 + 0 + 0

**TTCH F132 Building Maintenance Materials**
3 Credits
Offered As Demand Warrants
Basic properties, processes and uses of metals and non-metals in tools, machines and building materials. Practical application to building maintenance situations will be emphasized.
**Lecture + Lab + Other:** 3 + 0 + 0

**TTCH F133 Basic Hand and Power Tools**
3 Credits
Offered As Demand Warrants
Uses, care and maintenance of hand and power tools. Familiarity and skill development with these tools through construction of shop projects.
**Lecture + Lab + Other:** 3 + 0 + 0

**TTCH F134 Maintenance Safety**
1 Credit
Offered As Demand Warrants
Industrial safety including recognizing safety hazards, working safely, handling materials safely, using machinery safely, personal protective equipment, electrical safety, fire protection and government safety regulations.
**Lecture + Lab + Other:** 1 + 0 + 0

**TTCH F138 Introduction to Electricity for Building Maintenance and Repair**
2 Credits
Offered As Demand Warrants
Commonly used materials in the electrical trade. Provides basic understanding of the National Electrical Code, local codes and schematic drawings. Stresses safe installation and correct tool usage. Familiarity and skills are cultivated through projects.
**Lecture + Lab + Other:** 1.5 + 2 + 0

**TTCH F140 Introduction to Plumbing for Building Maintenance and Repair**
2 Credits
Offered As Demand Warrants
Basic plumbing materials that may be used in any plumbing system, how to use plumbing tools and completing selected projects. Includes using drawings to identify types of plumbing branches and bends, pipefittings, correct plumbing layout aids, and installation applications.
**Lecture + Lab + Other:** 1.5 + 2 + 0

**TTCH F147 Burner Maintenance and Repair**
1 Credit
Offered As Demand Warrants
Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts. Also offered as pass/fail as TTCH F147P.
**Lecture + Lab + Other:** 1 + 2 + 0

**TTCH F147P Burner Maintenance and Repair**
1 Credit
Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts.
**Lecture + Lab + Other:** 1 + 2 + 0

**TTCH F148 Heating Systems for Building Maintenance and Repair**
2 Credits
Offered As Demand Warrants
Comprehensive instruction for people employed in installation and maintenance of heating systems. Installation and maintenance applications of fuel transfer, theories of combustion, nozzles, combustion chambers, heat exchangers, draft regulators, stacks, controls and sizing of systems.
**Recommended:** TTCH F138.
**Lecture + Lab + Other:** 1 + 1.5 + 0

**TTCH F150 Introduction to Painting for Building Maintenance and Repair**
2 Credits
Offered As Demand Warrants
Surfaces and surface protection, sealants and fillers, paint categories and application tools. Hands-on projects are completed which apply skills learned in the classroom. These skills are needed in facility maintenance positions in businesses such as schools and hospitals, and in residential construction and renovation.
**Lecture + Lab + Other:** 1 + 1.5 + 0

**TTCH F151 Hazardous Paint Certification**
1 Credit
Offered As Demand Warrants
Potential health hazards and information on safety practices will be addressed.
**Lecture + Lab + Other:** 1 + 0 + 0

**TTCH F199 Practicum**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**TTCH F214 Heating Systems Design**
3 Credits
Offered As Demand Warrants
Comprehensive instruction in installation and systems approach to design of heating systems including installation procedures of current systems, heat loss calculation, heat distribution through hydronic and air systems, and boiler and furnace sizing.
**Lecture + Lab + Other:** 3 + 0 + 0

**TTCH F225 Advanced Carpentry for Building Maintenance and Repair**
3 Credits
Offered As Demand Warrants
Expand carpentry skills in measuring, plan reading, site layout skills and working with elevations.
**Prerequisites:** TTCH F125.
**Lecture + Lab + Other:** 2 + 2 + 0

**TTCH F250 Advanced Painting for Building Maintenance and Repair**
2 Credits
Offered As Demand Warrants
Proper methods for finishing, patching and spray painting drywall. Skills studied in the classroom will be developed in various projects.
**Prerequisites:** TTCH F150.
**Lecture + Lab + Other:** 1 + 2 + 0

**TTCH F282 Selected Topics in Process Unit Design**
4 Credits
Offered As Demand Warrants
Hands-on execution and application of automated process designs as they evolve from ideas to implementation. Emphasis will be on the expanded study of the purpose, utilization and adaptation of tools, machines, materials and systems to the solutions of automated process unit design problems. Special Notes:
**Prerequisites:** PRT F101; PRT F110.
**Recommended:** PRT F130; PRT F140, course may be repeated three times for credit.
**Lecture + Lab + Other:** 2 + 4 + 0

**TTCH F299 Practicum**
1-3 Credits
**Lecture + Lab + Other:** 0 + 0 + 0

**TTCH F300 Internship in Technology**
1-3 Credits
Offered As Demand Warrants
Supervised practical experience working with private industry, government units or agencies in technologies. Opportunities to apply theories and practical application and to observe procedures and operations of the businesses or agencies. May be repeated for a maximum of 9 credits.
**Prerequisites:** Upper-division standing.
**Lecture + Lab + Other:** 0 + 12 + 0

**TTCH F301 Technology and Society**
3 Credits
Offered As Demand Warrants
Concepts of social change related to the effects of technology on society, and application of the concepts and processes of technology as they evolve from ideas to implementation. Emphasis on expanded study of the creation, use and adaptation of tools, machines, materials and systems to the solutions of problems and the extension of human potential. Available via Independent Learning.
**Prerequisites:** Upper-division standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**TTCH F485 Advanced Technical Experiences: Discipline Area**
1-6 Credits
Offered As Demand Warrants
Formal technical upgrade training provided by various agencies, manufacturers, businesses or industries which are evaluated on an individual basis and must support the student's professional objectives. For Bachelor of Technology students only. The National Guide to Educational Credit for Training Programs will be used.
**Prerequisites:** Upper-division standing.
**Lecture + Lab + Other:** 1-6 + 0 + 0

# Tribal Governance (TG)

**College of Rural and Community Development**
Tribal Governance Program (https://tribal.uaf.edu/)
907-474-7143

**TG F101 Introduction to Tribal Government in Alaska** (an)
3 Credits
Offered As Demand Warrants
An introduction to the study of tribal government and politics in Alaska, including tribal legislative and judicial and administrative responsibilities. Presents key concepts of federal Indian law, self-determination and self-governance for building and enhancing tribal governments.
**Lecture + Lab + Other:** 3 + 0 + 0

**TG F102 Essentials of Tribal Government** (an)
1 Credit
Offered As Demand Warrants
This course will provide an overview of tribal council executive, legislative and judicial responsibilities including tribal council role in writing laws, basics of tribal sovereignty, sovereign immunity and rights of tribal members.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F103 Introduction to Tribal Administration**
1 Credit
Offered As Demand Warrants
This course will review the knowledge, skills and abilities required to successfully serve as a Tribal Administrator for Tribal Government within Alaska, including: introduction to Federal Indian Law, basics of Tribal Self-Governance/BIA 638 Contracts programs and funding, overview of tribal financial management, reporting fundamentals and role of the Tribal Administrator.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F105 Introduction to Managing Tribal Governments** (an)
3 Credits
Offered As Demand Warrants
Tools and methods for the management and oversight of tribal government programs and organizations. Student evaluation includes how well the student affects changes in tribal operations and tribal management.
**Prerequisites:** Must be familiar with computer and related word processing and spreadsheet programs.
**Lecture + Lab + Other:** 3 + 0 + 0

**TG F110 Tribal Court Development for Alaska Tribes**
1 Credit
An introduction to tribal court development in Alaska. Will focus on a practical understanding of key concepts for developing a tribal court process in rural Alaska. Will explore the differences and relationships between tribal, state, and federal justice systems, including concepts of jurisdiction and due process.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F111 Children's Topics in Tribal Justice**
1 Credit
Offered As Demand Warrants
Overview of children's cases in tribal justice. Preparation for informed participation in the tribal justice system as it affects children and families. Topics such as the Indian Child Welfare Act, child protection, child custody and tribal adoptions will be addressed.
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F112 Federal Indian Law for Alaska Tribes** (an)
1 Credit
Offered As Demand Warrants
Introduction to federal Indian law, focusing on the impacts to modern Alaskan tribal governments. Particular attention will be given to the relationship between federal Indian law and tribal justice systems in Alaska.
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F113 Tribal Code Development**
1 Credit
Offered As Demand Warrants
Focuses on development of written tribal codes, including the importance of incorporating traditional unwritten laws and values into modern written codes. Particular attention will be given to the relationship between written tribal laws and tribal justice systems.
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F114 Tribal Justice Responses to Community and Domestic Violence**
1 Credit
Offered As Demand Warrants
Focuses on role of the tribal justice system in responding to community and domestic violence, including the use of tribal protective orders under the federal Violence Against Women Act (VAWA).
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F115 Tribal Court Administration**
1 Credit
Offered As Demand Warrants
Focuses on the administration of tribal courts in Alaska and the role of the tribal court clerk. Key concepts and strategies related to the effective administration and operation of tribal justice systems in Alaska will be discussed.
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F116 Juvenile Justice in Tribal Court**
1 Credit
Offered As Demand Warrants
Focuses on concepts and strategies impacting juveniles in tribal justice systems. Special focus will be given to issues of juvenile delinquency, strategies in sentencing and community monitoring, as well as, youth courts and community justice theories.
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F117 Tribal Court Enforcement of Decisions**
1 Credit
Offered As Demand Warrants
Focuses on role of the tribal government and justice system in enforcement of tribal court decisions in rural Alaska, including monitoring of offenders. Key concepts and strategies related to enforcement of tribal court decisions, including writing effective orders and monitoring of offenders, will be discussed.
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F118 Tribal Community and Restorative Justice**
1 Credit
Offered As Demand Warrants
Focuses on concepts and strategies in community justice, restorative justice, tribal peacemaking and other prominent judicial theories impacting modern Alaskan tribal jurisprudence.
**Recommended:** TG F110.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F120 Introduction to Tribal Natural Resources Stewardship** (an)
3 Credits
Offered As Demand Warrants
Examination of foundations, principles and goals of tribal natural resources stewardship. Including the history of tribal stewardship in Alaska, covering state and federal natural resources laws and management systems. The course will also introduce concepts and tools in developing tribal natural resources stewardship programs, including successful contemporary models.
**Lecture + Lab + Other:** 3 + 0 + 0

**TG F140 Introduction to Geospatial Data**
1 Credit
Offered As Demand Warrants
An introductory survey of tools for the gathering and mapping of both qualitative and quantitative geospatial data for the natural and social sciences. Students will get direct experience with basic tools and techniques for gathering geospatial data, and will incorporate their data into an existing geospatial database.
**Prerequisites:** Basic computer literacy equivalent to CIOS F100.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F141 Practical GIS for Rural Alaska**
2 Credits
Practical and place-based introduction to the development of maps using Geographic Information System (GIS) software. Covers basic tools and skills necessary for creating community maps using existing geospatial data as well as data gathered using Global Positioning System (GPS) technology. Class exercises emphasize applications pertinent to rural Alaska map development.
**Prerequisites:** TG F140.
**Lecture + Lab + Other:** 2 + 0 + 0

**TG F142 Practical GIS Project Design**
2 Credits
How to design and implement basic Geographic Information System (GIS) projects. Class exercises emphasize GIS project planning, data collection, and practical map development to meet common needs for communities in rural Alaska.
**Prerequisites:** TG F141.
**Lecture + Lab + Other:** 2 + 0 + 0

**TG F170 Fundamentals of Rural Transportation**
4 Credits
Offered As Demand Warrants
Provides an introduction to managing the unique multi-modal transportation system in rural Alaska. Course is designed for entry-level transportation managers or those new to rural transportation issues.
**Lecture + Lab + Other:** 4 + 0 + 0

**TG F171 Introduction to the Indian Reservation Roads Program** (an)
1 Credit
Offered As Demand Warrants
Introduction to the federal Indian Reservation Roads (IRR) program. The course will cover the history of the program, including recent program changes and their applicability to and effect on Alaska Native Tribes and communities in rural Alaska. The fundamentals of implementing a tribal IRR program will be presented.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F172 Conducting a Rural Transportation Inventory**
1 Credit
Offered As Demand Warrants
Provides students with hands-on experience in conducting a field inventory of transportation facilities. Emphasis on meeting the inventory requirements for the Indian Reservation Roads program.
**Special Notes:** Recommended TG F171.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F173 Traffic Monitoring for Rural Transportation**
1 Credit
Offered As Demand Warrants
Focus on basic tools to conduct traffic monitoring in rural Alaska, including: purpose; terms, definitions, acronyms commonly used; where and when to monitor; data collection tools, techniques, reporting; adjustment factors and adjusted average daily traffic (ADT) calculations. Emphasis placed on meeting ADT requirements of Indian Reservation Roads program.
**Special Notes:** Recommended TG F171 and TG F172.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**TG F174 Basics of a Good Gravel Road**
1 Credit
Offered As Demand Warrants
Provides students with a basic understanding of what makes a good gravel road. This course is designed for entry-level transportation managers as well as transportation maintenance and operations staff.
**Recommended:** TG F171; TG F172; TG F173.
**Lecture + Lab + Other:** 0.5 + 1 + 0

**TG F182 Introduction to NEPA for Rural Transportation**
1 Credit
Offered As Demand Warrants
Introduction to federal National Environmental Policy Act (NEPA) and its applicability to rural Alaska transportation projects. Covering the history of NEPA, including recent policy changes affecting Alaska Native Tribes. Presenting an overview of NEPA process, document categories, requirements for different types of transportation projects, effective participation in agency-led NEPA processes.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F199 Tribal Management Practicum I**
3 Credits
Professional and personal development while working in a rural service organization. Emphasis on developing the understanding and skills necessary for delivery of rural services. Course is guided by an academic advisor. Student must be willing and able to work independently outside the classroom and in the community.
**Prerequisites:** Must be familiar with computer and related word processing and spreadsheet programs.
**Lecture + Lab + Other:** 3 + 0 + 0

**TG F201 Tribal Government in Alaska II** (an)
3 Credits
Offered Spring
A study of tribal government and politics in Alaska. Explores the historical relationships among tribal, state and federal government in Alaska. Provides a focus on tribal sovereignty and self-determination for building and enhancing tribal governments.
**Prerequisites:** TG F101.
**Lecture + Lab + Other:** 3 + 0 + 0

**TG F205 Managing Tribal Governments II** (an)
3 Credits
Advanced tools and methods for the management and oversight of tribal government programs and organizations. Student evaluation includes how well the student affects changes in tribal operations and tribal management
**Prerequisites:** TG F105.
**Lecture + Lab + Other:** 3 + 0 + 0

**TG F221 Tribal Participation in Federal Fish and Wildlife Management Systems**
1-3 Credits
Offered As Demand Warrants
Introduction to Tribal Government/Citizen participation in Federal Subsistence Management in Alaska as it pertains to promoting traditional ways of life. This course will review: ANILCA Title 8; Tribal Consultation; administration/structure/operations of Federal Subsistence Management. Experiential learning includes development of testimony and/or participation in Federal meetings.
**Lecture + Lab + Other:** 1-3 + 0 + 16

**TG F222 Tribal Participation in State Fish and Game Management Systems**
1-3 Credits
Offered As Demand Warrants
Introduction to Tribal Government/Citizen participation in State of Alaska fish and game management as it pertains to promoting traditional ways of life. Review of administration/structure/operations of fish and game management, including Local Advisory Committees, and/or Board of Fish/Game. Experiential learning includes development of testimony and/or participation in state meetings.
**Lecture + Lab + Other:** 1-3 + 0 + 16

**TG F225 Cross Connections: Adapting and Integrating Principles of Management and Conservation**
3 Credits
Offered As Demand Warrants
Skills, abilities and knowledge needed to adapt traditional Western science and management principles to indigenous resource concepts and values are crucial when dealing with contemporary rural Alaska natural resource, land and environmental management issues. Prepare students, provide tools/methods for considering cross-cultural concepts and values in resource management and conservation decisions.
**Lecture + Lab + Other:** 3 + 0 + 0

**TG F250 Current Topics in Tribal Government**
1-3 Credits
Offered As Demand Warrants
Various topics of current interest to Tribal Governments and Tribal Management students. Topics announced prior to each offering and course may be repeated for credit.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**TG F271 Rural Transportation Planning** (an)
1 Credit
Offered As Demand Warrants
Introduction to the planning requirements of rural transportation programs, with emphasis on the Indian Reservation Roads (IRR) program. An overview of a transportation planning cycle, from grounding and visioning through plan development, implementation, evaluation and re-visioning. Review and discussion of planning elements that can be included under IRR program regulations.
**Prerequisites:** TG F171.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F272 Finance Applications for Rural Transportation**
1 Credit
Offered As Demand Warrants
Prepares students and provides financial tools and methods for the management and oversight of rural government transportation programs. Familiarity with rural transportation issues and basic finance applications recommended.
**Prerequisites:** TG F171.
**Recommended:** TG F105.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F273 Transportation Improvement Programs and Control Schedules**
1 Credit
Offered As Demand Warrants
Focus on basic skills to develop a Tribal Transportation Improvement Program (TIP) and supporting Control Schedule for rural Alaska. Covering process, minimum requirements for developing a TIP, developing a supporting control schedule and tying control schedule to internal budget processes. Emphasis placed on meeting requirements of Indian Reservation Roads program.
**Prerequisites:** TG F272.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F274 Road Inventory Field Data System**
1 Credit
Offered As Demand Warrants
Introduction to the BIA Road Inventory Field Data System (RIFDS). Students will learn to navigate RIFDS and to enter, modify, and delete inventory data. The relationship between RIFDS, other databases, and fund allocation will be examined. Students may apply for RIFDS access upon completion of course.
**Prerequisites:** Basic computer literacy equivalent to CIOS F100 and familiarity with the BIA Indian Reservation Roads program.
**Lecture + Lab + Other:** 1 + 0 + 0

**TG F276 Project Management for Rural Transportation**
4 Credits
Offered As Demand Warrants
Introductory course on project management, focusing on transportation projects in rural Alaska. Designed for individuals familiar with rural transportation programs but new to project management.
**Prerequisites:** TG F170 or TG F171; TG F172; TG F173; TG F174.
**Lecture + Lab + Other:** 4 + 0 + 0

**TG F299 Tribal Management Practicum II**
3 Credits
Professional and personal development while working in a rural service organization. Emphasis on developing the understanding and skills necessary for delivery of rural services. Course is guided by an academic advisor. Student must be willing and able to work independently outside the classroom and in the community.
**Prerequisites:** Must be familiar with computer and related word processing and spreadsheet programs.
**Lecture + Lab + Other:** 3 + 0 + 0

# Undergraduate Research and Scholarly Activity (URSA)

**Interdisciplinary**
Undergraduate Research & Scholarly Activity (https://www.uaf.edu/ursa/)

**URSA F192 Introduction to UAF Research and Creative Scholarship**
1 Credit
Offered Fall and Spring
This course provides an overview of the diversity of research at UAF and the opportunities for undergraduate student participation in research and creative scholarship. Students will gain a broad understanding of the significance, process and impact of research as a creative scholarship as conducted across the wide range of disciplines represented on all the UAF campuses.
**Lecture + Lab + Other:** 1 + 0 + 0

**URSA F388 Undergraduate Research and Creative Scholarship I**
2-6 Credits
Offered Fall and Spring
Provides undergraduate opportunities for student research or creative scholarship in advanced topics beyond typical undergraduate laboratory or studio course offerings across all disciplines. Students will write a project proposal that will serve as a basis for future research or creative scholarship by the end of the semester.
**Prerequisites:** Junior standing.
**Lecture + Lab + Other:** 1 + 4-10 + 0

**URSA F488 Undergraduate Research and Creative Scholarship II**
2-6 Credits
Offered Fall and Spring
Provides undergraduate opportunities for student research or creative scholarship in advanced topics beyond typical undergraduate laboratory or studio course offerings. Students must meet with the instructor in the previous semester to identify their mentor and expected project; ideally students will have completed URSA F388 with the same mentor and have a written project proposal. Students will work on a project in collaboration with their mentor. Students are required to publicly present their work and submit a final report suitable for submission to a discipline-specific journal. Research and creative scholarship areas range across all disciplines. A substantial level of background in the specific discipline, a level commensurate with having achieved junior or senior level, is assumed.
**Prerequisites:** URSA F388 and junior-senior standing.
**Lecture + Lab + Other:** 1 + 4-10 + 0

**URSA F492 Undergraduate Research and Creative Scholarship Seminar**
1 Credit
Offered Fall and Spring
Course provides students a venue for presenting their research and learning about peer research at UAF. Students will have the opportunity to gain and develop oral presentation skills and will gain a broad understanding of the significance, process and impact of research as conducted across the wide range of scholarly disciplines at UAF campuses.
**Lecture + Lab + Other:** 1 + 0 + 0

# Veterinary Medicine (DVM)

**College of Natural Science and Mathematics**
Department of Veterinary Medicine
Center for One Health Research (https://www.uaf.edu/onehealth/)
907-474-6610

**DVM F480 Skeleton Articulation**
1 Credit
Offered Spring
Skeleton assembly of species, from birds to mammals, depending on availability. The majority of this course is hands-on articulation of skeletons that have been cleaned and prepared prior to class. The lab will be supplemented with lectures covering bones, joint types, and biologically accurate limb and joint angles.
**Prerequisites:** BIOL F111X, BIOL F112X or BIOL F310.
**Lecture + Lab + Other:** 0 + 3 + 0

**DVM F603 Veterinary Science Research and Methods**
1 Credit
Offered Fall
This course will illustrate the role of research in furthering the practice of veterinary medicine by presenting a series of lectures from clinical and basic science investigators, faculty and staff who will describe important elements of the research process. The course will also describe possible career opportunities to students in animal health research.
**Prerequisites:** Admittance to the professional veterinary program.
**Lecture + Lab + Other:** 1 + 0 + 0

**DVM F606 Veterinary Immunology**
3 Credits
Offered Fall
The aim of this course is to educate Veterinary Medicine students on fundamental aspects of immunology, including functional anatomy and mechanisms of the innate and adaptive immunity in animals, immunological mechanisms of animal disease, principles of vaccination, and how to apply immunology in diagnosis of diseases.
**Prerequisites:** Admittance to the professional veterinary program.
**Lecture + Lab + Other:** 3 + 0 + 0

**DVM F610 Foundations of Veterinary Medicine**
1 Credit
Offered Fall
The first semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. This course will help you develop the professional skills necessary for the successful practice of veterinary medicine.
**Prerequisites:** Admittance to the professional veterinary program.
**Lecture + Lab + Other:** 1 + 0 + 0

**DVM F611 Foundations of Veterinary Medicine II**
1 Credit
Offered Spring
The second semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. This course will help you develop the professional skills necessary for the successful practice of veterinary medicine.
**Prerequisites:** DVM F610.
**Lecture + Lab + Other:** 5 + 5 + 0

**DVM F615 One Health Concepts**
2 Credits
Offered Fall
This course introduces students to the One Health paradigm with emphasis on its application in the circumpolar North. Students explore the relationships between human, animal and environmental health. This holistic approach incorporates knowledge from natural and social sciences, history and culture of communities, traditional knowledge, laws, and government regulations.
**Prerequisites:** Admission to the One Health Masters.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F616 Functional Anatomy**
8 Credits
Offered Fall
The course will include an introduction to veterinary anatomy: basic veterinary anatomy, orientation, nomenclature, locomotion apparatus, circulatory system, digestive, respiratory apparatus, lymphatic organs and nervous system of domestic animals. A general explanation of the basic anatomical preparation techniques will be presented to improve the manual skills of the students. The course will place the anatomical knowledge in a clinical context.
**Prerequisites:** Admittance to the professional veterinary program.
**Cross-listed with** MSL F618.
**Lecture + Lab + Other:** 5 + 6 + 0

**DVM F618 Veterinary Physiology and Histology**
7 Credits
Offered Fall
The course will discuss the histology and physiology of domestic animal organ systems, tissues, cartilage, bone, muscle, arthrology, nervous system, hematopoiesis, lymphatic, cardiovascular, respiratory and digestive systems; the renal system and physiology. The course will help to place the knowledge in histology and physiology in a clinical context.
**Prerequisites:** Admittance to the professional veterinary program.
**Lecture + Lab + Other:** 6 + 3 + 0

**DVM F619 Veterinary Neurobiology**
4 Credits
Offered Spring
Students will learn information on neurologic conditions in domesticated animals. A problem-oriented approach makes it easy to diagnose and treat neurologic problems in domesticated animals. The coverage of disorders by problem, not by established disease diagnosis, emulates how animals present to the veterinary hospital and simplifies the formulation of a correct diagnosis.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Lecture + Lab + Other:** 3 + 3 + 0

**DVM F620 One Health Challenges in the Circumpolar North**
3 Credits
Offered Fall
Students are introduced to various tools and techniques to use a constructionist approach through a One Health lens to address significant issues in the circumpolar North. Students will learn to identify One Health challenges, gather information, engage stakeholders, communicate across several disciplines, build consensus, and develop action plans.
**Prerequisites:** DVM F615; admission to the One Health master's degree program.
**Lecture + Lab + Other:** 3 + 0 + 0

**DVM F621 One Health Colloquium**
4 Credits
Offered Fall
Building on the concepts developed in DVM F615 and the tools utilized in DVM F620, this course provides students with the opportunity to work completely through a One Health challenge, including engagement of stakeholders, gathering of data, proposal of solutions, and presentation of management plans in a public forum.
**Prerequisites:** Admission to the Masters of One Health and completion of both DVM F615 and DVM F620.
**Lecture + Lab + Other:** 4 + 0 + 0

**DVM F623 Veterinary Nutrition and Metabolism**
2 Credits
Offered Spring
This course will examine the nutritional needs of major species of veterinary importance. Discussion will revolve around specific nutritional needs as they relate to life-stages and production status of monogastric and ruminant animals. Course topics deal with the classification and function of nutrients, digestive processes (monogastric, ruminant, hind-gut fermenters), evaluation of feedstuffs and feed labels, and principles of disease related to nutritional deficiency as well as nutritional excess.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** MSL F613.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F625 Principles of Diagnostic Imaging**
2 Credits
Offered Fall
This course will include an introduction to radiographic anatomy of small and large animals; introduction to X-ray, MRI and CT. The course will help to place the anatomical knowledge into clinical context.
**Prerequisites:** Admittance to the professional veterinary program.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F637 Veterinary Bacteriology and Mycology**
2 Credits
Offered Spring
This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** BIOL F632; MSL F637.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F639 Veterinary Virology**
2 Credits
Offered Spring
This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** BIOL F639; MSL F639.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F640 Veterinary Pathology/Biology of Disease I**
5 Credits
Offered Spring
This course will discuss basic principles of disease with special emphasis on processes likely to be encountered veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell-mediated processes to more specific disease mechanisms.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Cross-listed with** BIOL F640; MSL F642.
**Lecture + Lab + Other:** 4 + 3 + 0

**DVM F648 Food Animal Production and Food Safety**
2 Credits
Offered Spring
This course is designed to provide an understanding of food animal agriculture and food quality assurance. Students will explore contemporary production management systems of traditional and non-traditional food animal species. Animal welfare issues related to the raising of animals for food will be investigated. Students will learn where veterinary medicine fits into the protection of the human food supply.
**Prerequisites:** Successful completion of first-semester veterinary courses.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F681 Performance Dog Medicine and Surgery**
2 Credits
Offered As Demand Warrants
Designed to provide the student with a basic understanding of the different types of performance dog activities, to identify the unique demands, husbandry, management issues and basic physiological impacts of each category of performance exercise and to gain a basic understanding of commonly observed injuries and their prevention/treatment. This course is designed for veterinarians and veterinary students- the information provided is only partially covered during the regular DVM curriculum and hence no other prerequisites are required.
**Prerequisites:** Good standing in professional veterinary program.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F710 Foundations of Veterinary Medicine III**
1 Credit
Offered Fall
The third semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. Expanded physical examination of companion animals and livestock will be taught with special emphasis on advanced cardiopulmonary auscultation, mammary gland evaluation, otic exam and colic evaluation.
**Prerequisites:** DVM F611.
**Lecture + Lab + Other:** 0 + 3 + 0

**DVM F711 Foundations of Veterinary Medicine IV**
1 Credit
Offered Spring
The fourth semester of a four-course series. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. Expanded physical examination of companion animals and livestock will be taught, with special emphasis on advanced techniques in reproduction, surgical skills, anesthesia and patient management.
**Prerequisites:** Successful completion of DVM F710.
**Lecture + Lab + Other:** 0 + 3 + 0

**DVM F714 Preventative Veterinary Medicine**
4 Credits
Offered Fall
The course will provide understanding of host/disease/agent interaction and the essential steps in disease outbreak investigation. Clinical and herd-based scenarios will be used for discussion of epidemiologic principles, features of zoonotic disease, and specific biosecurity and infectious-control issues as they relate to food safety and livestock production.
**Prerequisites:** Veterinary medicine student in good standing.
**Lecture + Lab + Other:** 4 + 0 + 0

**DVM F722 Veterinary Pharmacology**
4 Credits
Offered Fall
This course covers basic principles of pharmacology of common drugs and basic mechanisms of action. Individual agents will be introduced as examples. As a medicine course, the proper and effective use of drugs will be reviewed, including basics of veterinary therapeutics for selected classes of agents across selected species.
**Prerequisites:** Successful completion of all required first-year courses in DVM program, including advancement to year two.
**Lecture + Lab + Other:** 4 + 0 + 0

**DVM F724 Veterinary Bioanalytical Pathology**
6 Credits
Offered Fall
Professional veterinary program requirement studying pathology, hematology, biochemistry and cytopathology.
**Prerequisites:** Successful completion of first year professional veterinary medical program.
**Lecture + Lab + Other:** 5 + 2 + 0

**DVM F726 Principles of Imaging Interpretation**
2 Credits
Offered Spring
This is the first of a two-part series in imaging interpretation. This course covers gastrointestinal, thoracic and cardiac imaging. The second part of the course is held in the fall of the third year at Colorado State (VM728) and will cover equine and small-animal musculoskeletal, urinary tract and neurological imaging.
**Prerequisites:** Good standing in professional veterinary program.
**Lecture + Lab + Other:** 1 + 0 + 1

**DVM F733 Principles of Surgery**
2 Credits
Offered Spring
This course teaches principles and concepts of general and orthopedic surgery, including aseptic technique, surgical instrumentation, suture patterns, tissue healing and wound management. These topics comprise core material that prepares veterinary students for specific surgery.
**Prerequisites:** Successful completion of first-year veterinary medical program; good standing in professional veterinary medicine program.
**Lecture + Lab + Other:** 1 + 3 + 0

**DVM F735 Animal Welfare**
2 Credits
Offered Fall
This course will provide knowledge, skill development and tools necessary for professionals to assess and promote animal welfare and to analyze its associated challenges. It will stress the need for perpetual reassessment of animal welfare knowledge and reinforce the professional's role in staying up-to-date and proactive.
**Prerequisites:** Completion of first year of veterinary school, or graduate student with approval of instructor.
**Cross-listed with** BIOL F641.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F737 Principles of Veterinary Anesthesia**
3 Credits
Offered Spring
This course is an introduction to the principles of clinical anesthesia. This course serve as a foundation that supports and reinforces your knowledge of the basic sciences, and provide you with the opportunity to begin to get a feel for integrating those disciplines into making medical judgments in veterinary anesthesia.
**Prerequisites:** Good standing in the professional veterinary program.
**Lecture + Lab + Other:** 2 + 2 + 0

**DVM F741 Biology of Disease II- Pathology of Organ Systems**
4 Credits
Offered Fall
The course will discuss basic principles of disease with special emphasis on organ system diseases most likely to be encountered in veterinary practice. The discussions will move from general cell-mediated processes to more specific disease mechanisms in a variety of domestic and exotic species.
**Prerequisites:** Successful completion of first year of courses in the professional veterinary curriculum.
**Lecture + Lab + Other:** 3 + 2 + 0

**DVM F742 Biology of Disease III - Pathology of Organ Systems II**
3 Credits
Offered Spring
The course will discuss principles of disease with emphasis on organ disease likely to be encountered in veterinary practice. The discussions will move from general cell-mediated processes to more specific disease mechanisms. The goals for this course are to enable students to apply this knowledge and become competent veterinary practitioners.
**Prerequisites:** Good standing in the professional veterinary program.
**Lecture + Lab + Other:** 2 + 2 + 0

**DVM F744 Theriogenology**
3 Credits
Offered Spring
Will familiarize students with reproductive organs of large and small animals: regulation of function, reproductive endocrinology, reproductive cycles, and the physiology and pathology of reproduction.
**Prerequisites:** Successful completion of first year veterinary medical program; good standing in professional veterinary medicine program.
**Lecture + Lab + Other:** 2 + 2 + 0

**DVM F745 Clinical Sciences I**
5 Credits
Offered Spring
This course is an introduction to clinical reasoning and problem solving as a diagnostician. Diagnostic approaches to common medical problems of cardiovascular, urinary and digestive-hepatic systems.
**Prerequisites:** Second year professional veterinary medicine program; student in good standing.
**Lecture + Lab + Other:** 10 + 0 + 0

**DVM F747 Clinical Sciences II**
5 Credits
Offered Spring
Continuation of clinical reasoning and problem-solving as a diagnostician. Diagnostic approaches to common medical problems of cardiac and pulmonary systems and fluid and electrolyte disorders of small and large animals.
**Prerequisites:** Second year professional veterinary medicine program; student in good standing.
**Lecture + Lab + Other:** 10 + 0 + 0

**DVM F751 Veterinary Clinical Toxicology**
2 Credits
Offered Fall
This course will provide an overview of clinical toxicology relevant to veterinarians.
**Prerequisites:** Successful completion of all required first-year courses in DVM program, including advancement to year two.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F776 Veterinary First Principles**
2 Credits
Offered Spring Even-numbered Years
This course teaches students how to approach veterinary medicine from first principles of form and function. Building on anatomy and physiology knowledge, DVM students will develop a standard operating procedure for logical problem-solving in veterinary medicine. This course will teach critical thinking and clinical reasoning through facilitated discussion.
**Prerequisites:** Completion of first semester of veterinary school.
**Lecture + Lab + Other:** 2 + 0 + 0

**DVM F777 Strategies for Establishing and Maintaining Well-being in the Veterinary Profession**
1 Credit
Offered Spring
This course will investigate and demonstrate methods for maintaining well-being while managing the stress associated with membership in the veterinary profession. Strategies for time management, life balance, nutrition, exercise and recovery will be discussed as means of enhancing well-being and preventing professional burnout, which is widespread in the profession today.
**Prerequisites:** Good standing in the professional veterinary program.
**Lecture + Lab + Other:** 1 + 0 + 0

# Welding and Materials Technology (WMT)

**Community and Technical College**
Welding and Materials Technology (https://www.ctc.uaf.edu/programs/weld/)
907-455-2800

**WMT F101 Introduction to Welding**
4 Credits
Offered Fall, Spring and Summer
Introduction and orientation to the processes and procedures involved in the welding field including safe operational procedures for shielded metal arc welding (SMAW) (Stick), mixed inert gas (MIG), tungsten inert gas (TIG) and oxy-acetylene welding; in addition to the appropriate personal protective equipment (PPE), terminology related to the welding industry.
**Lecture + Lab + Other:** 2 + 4 + 0

**WMT F102 Intermediate Welding**
3 Credits
Offered As Demand Warrants
Continuation of WMT F101.
**Prerequisites:** WMT F101.
**Lecture + Lab + Other:** 2 + 2 + 0

**WMT F103 Welding I**
3 Credits
Offered Fall
Entry-level course that focuses on shop orientation, safety and thermal cutting processes. This class covers Module 2 and 8 of the AWS SENSE standards. Attendance on the first two days of class are mandatory.
**Lecture + Lab + Other:** 1 + 4 + 0

**WMT F105 Welding II**
3 Credits
Offered Fall
Welding II focuses on techniques and procedures related to shielded metal arc welding with cellulose type welding rod on mild carbon steel. Module 4 of the AWS SENSE standards are covered in this course.
**Prerequisites:** WMT F103.
**Lecture + Lab + Other:** 1 + 4 + 0

**WMT F106 Heat Treating/Metal Finishing/Knife Making I**
3 Credits
Offered As Demand Warrants
Heat treating, metal finishing. Build two knives, heat treat and finish.Special Conditions: Must have excellent hand-eye coordination. Attendance at first class is mandatory.br>
**Recommended:** WMT F117; WMT F241.
**Lecture + Lab + Other:** 2 + 3 + 0

**WMT F117 Oxy-Acetylene Welding and Cutting**
3 Credits
Offered As Demand Warrants
Safe oxyacetylene welding techniques and procedures of common metals. Welding of these metals in flat, horizontal, vertical and overhead positions. Attendance at first two class meetings is mandatory.
**Lecture + Lab + Other:** 2 + 5 + 0

**WMT F130 Shielded Metal Arc Welding**
1-3 Credits
Offered Fall
Advanced SMAW techniques using low hydrogen welding rod with a focus on structural type weld test procedures. Module 4 of the AWS SENSE standards are covered.
**Prerequisites:** WMT F103; WMT F105.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**WMT F140 Metal Fabrication**
1-3 Credits
Offered Spring
Plan, layout, and fabricate metal projects using multiple welding processes and equipment. Module 3 and 9 of the AWS SENSE standard are covered in this course.
**Prerequisites:** WMT F103; WMT F105; WMT F160.
**Special Notes:** Attendance at first two classes is mandatory.
**Lecture + Lab + Other:** 1.5 + 5.5 + 0

**WMT F150 Gas Tungsten Arc Welding**
1-3 Credits
Offered Spring
GTAW(TIG) techniques and procedures on ferrous and non ferrous metals. Module 7 of the AWS SENSE standards are covered in this course.
**Lecture + Lab + Other:** 1.5 + 5.5 + 0

**WMT F160 Gas Metal Arc Welding**
1-3 Credits
Offered Fall
Solid and flux cored wire fed processes and techniques. Modules 5 and 6 of the AWS SENSE standards are coved in this course.
**Lecture + Lab + Other:** 1.5 + 5.5 + 0

**WMT F206 Heat Treating/Metal Finishing/Knife Making II**
3 Credits
Offered As Demand Warrants
Second level of knife making and heat treating using more complex metals and additional equipment.Must have excellent hand-eye coordination. Attendance at first class is mandatory.
**Recommended:** WMT F106; WMT F117; WMT F241.
**Lecture + Lab + Other:** 2 + 2 + 0

**WMT F210 Pipe Welding**
3 Credits
Offered As Demand Warrants
Prepare and weld pipe in an uphill or downhill position.
**Lecture + Lab + Other:** 2 + 3.5 + 0

**WMT F241 Gas Tungsten Arc and Gas Metal Arc Welding**
3 Credits
Offered As Demand Warrants
Introductory techniques and procedures for welding on ferrous and non ferrous metals with GMAW and GTAW(TIG) processes. Attendance at first two classes are mandatory.
**Lecture + Lab + Other:** 1.5 + 5.5 + 0

**WMT F290 Welding Proficiency Maintenance**
3 Credits
Offered Spring
Maintenance of a high degree of welding proficiency through practice of previously-learned processes with an emphasis on AWS welding certification standards.
**Prerequisites:** WMT F130; WMT F140.
**Lecture + Lab + Other:** 2 + 4.5 + 0

# Wildland Fire Science (WFS)

**College of Rural and Community Development**
Wildland Fire Science (https://www.uaf.edu/iac/programs/fire-science/)
907-474-7143

**WFS F151 Wildland Firefighter I**
3 Credits
Offered As Demand Warrants
Designed to provide entry-level wildland firefighters the skills and knowledge to safely function as a member of a firefighting crew. Includes fundamental knowledge of wildland fire organization, fire behavior, suppression methods, safety and the incident command system. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) courses. Successful course completion combined with national age and physical fitness requirements will qualify the student for an interagency fire qualification card (red card) with a rating of Firefighter (FFT2). NWCG courses for F151 include: S-130 Firefighter Training S-190 Introduction to Wildland Fire Behavior L-180 Human Factors in Wildland Fire Service L-200 Basic ICS, ICS for Single Resource and Initial Action Incidents.
**Crosslisted with** FIRE F151.
**Lecture + Lab + Other:** 3 + 0 + 0

**WFS F152 Wildland Firefighter II**
3 Credits
Offered As Demand Warrants
Provides wildland firefighters with knowledge and skills in the deployment, use, safe practices and field maintenance of engine-powered wildland firefighting tools: portable pumps and chainsaws. This course is based on National Wildlife Coordinating Group (NWCG) courses: S-211 Portable Pumps and Water Use; S-212 Wildland Fire Chainsaws.
**Prerequisites:** FIRE F151.
**Special Notes:** Must have the ability/strength to start a portable pump and chainsaw.
**Lecture + Lab + Other:** 3 + 0 + 0

**WFS F153 Wildland Firefighter III**
2 Credits
Offered As Demand Warrants
Designed to meet the training needs of the advanced wildland firefighter. Course content includes training in use of fireline reference materials, recognition and mitigation of safety issues, and provides a solid foundation of basic leadership skills. This course is based on a number of individual National Wildfire Coordinating Group courses.
**Prerequisites:** FIRE F151.
**Special Notes:** NWCG courses included: S-131 Wildland Firefighter Type I; S-133 Look Up, Look Down, Look Around; L-280 Followership to Leadership.
**Lecture + Lab + Other:** 2 + 0 + 0

**WFS F157 Wildland Air Operations**
3 Credits
Offered As Demand Warrants
Introduction to aircraft types and capabilities, aviation policy and safety for flying in and working with agency aircraft, tactical and logistical uses of aircraft, and requirements for helicopter take-off and landing areas. This course is designed to provide student proficiency in all areas of the tactical and logistical use of helicopters to achieve efficiency and standardization. Topics include aviation safety, aircraft capabilities and limitations, aviation life support equipment, aviation mishap reporting, pre-flight checklist and briefing/debriefing, aviation transportation of hazardous materials, crash survival, helicopter operations. Emphasis is on aviation safety. This course is based on National Wildfire Coordinating Group (NWCG) courses: S-270 Basic Air Operations; S-271 Helicopter Crewmember (FIRE F157 will not include Module A-119 which is a required field exercise for S-271. Students will need to complete this field exercise).
**Prerequisites:** FIRE F151.
**Lecture + Lab + Other:** 3 + 0 + 0

# Wildlife (WLF)

**College of Natural Science and Mathematics**
Department of Biology and Wildlife (https://www.bw.uaf.edu/)
907-474-7671

**WLF F101 Survey of Wildlife Science**
2 Credits
Offered Fall
An introduction to wildlife science for research, conservation and management. Lectures, presentations, labs and other outside class activities will familiarize students with the field of wildlife biology and the wildlife profession. Special fees apply.
**Lecture + Lab + Other:** 1 + 2 + 1

**WLF F301 Design of Wildlife Studies**
3 Credits
Offered Spring
Study designs for wildlife populations and their habitats. Probability theory, finite population sampling, capture-mark-recapture sampling and research design will be examined through lectures, labs and a term project.
**Prerequisites:** WLF F101 (may be taken concurrently); MATH F151X (may be taken concurrently) or MATH F122X (may be taken concurrently).
**Recommended:** STAT F200X or STAT F300.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F304 Wildlife Internships**
1-3 Credits
Offered Fall and Spring
Practical experience in wildlife management in public or private agencies. Projects are approved by faculty member and supervised by professional agency staff. May not be substituted for courses required for major.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**WLF F305 Wildlife Diseases**
3 Credits
Offered Spring Even-numbered Years
Basic concepts of parasitic, infectious, environmental and nutritional diseases. Specific study of Alaska wildlife diseases. Basic necropsy technique and chemical immobilization.
**Prerequisites:** BIOL F115X and BIOL F116X.
**Recommended:** BIOL F310.
**Lecture + Lab + Other:** 3 + 0 + 0

**WLF F322 Principles and Techniques of Wildlife Management**
3 Credits
Offered Fall
This course applies ecology to the study and management of animals and their habitats. We will discuss management for consumptive and non- consumptive uses of birds, mammals, reptiles and amphibians.
**Prerequisites:** BIOL F371; WLF F101; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F385 Global Change Biology** (n)
3 Credits
Offered Spring
Causes of climate change, the climate record, and the effects of past and forecast climate change on biophysical systems. Consideration of impacts on plants, animals, ice, and people with an emphasis on Alaska and the Arctic.
**Prerequisites:** BIOL F115X; BIOL F116X; Junior or Senior standing.
**Cross-listed with** BIOL F385.
**Lecture + Lab + Other:** 3 + 0 + 0

**WLF F421 Ecology and Management of Large Mammals**
3 Credits
Offered Fall Even-numbered Years
Identification, distribution, life history, ecology and management of North American large mammals. Exploration of roles of reproduction, predation, nutrition, habitat alteration and competition in population dynamics of large mammals, and management and research practices designed for conservation of habitats and populations.
**Prerequisites:** BIOL F371; WLF F322.
**Stacked with** WLF F623.
**Lecture + Lab + Other:** 3 + 0 + 0

**WLF F425 Ecology and Management of Birds**
3 Credits
Offered Spring Even-numbered Years
Ecology of avian populations with a focus on harvest and habitat management for North American birds. Distributions, life-history, population dynamics, and monitoring and research techniques will be considered.
**Prerequisites:** BIOL F371; COJO F131X or COJO F141X; WLF F322.
**Lecture + Lab + Other:** 3 + 0 + 0

**WLF F469 Landscape Ecology and Wildlife Habitat**
3 Credits
Offered Spring Even-numbered Years
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with problems and questions.
**Prerequisites:** BIOL F371; COJO F121X or COJO F131X or COJO F141X.
**Cross-listed with** BIOL F469.
**Stacked with** BIOL F669; WLF F669.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F470 Human Dimensions of Wildlife Management**
3 Credits
Offered Spring
Study of the interactions and relationships between people and wildlife, and the thoughts and behaviors of people related to wildlife and their management. This course also considers the social psychology, economic and political components of wildlife management.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F213X; WLF F101; WLF F322; BIOL F371.
**Stacked with** WLF F670.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F602 Research Design**
3 Credits
Offered Fall
An introduction to the philosophy, performance and evaluation of hypothetical/deductive research in the biological sciences, with emphasis on hypothesis formulation and testing. Each student will develop a research proposal.
**Prerequisite:** Graduate standing.
**Cross-listed with** BIOL F602.
**Lecture + Lab + Other:** 3 + 0 + 0

**WLF F604 Scientific Writing, Editing and Revising in the Biological Sciences**
3 Credits
Offered Spring
For students who are ready to produce a manuscript or thesis chapter. Topics include the publication process, selecting a journal, authorship, the components of the scientific paper, revising and editing manuscripts, and responding to reviews. Students will produce a complete manuscript.
**Prerequisites:** Graduate standing in Biology, Wildlife, or related discipline; permission of instructor.
**Cross-listed with** BIOL F604.
**Lecture + Lab + Other:** 3 + 0 + 0

**WLF F623 Ecology and Management of Large Mammals**
3 Credits
Offered Fall Even-numbered Years
Identification, distribution, life history, ecology and management of North American large mammals. Exploration of roles of reproduction, predation, nutrition, habitat alteration and competition in population dynamics of large mammals, and management and research practices designed for conservation of habitats and populations.
**Stacked with** WLF F421.
**Lecture + Lab + Other:** 3 + 0 + 0

**WLF F625 Population Dynamics of Vertebrates**
3 Credits
Offered Spring Odd-numbered Years
Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters and inference. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data.
**Prerequisites:** BIOL F371; STAT F401.
**Cross-listed with** FISH F625.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F669 Landscape Ecology and Wildlife Habitat**
3 Credits
Offered Spring Even-numbered Years
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with problems and questions.
**Prerequisites:** Graduate standing.
**Cross-listed with** BIOL F669.
**Stacked with** BIOL F469; WLF F469.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F670 Human Dimensions of Wildlife Management**
3 Credits
Offered Spring
Study of the interactions and relationships between people and wildlife, and the thoughts and behaviors of people related to wildlife and their management. This course also considers the social psychology, economic and political components of wildlife management.
**Stacked with** WLF F470.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F680 Data Analysis in Biology**
3 Credits
Offered Spring
Course covers major statistical concepts and techniques using the statistical software R, with emphasis on applications in biology. Reviews probability theory, hypothesis testing, ANOVA, regression, least squares fitting, parametric and nonparametric approaches, and then focuses on random and mixed-effects models, likelihood based fitting, GAMs, GLMs, ordination, and model selection.
**Prerequisites:** STAT F200X, STAT F401; graduate standing in a biologically oriented field.
**Cross-listed with** BIOL F680.
**Lecture + Lab + Other:** 2 + 3 + 0

**WLF F692 Graduate Seminar**
1-6 Credits
Topics in fish and wildlife management explored through readings, talks, group discussions and guest speakers with a high level of student participation.
**Prerequisites:** Graduate standing.
**Lecture + Lab + Other:** 0 + 0 + 1-6

# Women, Gender and Sexuality Studies (WGS)

**College of Liberal Arts**
Department of Women, Gender and Sexuality Studies (https://www.uaf.edu/women/)
907-474-6249

**WGS F201X Introduction to Women, Gender and Sexuality Studies** (s)
3 Credits
Offered Fall
An interdisciplinary introduction to the field of women, gender and sexuality studies that explores its development, subject matter and methodologies. Readings from studies that have become classic examples of the importance of gender in research in many disciplines are examined.
**Attributes:** UAF GER Social Sciences Req
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F202 History of Women in America** (s)
3 Credits
Offered As Demand Warrants
A chronological approach to the history of women in America. Introduction to major issues of concern to historians of women, as well as different approaches used in analysis of women's past. Consideration of multiracial backgrounds of American women.
**Cross-listed with** HIST F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F308 Language and Gender** (s)
3 Credits
Offered As Demand Warrants
Examination of relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; LING F101X, LING F216X, ANTH F100X, ANTH F101X or WGS F201X.
**Cross-listed with** ANTH F308; LING F308.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F325 The History of Sexuality** (s)
3 Credits
Offered As Demand Warrants
The history of sexuality from a worldwide comparative perspective. Theories and debates about the history of sexuality in selected times and places, with an emphasis on the modern period.
**Prerequisites:** HIST F100X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X.
**Cross-listed with** HIST F325.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F331 Women's Voices in Japanese Literature** (h)
3 Credits
Offered As Demand Warrants
Selected novels, short stories, poems and diaries by Japanese women from the tenth century to the present which reveal the personal, social, aesthetic and intellectual concerns of women in different periods of Japanese history. Focus on the changing role of women in Japanese society and the role of women writers.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; ENGL F200X or FL F200X.
**Recommended:** HIST F121, HIST F122X, HIST F331.
**Cross-listed with** JPN F331.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F332 Human Sexualities Across Cultures** (s)
3 Credits
Offered Fall, Spring and Summer
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies and related fields, with particular focus determined by which department is offering the course.
**Prerequisites:** PSY F101X, WGS F201X.
**Recommended:** PSY F275.
**Cross-listed with** PSY F333; SOC F333.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F333 Women's Literature** (h)
3 Credits
Offered Fall Odd-numbered Years
Reading, discussing and analyzing literary works dealing with the social, cultural and political implications of patriarchal structures and traditions from the perspective of feminist theory and criticism. Focus may be on a particular theme, period or genre, but readings will include both primary and secondary texts.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F333.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F335 Gender and Crime**
3 Credits
Offered Fall and Summer
An exploration of gender and crime including the extent of female crime, victimization, masculinity and violence, and women professionals in the justice system.
**Prerequisites:** JUST F110X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Cross-listed with** JUST F335.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F340 Gender, Sex and Politics** (s)
3 Credits
Offered As Demand Warrants
In-depth examination of the relevance of gender in political thought and action. Topics vary and may include: an historical perspective of political ideas on the nature and status of women; women's involvement in national and/or international political movements and organizations; feminist approaches to the social sciences; feminism as a political ideology.
**Prerequisites:** One political science course.
**Recommended:** WGS F201X.
**Cross-listed with** PS F340.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F348 Native North American Women** (s)
3 Credits
Offered As Demand Warrants
Interdisciplinary examination of the relationship between Native American women and their social settings and cross-cultural experiences. Includes issues of political, economic and social solutions as employed by women in a large multi-ethnic nation-state.
**Prerequisites:** ANS F101; ANTH F100X; WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SOC F101X.
**Cross-listed with** ANS F348.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F350 Women's Issues in Social Welfare and Social Work Practices** (s)
3 Credits
Offered As Demand Warrants
Examination of theories and research concerning women's issues in the field of social work and in the social welfare system, with particular emphasis on women in poverty and women of color. Contemporary policy issues and strategies of empowerment will be covered.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; SWK F103X or SOC F101X.
**Cross-listed with** SWK F350.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F351 Gender and Communication** (s)
3 Credits
Offered Fall
Basic socialization differences exist in the communication practices of women and men in every culture, resulting in differing cultural constructions of male and female gender. Those differences are addressed in interpersonal, organizational and cultural contexts. Explores cultural female/male dichotomy as well as individual similarities.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F360 Psychology of Women Across Cultures** (s)
3 Credits
Offered As Demand Warrants
Major theories, research and empirical data which describes the psychology of women as a discrete field, philosophical values of feminism and history of women's roles in society. The impact of culture on women interpersonally and intrapsychically examined across cultures.
**Prerequisites:** COJO F131X or COJO F141X; PSY F101X or WGS F201X.
**Cross-listed with** PSY F360.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F362 Feminist Philosophy** (h)
3 Credits
Offered As Demand Warrants
Examination of contemporary feminist philosophical positions. Emphasis on feminist ethics, social and political philosophy, and epistemology.
**Cross-listed with** PHIL F362.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F380 Women, Minorities and the Media** (h)
3 Credits
Offered As Demand Warrants
Basic socialization differences that exist in the communication practices of women and men in every culture are addressed in the interpersonal organizational and cultural contexts. Examination of how women and minorities are portrayed in the mass media, the employment of women and minorities in the media, as well as how.
**Prerequisites:** COJO F131X or COJO F141X; junior standing.
**Cross-listed with** COJO F380.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F403 Theories in Women's and Gender Studies** (h, s)
3 Credits
Offered Fall Odd-numbered Years
This class explores the intellectual history of women's and gender studies. We will start our exploration in the late 18th century, and follow feminist theoretical ideas about women and gender through to the present. The main focus is on Western theory, we will also explore non-Western ideas and critiques.
**Prerequisites:** WGS F201X.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F410 Women in Music History** (h)
3 Credits
Offered As Demand Warrants
Lives and works of female musicians, composers and performers will be traced from the earliest days of the ancient and mythological periods through the medieval, Baroque, Classical and Romantic periods with special emphasis on composers of the 20th-century.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; junior standing.
**Cross-listed with** MUS F410.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F414 Women and Gender in East Asian History** (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on the history of East Asia, with a special emphasis on the experiences of women and on the issue of gender. This seminar will focus on the modern period, and on China and Japan especially, though other regions of East Asia may also be considered.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; HIST F100X.
**Recommended:** HIST F122X, HIST F275.
**Cross-listed with** HIST F414.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F424 Topics in Women's History** (s)
3 Credits
Offered As Demand Warrants
An in-depth seminar on a specific topic of current interest. Topics may change and may cover the history of European or American women from the 18th century to the present.
**Prerequisites:** Junior standing.
**Cross-listed with** HIST F424.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F433 Women, Gender, and Sexuality Studies in Language, Literature, and Culture** (h)
3 Credits
Offered Fall Even-numbered Years
Intensive study of variable topics in women, gender and/or sexuality studies with a focus on humanities fields such as literature, writing, rhetoric, theory, film and cultural studies. Topics will be placed in dialogue with current debates within women, gender and/or sexuality studies. Specific content to be announced at the time of registration. Course may be repeated for credit when content varies.
**Prerequisites:** WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; sophomore standing.
**Cross-listed with** ENGL F433.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F440 Gender and Education** (s)
3 Credits
Offered As Demand Warrants
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender, patterns of access and achievements, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change.
**Prerequisites:** Junior standing.
**Cross-listed with** ED F440.
**Stacked with** ED F640.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F445 Gender in Cross-cultural Perspective** (s)
3 Credits
Offered Spring Even-numbered Years
Gender is examined as both cultural construction and social relationship through studies that explore gender diversity, roles, experiences, and expressions in a broad variety of societies and contexts, past and present. Includes a range of theoretical and methodological approaches in anthropology for exploring and understanding gender cross-culturally.
**Prerequisites:** ANTH F215 or WGS F201X.
**Cross-listed with** ANTH F445.
**Stacked with** ANTH F645.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F460 Women and Development** (s)
3 Credits
Offered As Demand Warrants
Explores interrelationships of gender roles and development in the global economy, emphasizing Alaska and the circumpolar north. Examines the historical marginalization of women, women in indigenous communities, and changing socio-economic and cultural gender roles in community development. Examines women's life histories that illustrate strategies for individual and community empowerment.
**Cross-listed with** RD F460.
**Lecture + Lab + Other:** 3 + 0 + 0

**WGS F492 Seminar**
1-3 Credits
**Lecture + Lab + Other:** 1-3 + 0 + 0

**WGS F492P Seminar**
1-3 Credits
**Lecture + Lab + Other:** 1-3 + 0 + 0

# Writing (WRTG)

**College of Liberal Arts**
Department of English (https://www.uaf.edu/english/)
907-474-7193

**WRTG F068 College Literacy Skills**
1-3 Credits
Offered As Demand Warrants
Individualized instruction in writing and/or reading. Coursework can be designed to support specific courses or specific individuals as needed. This course does not fulfill the prerequisites for any other course.
**Special Notes:** May be repeated for credit.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**WRTG F080 Basic Writing and Reading**
4 Credits
Offered Fall and Spring
Introduces college writing and reading skills. Develops sentences, paragraphs and short essays. Introduces strategies for effective revision. Enhances reading comprehension and vocabulary for academic reading. On completing this course students may retake Accuplacer for a higher placement. A grade of C or higher in this course qualifies students for WRTG F090.
**Prerequisites:** Placement into WRTG F080.
**Lecture + Lab + Other:** 4 + 0 + 0

**WRTG F090 Writing and Reading Strategies**
4 Credits
Offered Fall and Spring
Develops college writing and reading strategies. Reviews sentence and paragraph structure as part of the development of essays. Emphasizes revision techniques for essays and critical reading in academic contexts. A grade of C or higher in this course qualifies students for WRTG F110.
**Prerequisites:** Placement into WRTG F090, or a grade of C or higher in WRTG F080, or DEVE F060 and DEVS F052.
**Special Notes:** On completing this course students may retake Accuplacer for placement into WRTG F111X.
**Lecture + Lab + Other:** 4 + 0 + 0

**WRTG F110 Introduction to College Writing**
3 Credits
Offered Fall and Spring
Intensive preparatory work in the college writing skills needed for WRTG F111X, including research, writing, revising and critical reading skills. Special fees apply.
**Prerequisites:** C or better in WRTG F090, or placement.
**Lecture + Lab + Other:** 3 + 0 + 0

**WRTG F111X Writing Across Contexts**
3 Credits
Offered Fall and Spring
An introduction to writing strategies and processes for reading and responding to rhetorical situations across a variety of public and academic contexts.
**Prerequisites:** Placement into WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

**WRTG F211X Writing and the Humanities**
3 Credits
Offered Fall and Spring
An introduction to what writing is and does and how people learn to do it in the humanities, with a focus on the disciplinary questions, methods and reasoning that shape the genres and writing practices in the field.
**Prerequisites:** WRTG F111X.
**Recommended:** Sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**WRTG F212X Writing and the Professions**
3 Credits
Offered Fall and Spring
An introduction to what writing is and does and how people learn to do it in the professions, with a focus on the disciplinary questions, methods and reasoning that shape the genres and writing practices in the field.
**Prerequisites:** WRTG F111X.
**Recommended:** Sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**WRTG F213X Writing and the Sciences**
3 Credits
Offered Fall and Spring
An introduction to what writing is and does and how people learn to do it in the social and natural sciences, with a focus on the disciplinary questions, methods and reasoning that shape the genres and writing practices in the field.
**Prerequisites:** WRTG F111X.
**Recommended:** Sophomore standing.
**Lecture + Lab + Other:** 3 + 0 + 0

**WRTG F214X Arguing Across Contexts**
3 Credits
Offered Fall and Spring
Instruction and practice in written research-supported arguments for a variety of audiences, with an emphasis on rhetorical strategies across a variety of public and academic contexts.
**Prerequisites:** WRTG F111X.
**Lecture + Lab + Other:** 3 + 0 + 0

# Yup'ik (YUP)

**College of Rural and Community Development**
Department of Alaska Native Languages (https://www.uaf.edu/anlc/)
907-543-4500 or 907-474-7874

**YUP F101X Elementary Central Yup'ik I** (an, h)
5 Credits
Offered Fall
Introduction to Central Yup'ik, the language of the Yukon and Kuskokwim deltas and Bristol Bay. Open to both speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others, it provides a framework for learning to speak, read and write the language. Consideration given to dialect differences.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**YUP F102X Elementary Central Yup'ik II** (an, h)
5 Credits
Offered Spring
Continued introduction to Central Yup'ik, the language of the Yukon and Kuskokwim deltas and Bristol Bay. Open to speakers and nonspeakers. For speakers the course provides literacy and grammatical analysis. For others, it provides a framework for learning to speak, read and write the language. Consideration given to dialect differences.
**Prerequisites:** YUP F101X.
**Attributes:** UAF GER Humanities Req
**Lecture + Lab + Other:** 5 + 0 + 0

**YUP F103 Conversational Central Yup'ik I** (an)
1-3 Credits
Offered As Demand Warrants
Entry-level course to learn to speak and understand Yup'ik Eskimo. Focus on communication in everyday situations. Kuskokwim and Northwest campuses only.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**YUP F104 Conversational Central Yup'ik II** (an)
3 Credits
Offered As Demand Warrants
Continuation of YUP F103. Beginning level Yup'ik Eskimo. Focus on communication in everyday situations. Kuskokwim and Northwest campuses only.
**Prerequisites:** YUP F103.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**YUP F109 Central Yup'ik Orthography** (an)
3 Credits
Offered Fall
An entry-level class for persons fluent in Central Yup'ik. Covers reading - silent and oral - and writing, emphasizing specific skills and practical application of those skills through writing assignments. Dialect differences in the Central Yup'ik region are used to demonstrate standardization of the writing systems.
**Prerequisites:** Demonstrated conversational Yup'ik skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F121 Elementary Central Yup'ik Apprenticeship I** (an)
4 Credits
Offered As Demand Warrants
Entry-level course to learn to speak/understand Yup'ik Eskimo. Local speaker acts as language mentor/primary resource. Focus on everyday situations. Student and mentor required to participate in 10-hour orientation, maintain weekly contact with instructor of record, and participate in monthly assessment. Kuskokwim Campus only. Requires mentor meeting Yup'ik Faculty approval.
**Lecture + Lab + Other:** 1 + 10 + 0

**YUP F122 Elementary Central Yup'ik Apprenticeship II** (an)
4 Credits
Offered As Demand Warrants
Continuation of YUP F121. Increasing emphasis on listening and speaking skills. Kuskokwim Campus only. Special Conditions: Dependent on ability to identify willing mentor who meets Yup'ik faculty approval.
**Prerequisites:** YUP F121 or formal assessment indicating equivalent speaking and listening skills.
**Lecture + Lab + Other:** 1 + 10 + 0

**YUP F123 Elementary Central Yup'ik Apprenticeship III** (an)
4 Credits
Offered As Demand Warrants
Continuation of YUP F122. Increasing emphasis on listening and speaking skills. Kuskokwim Campus only. Special Conditions: Dependent on ability to identify willing mentor who meets Yup'ik faculty approval.
**Prerequisites:** YUP F122 or formal assessment indicating equivalent speaking and listening skills.
**Lecture + Lab + Other:** 1 + 10 + 0

**YUP F130 Beginning Yup'ik Grammar** (an, h)
3 Credits
Offered Spring
Literacy and grammatical analysis of Central Yup'ik language for language learners. Students will learn basic grammatical concepts and literacy skills, with consideration given to dialect differences.
**Prerequisites:** YUP F103 or YUP F122 or basic conversational Yup'ik skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F131 Beginning Yup'ik Grammar II** (an, h)
3 Credits
Offered Fall
Continuation of literacy and grammatical analysis of Central Yup'ik. Students will learn intermediate grammatical concepts and literacy skills, with consideration given to dialect differences.
**Prerequisites:** YUP F130.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F155 Conversational Siberian Yupik I** (an)
1-3 Credits
Offered As Demand Warrants
Introductory course for students who wish to acquire the ability to speak in Siberian Yupik, the language of St. Lawrence Island and parts of the Chukchi Peninsula in Siberia. Students first learn to understand simple spoken language, then to speak simple Siberian Yupik, developing a beginning level of communicative competence.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**YUP F156 Conversational Siberian Yupik II** (an)
1-3 Credits
Offered As Demand Warrants
Introductory courses for students who wish to acquire the ability to speak in Siberian Yupik, the language of St. Lawrence Island and parts of the Chukchi Peninsula in Siberia. Students first learn to understand simple spoken language, then to speak simple Siberian Yupik, developing a beginning level of communicative competence.
**Prerequisites:** YUP F155.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**YUP F158 Siberian Yupik Orthography** (an)
1-3 Credits
Offered As Demand Warrants
Introduction to the standard writing system (orthography) of Siberian Yupik. Students learn the skills of spelling, reading and writing words in Siberian Yupik, which are the fundamentals of basic literacy.
**Prerequisites:** Ability to speak Siberian Yupik.
**Special Notes:** Northwest Campus only.
**Lecture + Lab + Other:** 1-3 + 0 + 0

**YUP F201 Intermediate Central Yup'ik I** (an, h)
3 Credits
Offered Fall
Continuation of YUP F101X and YUP F102X. Increasing emphasis on speaking, reading and writing.
**Prerequisites:** YUP F102X.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F202 Intermediate Central Yup'ik II** (an, h)
3 Credits
Offered Spring
Continuation of YUP F201. Increasing emphasis on speaking, reading and writing.
**Prerequisites:** YUP F201.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F203 Conversational Central Yup'ik III** (an, h)
3 Credits
Offered Fall
A continuation of YUP F103 and YUP F104. Kuskokwim Campus only.
**Prerequisites:** YUP F104.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F204 Conversational Central Yup'ik IV** (an, h)
3 Credits
Offered Spring
Continuation of YUP F203. Development of proficiency in the Central Yup'ik language, vocabulary for everyday situations, reading and writing.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F205 Regaining Fluency in Yup'ik** (an, h)
3 Credits
Offered Fall
Yup'ik speaking skills and fluency for those with some background in the language.
**Prerequisites:** Each potential student must be evaluated for language capabilities.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F206 Regaining Fluency in Yup'ik II** (an, h)
3 Credits
Offered Spring
Continuation of YUP F205. Speaking skills and fluency for those with some background in the language. Each potential student must be evaluated for language capabilities.
**Prerequisites:** YUP F205.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F208 Yup'ik Composition** (an, h)
3 Credits
Offered Spring
An examination of the development of written Yup'ik and exploration of writing where Yup'ik is the dominant language. New writing styles are examined, rather than simply translating the standard categories of English composition. Students receive extensive practice in Yup'ik orthography and participate in the evaluation of each other's writings.
**Prerequisites:** YUP F109.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F221 Intermediate Central Yup'ik Apprenticeship I** (an)
3 Credits
Offered As Demand Warrants
Intermediate-level learning to speak and understand Yup'ik. Local speaker acts as mentor/primary resource. Focus on everyday situations. Yup'ik faculty member serves as instructor of record. Student and mentor required to participate in ten hour orientation, maintain weekly contact with instructor of record, and participate in monthly assessment. Kuskokwim Campus only. Special Conditions: Dependent on ability to identify willing mentor who meets Yup'ik faculty approval.
**Prerequisites:** YUP F123 or formal assessment indicating equivalent speaking and listening skills.
**Lecture + Lab + Other:** 1 + 10 + 0

**YUP F222 Intermediate Central Yup'ik Apprenticeship II** (an)
3 Credits
Offered As Demand Warrants
Continuation of YUP F221. Increasing emphasis on listening and speaking skills. Dependent on ability to identify willing mentor who meets Yup'ik faculty approval. Kuskokwim Campus only.
**Prerequisites:** YUP F221 or formal assessment indicating equivalent speaking and listening skills.
**Lecture + Lab + Other:** 1 + 10 + 0

**YUP F223 Intermediate Central Yup'ik Apprenticeship III** (an)
3 Credits
Offered As Demand Warrants
Continuation of YUP F222. Increasing emphasis on listening and speaking skills. Dependent on ability to identify willing mentor who meets Yup'ik faculty approval. Kuskokwim Campus only.
**Prerequisites:** YUP F222 or formal assessment indicating equivalent speaking and listening skills.
**Lecture + Lab + Other:** 1 + 10 + 0

**YUP F230 Introduction to Interpreting and Translating I** (an, h)
3 Credits
Offered As Demand Warrants
Introduction to interpreting and translating, designed for both those wishing to enter the field and those who wish to upgrade their skills. Discussion of problems which arise during interpreting and translating along with suggestions on how to handle them.
**Prerequisites:** Must be fluent in English and Yup'ik.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F231 Introduction to Interpreting and Translating II** (an, h)
3 Credits
Offered As Demand Warrants
Continuation of YUP F230.
**Prerequisites:** YUP F230.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F240 Introduction to Reading and Writing Yup'ik** (an)
3 Credits
Offered Spring
Emphasis on reading and writing Yup'ik for practical purposes (posters, brochures, pamphlets, newsletters, signs) and continued language learning (short stories, descriptions and narratives).
**Prerequisites:** YUP F130; YUP F204 or YUP F222.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F250 Yup'ik Literature for Children** (an)
3 Credits
Offered Fall
Students explore and practice reading children's literature in Yup'ik. Students are exposed to a variety of genres (fiction, nonfiction, traditional stories, poetry, songs, etc.). Reader leveling will be discussed. Students are required to write targeted readers for specific reading levels in Yup'ik. Kuskokwim campus only.
**Prerequisites:** YUP F208 or equivalent reading and writing skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F251 Teaching Beginning Yup'ik Reading and Writing** (an)
3 Credits
Offered As Demand Warrants
Teaching strategies in Yup'ik literacy. Focus on reading, writing at the primary/early through intermediate levels. Students develop lessons; for reading, writing, and word study; manage instructional time; use assessment for placement and instructional purposes. Materials, reading resources, instructional guides will be reviewed, for the development of lessons.
**Prerequisites:** YUP F208 or equivalent reading and writing skills.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F260 Siberian Yupik I** (an, h)
3 Credits
Offered As Demand Warrants
A course in Eskimo language of St. Lawrence Island and the opposing area of Chukotka in Russia. Concentration on literacy and grammar with background given for conversation. Open to speakers of the language and to others if they have taken one or more years of Central Yup'ik or Inupiaq courses.
**Prerequisites:** Ability to speak Siberian Yupik or one year study of other Eskimo language.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F261 Siberian Yupik II** (an, h)
3 Credits
Offered As Demand Warrants
Continuation of studies in Eskimo language of St. Lawrence Island and the opposing area of Chukotka in Russia. Concentration on literacy and grammar, with background given for conversation. Open to speakers of the language and others if they have taken one or more years of Central Yup'ik or Inupiaq courses.
**Prerequisites:** YUP F260, ability to speak Siberian Yupik or one year study of other Eskimo language.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F301 Advanced Central Yup'ik** (an, h)
3 Credits
Offered Fall
Continuation of YUP F201 and YUP F202. Completes the basic study of the Central Yup'ik grammar.
**Prerequisites:** YUP F101X; YUP F102X; YUP F201; YUP F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F330 Yup'ik Literature/Yupiit Quliraitnek Igaryaraq** (an, h)
3 Credits
Offered Fall Even-numbered Years
Central Yup'ik literature with exposure to a variety of literary styles, including qulirat, qaneryaraqegtaaraat, ak'allaat qulirat, qanruyutet/alerquutet. Broad range of regional, stylistic and orthographic traditions through a variety of short papers and a final paper/project. Specific content announced at time of registration. Taught entirely in Yup'ik. Kuskokwim Campus only.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; YUP F208; YUP F240.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F375 Yup'ik Philosophy/Umyuarteqsaraq** (an, h)
3 Credits
Offered Fall Even-numbered Years
Exploration of Yup'ik philosophy and spirituality, including exploration of the relationship between modern and traditional belief systems and the influence of western religion and philosophy. Taught entirely in Yup'ik. Kuskokwim Campus only.
**Prerequisites:** COJO F131X or COJO F141X; YUP F240.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F415 Additional Topics in Advanced Yup'ik** (an, h)
3 Credits
Offered Spring
Further study of Yup'ik linguistics. Includes text transcription, editing, analysis and discussion. Yup'ik dialectology. Study of related Eskimo languages from the standpoint of Central Yup'ik. Additional topics to be studied depending upon the interests of the students and the instructor.
**Prerequisites:** YUP F101X; YUP F102X; YUP F201; YUP F202.
**Lecture + Lab + Other:** 3 + 0 + 0

**YUP F488 Documenting Yup'ik Traditions/Caliarkaq** (an, h)
3 Credits
Offered Fall Even-numbered Years
Major research project relating to Yup'ik language and culture (e.g., traditional narratives, personal/local histories, local customs/beliefs). Project formats include (but are not limited to) research papers, video/audiotapes, curricula and public presentations.
**Prerequisites:** WRTG F111X; WRTG F211X, WRTG F212X, WRTG F213X or WRTG F214X; YUP F330; senior standing.
**Special Notes:** Writing-intensive course, all formats will include a significant written component; Taught entirely in Yu'pik; Kuskokwim Campus only.
**Lecture + Lab + Other:** 3 + 0 + 0

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