1983-1984

University of Alaska-Fairbanks

University of Alaska-Fairbanks 1983-84 Catalog

NOTICE

This catalog and its contents shall not be construed as a contract between the University of Alaska-Fairbanks and prospective and enrolled students. The catalog is merely a vehicle of information. Although every effort is made to insure its correctness, regulations of the University and its program requirements change from time to time during the period any student is attending the University of Alaska-Fairbanks.

Accordingly if regulations or program requirements of the University in any way conflict with information contained in this catalog, the current regulations and program requirements govern. The University reserves the right to initiate changes in any of its regulations or program requirements affecting operation of the University and its program requirements; such changes shall become effective upon whatever time periods are required by applicable statutes, University regulations or program requirements.

The University of Alaska-Fairbanks, is a major unit of the University of Alaska statewide system of higher education. Under the direction of the Board of Regents, the University of Alaska serves the people of America's largest state through urban centers at Fairbanks, Anchorage, and Juneau, and community colleges at Anchorage, Bethel, Fairbanks, Kenai-Soldotna, Ketchikan, Kodiak, Kotzebue, Nome, Palmer, Sitka, and Valdez. Information about the programs of each unit in the system may be obtained from that unit.

It is the policy of the University of Alaska to provide equal educational and employment opportunities and to provide services and benefits to all students and employees without regard to race, color, religion, national origin, sex, age, physical handicap, or veteran status. The University of Alaska does not discriminate on the basis of handicap in the recruitment and admission of students, the recruitment and employment of faculty and staff, and the operation of any of its programs and activities, as specified by federal laws and regulations. Compliance with Section 504 of the Rehabilitation Act of 1973 is coordinated by the UAF Equal Opportunity/ Affirmative Action Officer. This policy is in accordance with the laws enforced by the Department of Health, Education and Welfare, and the Department of Labor, including Presidential Executive Order 11246, as amended; Title VI and VII of the 1964 Civil Rights Act; Title IX of the Education Amendment of 1972; Title 41, parts 60-1, 60-2, 60-3, and 60-50; Sections 799A and 845 of the Public Health Service Act, where applicable; Sections 503 and 504 of the Rehabilitation Act; Veteran's Readjustment Assistance Act of 1974; and Alaska Statute 18.80.220. Inquiries regarding application of these and other regulations should be directed to either the Statewide Equal Employment/Affirmative Action Officer of the University of Alaska or to the Office of Civil Rights, Department of Health, Education, and Welfare, Washington, D.C.

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Sources of Information University of Alaska-Fairbanks

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Director of Admissions and Records ..... (907) 474-7521 or (907) 474-7821
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Conferences and Institutes 474-7800
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Tanana Valley Community College
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The address for all departments is:
University of Alaska-Fairbanks
Fairbanks, Alaska 99701

Academic Calendar

1983 Fall Semester

Registration materials and advisors available to students,
ACT and Placement testing ..... Tues., Sept. 6
New Student Convocation ..... Tues., Sept. 6
Registration ..... Tues., Wed., Sept. 6-7
First day of instruction ..... Thurs., Sept. 8
Last day of late registration ..... Wed., Sept. 14
Fifth and sixth week progress reports ..... Oct. 6-20
Last day to apply for fall semester graduation ..... Fri., Oct. 14
Last day for student-initiated withdrawals ..... Wed., Nov. 9
Thanksgiving holiday ..... Thurs. and Fri., Nov. 24-25
Study day (no classes) ..... Fri., Dec. 16
Final examinations ..... Sat., Dec. 17 through Wed., Dec. 21
Grades on file with Director of Admissions and Records ..... Tues., Dec. 27

1984 Spring Semester

Registration materials and advisors available to students,
ACT and Placement testing ..... Mon., Tues., Wed., Jan. 16, 17, 18
New Student Convocation ..... Mon., Jan. 16
Registration ..... Tues., Wed., Jan. 17-18
First day of instruction ..... Thurs., Jan. 19
Last day of late registration ..... Wed., Jan. 25
Last day to apply for spring semester graduation ..... Wed., Feb. 15
Fifth and sixth week progress reports ..... Feb. 15-29
Last day for student-initiated withdrawals ..... Wed., Mar. 21
Spring recess ..... Mar. 26-30
All Campus Day ..... Fri., Apr. 27
Final examinations ..... Mon., May 7 through Thurs., May 10
Commencement ..... Sun., May 13
Grades on file with Director of Admissions and Records ..... Thurs., May 17

1984 Summer Session (dates are tentative)

Twelve Week Session ..... June 4 - Aug. 24
Three Week Session ..... June 11 - June 29
Six Week Session ..... July 2 - Aug. 10

1983

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1984 Fall Semester

Registration materials and advisors available to students,
ACT and Placement testing ..... Tues., Sept. 4
New Student Convocation ..... Tues., Sept. 4
Registration ..... Tues., Wed., Sept. 4-5
First day of instruction ..... Thurs., Sept. 6
Last day of late registration ..... Wed., Sept. 12
Fifth and sixth week progress reports ..... Oct. 3 - Oct. 17
Last day to apply for fall semester graduation ..... Mon., Oct. 15
Last day for student-initiated withdrawals ..... Wed., Nov. 7
Thanksgiving holiday ..... Thurs. and Fri., Nov. 22-23
Study day (no classes) ..... Fri., Dec. 14
Final examinations ..... Sat., Dec. 15 through Wed., Dec. 19
Grades on file with Director of Admissions and Records ..... Wed., Dec. 26

1985 Spring Semester

Registration materials and advisors available to students
ACT and Placement testing ..... Mon., Tues., Wed., Jan. 14, 15, 16
New Student Convocation ..... Mon., Jan. 14
Registration ..... Tues., Wed., Jan. 15, 16
First day of instruction ..... Thurs., Jan. 17
Last day of late registration ..... Wed., Jan. 23
Last day to apply for spring semester graduation ..... Fri., Feb. 15
Fifth and sixth week progress reports ..... Feb. 14-28
Last day for student-initiated withdrawals ..... Wed., Mar. 20
Spring recess ..... Mar. 25-29
All Campus Day ..... Fri., Apr. 26
Final examinations ..... Mon., May 6 through Thurs., May 9
Commencement ..... Sun., May 12
Grades on file with Director of Admissions and Records ..... Thurs., May 16

1984

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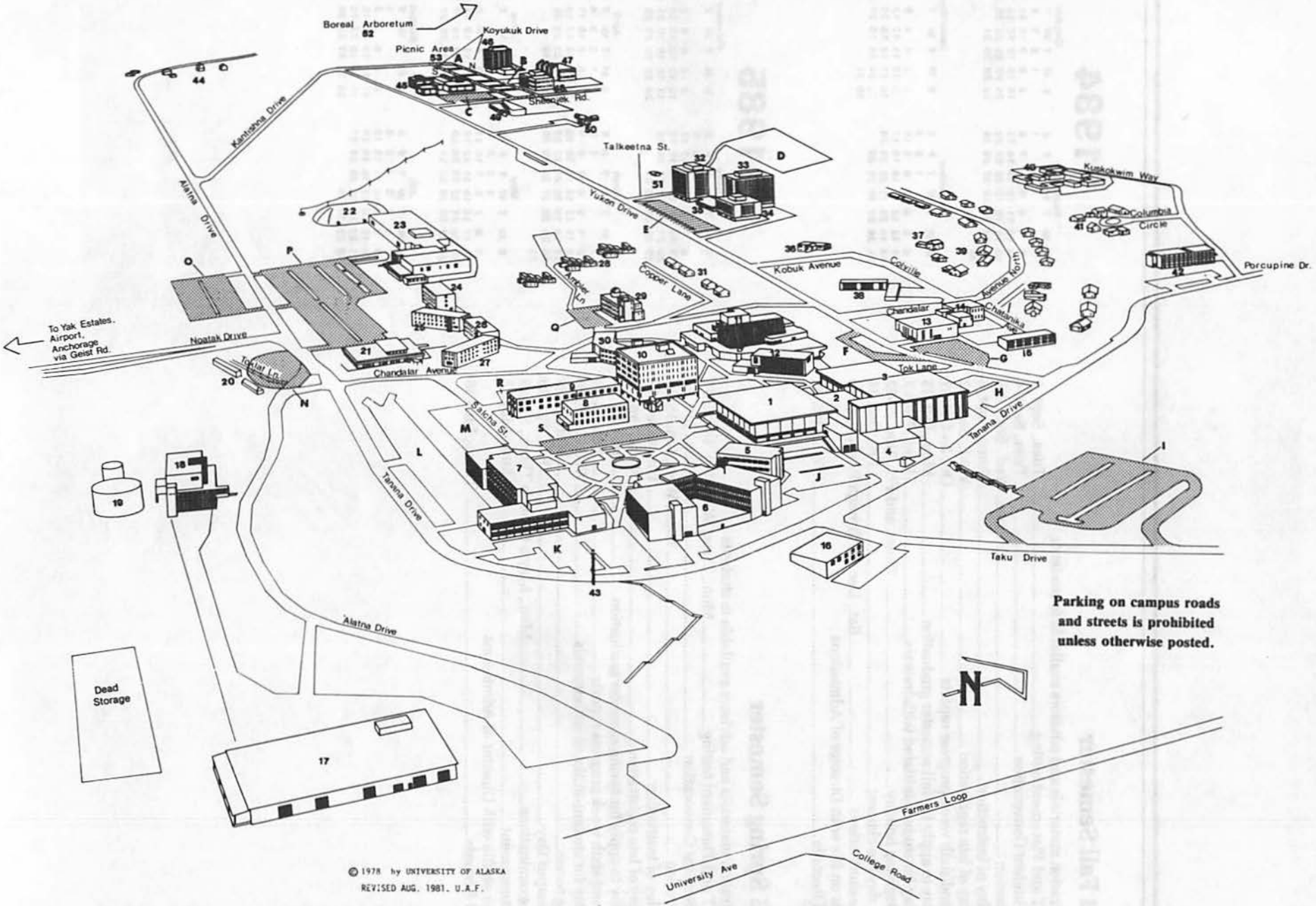

Parking on campus roads and streets is prohibited unless otherwise posted.

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REVISED AUG. 1981. U.A.F.

1. **Elmer E. Rasmuson Library**—
2. **Regents Great Hall**
3. **Fine Arts and Humanities Complex**—Art Gallery, Concert Hall, Depts. of Art, English, Music, Philosophy and Humanities, and Speech Communication and Drama. College of Arts and Sciences Office, KUAC-FM and KUAC-TV.
4. **Fine Arts Theatre**
5. **Brooks Memorial Building**—School of Mineral Industry Office, Geology and Geophysics Program, Dept. of Mineral Engineering.
6. **William E. Duckering Building**—School of Engineering Office, Depts. of Civil Engineering, Electrical Engineering, Engineering Management, Environmental Engineering, Geography, Mathematical Sciences, Mechanical Engineering, Petroleum Engineering, and Physics. Alaska Department of Transportation and Public Facilities and Institute of Water Resources.
7. **Bunnell Memorial Building**—Computer Center, Admissions and Records, Business Office, Personnel Services, Graphic Services, Depts. of Biological Sciences, Chemistry, and Journalism and Broadcasting, and Institutional Planning. University of Alaska Statewide Administrative Office: Alumni Services, Information Services and Human Resources. Schaible Hall.
8. **UAF Administrative Center (Old Museum Building)**—Chancellor's Office, Vice Chancellor for Academic Affairs, Vice Chancellor for Administrative Services, Fairbanks Assembly, Graduate Studies, and Public Affairs.
9. **Eielson Memorial Building**—Conferences and Institutes, Correspondence Study, Cooperative Extension Service, Correspondence Studies, Dept. of Linguistics and Foreign Languages, Media Services, and Summer Sessions.
10. **Ernest Gruening Building**—College of Human and Rural Development, School of Management, Depts. of Accounting, Behavioral Sciences and Human Services, Business Administration, Cross Cultural Communication, Education, Economics, History, Political Science, and Rural Development. Center for Cross-Cultural Studies, Student Affairs, Rural Student Services (RSS), Financial Aid, and Career Planning and Placement.
11. **William Ransom Wood Center** (Student Union)—Cafeteria, Snack Bar, The Pub, Sun-Star, Denali, Associated Students of the University of Alaska (ASUA) Offices, Wood Center and Student Activities Offices.
12. **Constitution Hall**—Bookstore, U.S. Post Office, KSUA, United Campus Ministry, Tanana Valley Community College.
13. **Health, Safety and Security Building**—Student Health Center, Department of Safety and Security.
14. **Fire Station**
15. **Walsh Hall**—Married Student Housing.
16. **U.S. Forest Service**
17. **Services Building**—Maintenance Facilities.
18. **Ben J. Atkinson Building**—Power Plant and Central Heating.
19. **Water Tank**
20. **Rural Laboratory School**
21. **University Commons**—Resident Student Dining Hall.
22. **Beluga (White Whale)**—Tennis Courts (summer).
23. **Ernest N. Patty Athletic Center**—Gymnasium, Swimming Pool, Rifle Range, Swimming Pool. Depts. of Intercollegiate Athletics, Military Science and Physical Education.
24. **Lathrop Hall**—Residence Hall.
25. **Stevens Hall**—Residence Hall.
26. **Nerland Hall**—Residence Hall.
27. **McIntosh Hall**—Residence Hall.
28. **Modular Units**—Married and Single Student Housing.
29. **Chapman Building**—Alaska Native Language Program, Institute of Social and Economic Research, Anthropology Program, Grants and Contracts.
30. **Wickersham Hall**—Residence Hall.
31. **Faculty Housing**
32. **Moore Hall**—Residence Hall.
33. **Bartlett Hall**—Residence Hall.
34. **Skarland Hall**—Residence Hall.
35. **Hess Commons**
36. **President's Residence**
37. **Chancellor's Residence**
38. **Married Student Housing**
39. **Faculty Housing**
40. **New Married Student Housing**
41. **Faculty Housing**
42. **Harwood Hall**—Married Student Housing.
43. **Totem Pole**
44. **Agricultural Experiment Station**
45. **Arctic Health Research Building**—Vice Chancellor for Research and Advanced Study, WAMI Medical Program, Alaska Cooperative Fisheries Research Unit, and Bio-Med Library.
46. **Elvey Building**—Geophysical Institute, Space Physics and Atmospheric Sciences Program.
47. **William A. O'Neill Building**—School of Agriculture and Land Resources Management, Institute of Marine Science, U.S. Bureau of Mines, State Division of Geological and Geophysical Surveys, Marine Science Program, College of Environmental Sciences Office, Mineral Industry Research Laboratory.
48. **Laurence Irving Building**—Division of Life Sciences, Wildlife and Fisheries Program, Institute of Arctic Biology, Alaska Cooperative Wildlife Research Unit.
49. **University of Alaska Museum**
50. **College Magnetic and Seismological Observatory**

General Information

University of Alaska-Fairbanks

Special Mission

The University of Alaska-Fairbanks reflects its historic role by assuming primary responsibility for the land-grant functions of the system. It is the state's primary residential institution serving students from all of Alaska as well as from other states and nations. UAF offers baccalaureate and master's degree programs in the arts, sciences, and professions as well as selected doctoral programs in areas of particular strength, such as the natural sciences. Additionally, it provides the state's major instructional resource in music.

Professional preparation of students is offered in the following areas: engineering with particular emphasis on the unique stresses imposed by the arctic environment; petroleum and mineral engineering; management, economics and business administration with a special focus on natural resources and meeting the needs of Alaska Native corporations; high latitude agriculture; journalism; and the human service professions including education, which are directed toward multicultural groups, rural populations, and cross-cultural methodologies. Within the human services, it will provide an off-campus delivery network and upper division courses in selected areas, maximizing its efforts through cooperation with rural community colleges and extension programs.

The University of Alaska-Fairbanks is the state's center for organized activity in basic and applied research with particular emphasis on high latitude and Alaskan problems which have provided this university with a well-earned national and international reputation. Focuses are directed toward marine science and high latitude studies in geophysics, biology, environmental sciences, and engineering disciplines. It will further conduct studies relative to the definition, exploration, and development of Alaska's natural resources, with a special emphasis on agriculture and minerals.

UAF further serves as a cultural center for interior Alaska by offering activities and programs in the creative and performing arts. Through its museum and its Alaska and Polar regions library collection, it also provides a major cultural and information resource to the state.

Student Rights Under Title IX

Title IX of the Education Amendments of 1972 was enacted to ensure that complete equality of education is afforded to all students, both male and female. This means that in every program, policy, and practice at the University of Alaska-Fairbanks, there will be no discrimination on the basis of sex. Included in the areas covered by this law are: admissions, financial aid, counseling, health services, student activities and programs, and access to all course offerings, to name a few.

The Fairbanks campus Title IX coordinator is located in room 112 of the Bunnell Building. All concerns and/or allegations that relate to Title IX are to be directed to the Fairbanks campus Title IX coordinator.

Historical Dates

May 3, 1917 — The "Alaska Agricultural College and School of Mines" created by the Territorial Legislature.

September 18, 1922 — College opens with six faculty members and six students.

July 1, 1935 — Territorial Congress changes college to the University of Alaska.

June 1947 — The first summer session established at the university.

July 1, 1974 — Tanana Valley Community College established, located on the UAF campus.

1980's — UAF continues to experience record enrollments. The university has expanded to three colleges, four professional schools, with more than 70 degree programs and 140 different majors.

Accreditation

The University of Alaska-Fairbanks is accredited as an institution of higher learning by the Northwest Association of Secondary and Higher Schools; belongs to the Association of State Universities and Land-Grant Colleges, and the National Commission of Accrediting; and has institutional membership in the American Council of Education, the American Association of Colleges for Teacher Education, and the Western Interstate Commission for Higher Education.

Transportation to the University

The City of Fairbanks is served by air, rail and highway.

The University of Alaska-Fairbanks campus is some four miles west of the Fairbanks central business district. A bus line offers service between the campus, downtown, and surrounding areas.

UAF also has on-campus shuttle service between the lower campus area and the West Ridge facilities.

Majors and Programs

COLLEGE OF ARTS AND SCIENCES

Alaska Native Languages, B.A.
Alaska Native Studies, B.A.
Applied Linguistics, B.A.
Art, B.A., B.F.A.
Chemistry, B.A., B.S., M.A., M.S., M.A.T.
Computer Science, B.T., B.S.
English, B.A., M.A., M.A.T., M.F.A.
Foreign Languages, B.A.
General Science, B.S., M.S.
Geography, B.A., B.S.
History, B.A., M.A.T.
Humanities, B.A.
Journalism and Broadcasting, B.A.
Justice, B.A.
Linguistics, B.A.
Mathematics, B.A., B.S., M.S., M.A.T.
Music, B.A., B.M., M.A., M.A.T.
Northern Studies, B.A.
Philosophy, B.A.
Physical Education, B.A., B.S.
Physics, B.A., B.S., M.S., M.A.T., Ph.D.
Political Science, B.A.
Russian Studies, B.A.
Speech and Drama, B.A.

COLLEGE OF ENVIRONMENTAL SCIENCES

Division of Life Sciences:
- Anthropology, B.A., B.S., M.A.
- Biological Sciences, B.A., B.S., M.S., M.A.T., Ph.D
- Botany, M.S.
- Fisheries Biology, B.S., M.S.
- Wildlife Management, B.S., M.S.
- Zoology, M.S., Ph.D.

Division of Geosciences:
- Atmospheric Sciences, M.S., Ph.D.
- Earth Science, B.A.
- Geology/Geophysics, B.S., M.S., M.A.T., Ph.D.
- Space Physics, M.S., Ph.D.

Division of Marine Sciences:
- Marine Biology, M.S.
- Oceanography, M.S., Ph.D.

COLLEGE OF HUMAN AND RURAL DEVELOPMENT

College Student Personnel Administration, M.Ed.
Cross-Cultural Education, B.Ed., M.Ed.
Early Childhood Education, B.Ed.
Education, B.T.
Elementary Education, B.Ed., M.Ed., M.A.T.
Guidance and Counseling, M.Ed.
Psychology, B.A., B.S.
Public School Administration, M.Ed.
School Administration, Ed.S.
Secondary Education, B.Ed., M.Ed., M.A.T.
Sociology, B.A., B.S.
Vocational Education, M.Ed.

SCHOOL OF AGRICULTURE AND LAND RESOURCES MANAGEMENT

Natural Resources Management, B.S., M.S.

SCHOOL OF ENGINEERING

Arctic Engineering, M.S.
Civil Engineering, B.S., M.S., M.C.E.
Electrical Engineering, B.S., M.S., M.E.E.
Engineering Management, M.S.
Environmental Quality Engineering, M.S.
Environmental Quality Science, M.S.
Mechanical Engineering, B.S., M.S.
Science Management, M.S.

SCHOOL OF MANAGEMENT

Accounting, B.B.A., [redacted]
Business Administration, B.B.A., M.B.A.
Economics, B.B.A., B.A., [redacted]
Resource Economics, M.S.

SCHOOL OF MINERAL INDUSTRY

Geological Engineering, B.S., M.S.
Mineral Preparation Engineering, M.S.
Mining Engineering, B.S., M.S., E.M.
Petroleum Engineering, B.S., M.S.

INTERDISCIPLINARY PROGRAMS

Interdisciplinary, B.A., B.S., M.A., M.S., Ph.D.

Undergraduate Admissions

Admission Requirements for Freshmen

High School Graduates

To qualify for admission as a freshman, a high school graduate must have a high school grade point average (GPA) of 2.00(C) or higher. An applicant whose high school grades averaged less than that may be considered for probationary admission to UAF if his/her performance on the American College Testing Program (ACT) or the Scholastic Appitude Test (SAT) demonstrates that the student has the capacity for successful academic work. The ACT and SAT tests are administered at testing centers throughout the country several times each year. Arrangements for taking one of these tests may be made through high school principals or guidance officers.

Non-High School Graduates

An Alaska resident at least 21 years of age who has not graduated from high school or been awarded a high school diploma on the basis of GED or military tests and who has not completed any previous college level work may be admitted. Such a student will become a bachelor's degree candidate after completion of not fewer than 30 collegiate semester hours of credit with at least a 2.00(C) average.

Admission Requirements for Transfer Students

Transfer students must have a minimum GPA of 2.00(C) in all previous college work in order to be eligible for admission to a bachelor's degree program. A transfer student with fewer than 30 semester hours of transferable credit must also have a high school GPA of 2.00(C) or higher and is required to complete the ACT placement test prior to registration.

Transfer of Credit

Credit accepted for transfer to UAF which has been earned at other units of the UA system, at other accredited institutions, through military educational experiences or credit accepted by special approval shall be considered as transfer credit. Where possible, transfer credit will be equated with UAF courses.

The following regulations apply to transfer of credit:

1. Only persons accepted as degree candidates at UAF are eligible for transfer of credit.
2. A maximum of 72 semester hours of credit will be accepted from junior and community colleges, cumulative from within and outside the UA system.
3. A student in good standing (C average or higher) may transfer his/her credits from other UA units to UAF under the following conditions:
   a) Course credit at the 100 and 200 levels from the UA Community College Rural Education Extension centers shall be accepted for full credit up to a maximum of 72 semester hours.
      The evaluation of UA community college credit will follow the recommendations which appear in the *Alaska Transfer Guide* as prepared by the Alaska Commission on Postsecondary Education. Copies of the *Guide* are available at all UA and community college units.
   b) Course credit from the University of Alaska-Anchorage, the University of Alaska-Juneau, and 300, 400, and graduate level credit from CCREE centers shall be accepted at full credit.
4. Credits earned with grades of C or higher at other accredited institutions normally will be accepted by transfer. UAF reserves the right to reject work of doubtful quality or to require an examination before credit is allowed.
5. Eight elective credits may be awarded by transfer to students having completed at least one calendar year of military service. In addition, credit also may be transferred from formal service schools as recommended in the *Guide to the Evaluation of Educational Experiences in the Armed Services*,as prepared by ACE. Credit is transferred for the successful completion of Defense Activity Non-Traditional Education Support (DANTES) tests as recommended by the American Council on Education provided the score received is 50% or higher. A maximum 30 credits awarded for military service and/or formal service schooling can be applied toward a bachelor's degree. The completion of course work taken through the Community College of the Air Force is considered military credit and is subject to the same restrictions.
6. Special review for approval of the transfer credit not meeting the requirements stated above may be requested from the Director of Admissions and Records.
7. The applicability of any transfer credit to major and/or minor requirements is subject to approval by the appropriate major and/or minor department. Transfer students must fulfill the graduation and residency requirements of UAF, including those which may be required for a particular program.
8. Transfer credit is not included in UAF grade point computation.

High School Entrance Credits

The specific high school credits suggested for entrance as a freshman, without deficiency, into any of the academic colleges or schools of the UAF, are given in this table:

University Academic Colleges or School	High School Credits					
	English	Mathematics	*Foreign Lang.	U.S. History	Natural or Social Science	Academic and Elective
College of Arts and Sciences	3	Algebra-1 Geom.-1	2	1	2	5
Geography	3	2	0	1	4	5
School of Agriculture and Land Resources Management	3	'Algebra-2 Geom.-1 Trig.-½	°	1	Physics or Chemistry-1 Biology or Elective-1	7
College of Human and Rural Development	3	**2	0	1	2	7
Psychology and Sociology	3	Algebra-1 Geom/Trig-1	0	1	Physics or Chemistry-1 Biology-1 Psych. or Sociology or Natural Science-½	6
School of Engineering	3	Algebra-2 Geom.-1 Trig.-½	0	1	Physics or Chemistry-1	7½
School of Management						
Business	3	2	°	1	2	7
Economics	3	2	2	1	2	5
School of Mineral Industry	3	Algebra-2 Geom.-1 Trig.-½	0	1	Physics or *** Chemistry-1	7
College of Environmental Sciences	3	'Algebra-2 Geom.-1 Trig.-½	°	1	Physics or Chemistry-1 Biology or Elective-1	7
Anthropology	3	2	2	1	4	5

*Students who offer two units of a high school foreign language will normally enroll in a second year language. See Course Placement, page 13.

**Plane Geometry required of Education students who intend to select teaching majors and/or minors in mathematics, chemistry, and/or physics.

***Both strongly recommended for Petroleum Engineering.

'One year of algebra and one year of geometry will be acceptable for students in Agriculture and Biological Sciences not wishing to continue with advanced studies — graduate work, medicine, etc.

°Two years of French, German, or Russian language highly recommended. See specific degree programs.

Admission Requirements for Others

Auditors — An auditor is a student who enrolls for informational instruction only and does not receive academic credit, have laboratory privileges, and may not submit papers for correction and grading. An auditor must apply for admission, register formally on the designated registration dates, obtain approval of the class instructors, and pay the required fees. Fees for auditing one or more classes are the same as those paid for taking one or more courses for credit.

Foreign Students — In addition to meeting regular admission requirements, a foreign student must be able to speak, read, and write the English language well enough to do college level work successfully. All applicants from countries where English is not

the native language must present a satisfactory score on the Test of English as a Foreign Language (TOEFL). No other English language test can be used, nor may any other proof of English competency be substituted such as English credits from other schools. In addition, when preparing the I-20 form that is necessary to obtain an F-1 (student) visa (a J-1 exchange visa may be more appropriate for some graduate students), the University must certify to the Immigration and Naturalization Service (INS) that the prospective student has been accepted for full-time enrollment and has sufficient funds to meet estimated expenses for one academic year. Foreign students on F-1 visas must maintain a full-time course load; they may not enroll as part-time students (less than 12 undergraduate or 9 graduate credits). A foreign student must sign a statement that he/she has sufficient funds to pay all of his/her expenses while attending UAF, as well as the amount needed to pay his/her round trip transportation costs between his/her home and Alaska. The minimum cost for attending UAF for one school year is $5,500 or more (at least $6,300 for graduate students). This amount covers all university fees, room and board on campus, and a reasonable amount of personal expenses including transportation. It does not include summer living or cold weather clothing costs. Since the issuance of an F-1 visa requires a foreign student to affirm that he/she does not intend to make the United States his/her permanent residence, he/she may not be considered for resident tuition fees.

High School Students — Qualified high school students of advanced standing and ability are permitted to enroll in one or two UAF courses while attending high school. To qualify for admission while attending high school, a high school student must present written recommendation of his/her high school counselor or principal, the written approval of his/her parents, and an official transcript indicating a satisfactory GPA in his/her high school work. High school seniors with GPA's of 2.5 or higher may register for two college courses for a maximum of 6 credits. High school seniors with GPA's of 2.0 to 2.5 may register for one college course per semester. Juniors with GPA's of 2.75 or higher may register for one college course per semester. Qualified high school students of less than junior standing may register for one course per semester with the approval of the Director of Admissions and Records.

Special Students — In order to be admitted as a special student, one must be a high school graduate or 21 years of age or older. A special student is limited to enrollment in no more than six credits per semester and is subject to the placement examination requirements for freshman level courses. A special student is subject to the academic regulations of UAF and is required to maintain a 2.00 average in order to remain in good standing. A special student is not considered a degree candidate until regular admission requirements are met and transcripts filed.

Admission Requirements for Students with Bachelor's Degrees

Non-Degree Programs — An applicant who holds a bachelor's degree but has not defined or declared his/her graduate program may be admitted as a student without class standing (WCS) if space permits. Students in this category include:

1. Those who plan to take "interest courses."
2. Those completing work for a teaching certificate.
3. Those completing a second undergraduate major and/or a second bachelor's degree.
4. Those strengthening their preparation in order to be admitted to graduate study.
5. Transient students expecting to be at UAF only briefly.
6. Students awaiting action on applications for graduate status.

Course Placement

The American College Testing Program (ACT) and other placement tests must be taken before a new student with less than sophomore standing may complete registration.

On the basis of test scores, a student whose background appears to be deficient in English and mathematics may be required to take remedial English and mathematics or both in addition to the requirements of his/her chosen curricula. Achievement in these subjects is essential to success in other study areas. The basic English and mathematics courses are especially designed to assist the student in achieving competency in minimum time.

Generally, placement in Engl. 111 will be made if both ACT English and composite scores are 16 or above.

Placement in mathematics courses is usually based on a combination of the ACT mathematics score plus the number of semesters of high school mathematics completed. Generally, the following scores and semesters of high school mathematics give placement in the courses indicated:

ACT Math Score	*Number of Semesters of High School Math*	*UAF Math Placement*
26 or higher	with 1-8	See Math Department
21 to 25 with	6-8	Math 107, 161, 171
21 to 25 with	less than 6	See Math Department
19 to 20 with	7-8	Math 107, 161, 171
19 to 20 with	less than 7	See Math Department
17 to 18 with	8	Math 107, 161, 171
17 to 18 with	4-7	See Math Department
17 to 18 with	less than 4	Math 076*
13 to 16 with	1-8	Math 076*
12 or below	1-8	Math 075*

*Note: Math 075 and Math 076 are offered only through the Tanana Valley Community College.

A student continuing the study of foreign language begun in high school will be required to take a placement test. If he/she fails to place at the level appropriate to the amount of previous language study, he/she will be allowed to enroll for credit in a course that is one semester below his/her level. Work more than one semester below the normal level will be considered remedial, and although not a prerequisite to further study, will carry no credit.

Advanced Placement

Advancement placement credit through College Entrance Examination Board (CEEB) — UAF grants advanced credit, with waiver of fees, for satisfactory performance (a score of 3 or higher) in the College Board Advanced Placement Tests. These tests are normally completed by students during their senior year in high school.

A student desiring CEEB Advanced Placement credit must request that an official report of his/her scores on the examination be sent to the Office of Admissions and Records and upon his/her enrollment will be awarded appropriate credit. Students

may receive credit for more than one Advanced Placement examination.

Local Advanced Placement Credit

Placement in an advanced course is available in some units through local placement tests given at the time of the student's registration. Under some circumstances, advanced placement credit also may be awarded with waiver of fees after the student has satisfactorily completed the advanced course. The following advanced placement policies have been established:

Chemistry — A student who receives advanced placement in Chem. 211 and who completes the Chem. 211-212 sequence with a grade of "C" or better will be awarded 4 semester credits of advanced placement credit in Chemistry.

English — An incoming freshman whose English and composite ACT scores are 26 or better has the option of receiving credit for Engl. 111 in two ways: the student may enroll in a 200- or 300-level literature course and complete it with a grade of "C" or better, or the student may wait until he/she has sophomore standing and then complete Engl. 211 or 213 with a grade of "C" or better.

Foreign Language — A student with previous exposure to a language who wants to continue studies in that language is expected to take a placement test so that the course level most beneficial to him/her can be determined.

Upon completion of the course in which he/she has been placed with a grade of "C" or higher, the student will receive credits for that course and, in addition, for the two immediately preceding prerequisite courses, if any, unless he/she has received university credit for these already. A native speaker may not receive credit for 101 and 102 levels.

This policy does not apply to the individual study courses inasmuch as they represent special practice activities and teach special skills, nor to literature and civilization courses.

Mathematics — Placement in mathematics courses is determined by ACT mathematics scores and the number of semesters of mathematics completed in high school. If a student is placed in a mathematics course at the 200 level or above, upon successful completion of that course with a grade of "C" or higher, the student may receive advanced placement credit for the college level courses which are prerequisite to the course completed.

Academic Bankruptcy for Returning Students

Students occasionally perform at an academic level which makes them ineligible to continue their studies, and they drop out or are dismissed from school. Subsequently, some want to resume their college work but find their previous academic record an obstacle.

Persons in this category who want an opportunity for a fresh undergraduate start at UAF may apply for readmission on the basis that their prior academic record be disregarded and they begin their college study again with no credits attempted and no credits and quality points earned. This policy may be used by a student only once and is applicable only to students enrolled at UAF and only for UAF credits. Credits earned at TVCC prior to the 1979 fall semester are eligible for bankruptcy action.

Prior to applying for admission on this basis, at least two years must have elapsed since the end of the semester in which the applicant was last in full-time attendance at school. The applicant's proposal must be approved by the dean of the college/school of the proposed degree program. The applicant must present adequate evidence to the dean that the conditions which caused the poor academic record have changed so there is now reasonable expectation that the applicant will perform satisfactorily if admitted.

It should be noted that the prior academic record remains a part of the student's overall academic record, but none of it is carried forward as part of his/her program, and none of the credits earned previously can be used in the new program. Students showing competency in any area may be allowed advanced standing (without credit) or a waiver of requirements just as any non-bankrupt student, but will not be allowed credit-by-examination for courses lost in bankruptcy. In spite of bankruptcy, the prior academic record is used in the computations for graduation honors.

Applying for Admission

When to Apply

It is recommended that seniors in high school make application for admission during the first semester of their senior year if they plan to enroll at the university during the next fall semester. Transfer and graduate students should make application at least nine months prior to the beginning of the semester in which they plan to enroll at UAF. Applications for admission should be submitted not later than August 1 for the fall semester and December 1 for the spring semester. Applications received after these dates will be processed if time permits and space is available.

How to Apply

Application forms may be obtained from the Office of the Director of Admissions and Records. Applications for admission will be considered only when the following credentials have been received by the Office of the Director of Admissions and Records:

1. Application for Admission — A $10 application fee must accompany the completed Application for Admission form.

2. Scholastic Records — An applicant is required to have complete official transcripts of all high school and college credits sent to UAF in support of his/her application. An official high school transcript or a secondary school record form completed by the high school where the applicant finished his/her high school work should be mailed to the university from the high school. A high school transcript is not required of a transfer applicant who has completed more than one full year of college work elsewhere. An official transcript from each college or university attended must be sent to the Director of Admissions and Records. The applicant is responsible for requesting that these transcripts be sent to UAF, but transcripts will not be accepted unless they are sent to the Director of Admissions and Records directly from the other college or university attended.

Conditional and Final Acceptance

After the required credentials are received, reviewed and processed, a statement of acceptance will be mailed to the qualified applicant. The statement of acceptance will contain the conditions under which the applicant has been admitted.

Qualified applicants can be accepted for admission while enrolled in their last year of high school or another college. However, the acceptance may be conditional upon receipt of an official transcript indicating satisfactory completion of the work in progress at the time of acceptance or, in the case of a high school senior, completion of graduation requirements.

Final acceptance to UAF for the purpose of earning scholastic credit becomes complete only when all credentials have been

received and accepted by the Director of Admissions and Records.

Acceptance of a student for enrollment at the University of Alaska-Fairbanks constitutes an agreement of mutual responsibility. The student agrees to abide by established rules and policies and to act in a responsible, mature manner. The University's part is to provide an appropriate academic atmosphere.

Placement Test Requirement

Results from the tests prepared by the American College Testing Program (ACT) are required for all entering freshmen and those transfer students with fewer than 30 semester hours of transferable credit. The results must be on file with the Office of the Director of Admissions and Records before approval for registration is granted. It is the responsibility of the student to have the test results sent to this office. Information concerning ACT testing centers and test dates may be obtained from most high schools throughout the nation and from the American College Testing Program, Post Office Box 168, Iowa City, Iowa 52240. Only the ACT test is acceptable for placement purposes. (See also "Course Placement," page 13.)

The Honors Program

The Honors Program at the University of Alaska-Fairbanks, offers a special educational opportunity to those students willing to accept the challenge of a broad and comprehensive intellectual experience. Highly motivated undergraduate students are given the opportunity to acquire an appreciative understanding of the natural and social sciences, the arts, and the humanities in an atmosphere that promotes intellectual curiosity and maximizes independent learning.

The program is designed to attract and retain outstanding students and to provide them with a stimulating intellectual experience in an environment worthy of their academic abilities.

Eligibility

Undergraduate students from all disciplines are eligible for admission to the Honors Program. For admission, new freshmen must have attained a high school grade point average of no less than 3.50, a composite ACT score of no less than 26, and no individual ACT score of less than 23. National Merit Semi-finalists and Finalists are automatically eligible, regardless of their high school grade point average.

Admissions to the Honors Program will be limited to the beginning of the fall semester. Credentials for admission to UAF must be on file with the Office of Admissions and Records by August 1. Invitations to apply for admission to the program will be issued to all first-time freshmen who meet the honors admissions criteria.

Undergraduate Admission Requirements in Brief

Admission Category	*Admission Requirements*
Freshman — Bachelor's Degree*	High School Graduation 2.00 (C) GPA
Transfer Student — Less than 30 semester hours of credit*	High School GPA of 2.00 (C) 2.00 (C) GPA in previous college work
Transfer Student — 30 semester hours of credit or more	2.00 (C) GPA in previous college work
Non-High School Graduate*	21 years of age or older Alaska Resident No previous college work
Special Student**	High School Graduation or 21 years of age or older
Auditor	Same requirements as for appropriate category above (freshman, transfer, special, etc.)
Foreign Student	Same requirements as for appropriate category above (freshman, transfer, etc.) Acceptable TOEFL Examination Scores Acceptable Financial Statement

*Prior to registration, all freshmen and transfer students with fewer than 30 semester hours of credit must complete the ACT test which is used for course placement purposes.

**Special students are limited to two courses and not more than six credits per semester.

Graduate Admissions

Admission to Graduate Study

Graduate study seeks to prepare the student for advanced work. It aims to give the student deeper insights and better understandings of fundamental principles. The graduate program is shaped to the needs of the individual student and is developed in terms of his/her experience, academic background, and aspirations. Earning an advanced degree entails more than the satisfactory completion of specified courses; that student must show promise and performance in productive scholarship.

Graduate programs of the Fairbanks campus are supervised by the Office of the Chancellor, which formulates policies to guide and govern graduate studies.

In general, a student may be admitted to graduate status if he/she has a bachelor's degree from an accredited institution with at least a 3.0 (B) average in his/her major and if his/her major is deemed suitable for continuation of studies in the field of his/her choice. Equivalent accomplishments at a foreign university may be substituted. For the purposes of admission to graduate study, all grades, including those generated from retaking a course, will be included in the calculation of the grade point average. Program heads in fields of interest will determine the adequacy of the student's preparation and whether or not departmental facilities are sufficient for the student's aims.

Students are advised that permission to enroll in graduate courses does not imply admission to graduate study. Nor may a student presume that such coursework will necessarily be applicable to a graduate program. Admission to graduate study, when approved, does not imply admission to candidacy for a degree. Any program has the option of refusing to recommend a student for candidacy for a degree.

Soon after the student is accepted, a faculty advisory committee will be set up to assist the student in planning and carrying out his/her program. (See Degree Requirements — Graduate, page .)

Master's Degrees

Master's degrees are offered in the humanities, social sciences, mathematics, physical and natural sciences, and professional areas such as engineering, education and business administration. Students wishing to enroll for graduate study in any of the available programs should obtain application for admission forms from the Office of Admissions and Records and follow the application procedures for graduate students.

In addition, approval of individualized programs leading to master's degrees may be possible in certain aspects of other areas or in combinations of disciplines, such as, cross cultural studies, arctic studies, linguistics, etc. A student interested in pursuing such a program should submit a brief statement with the application for admission outlining goals and describing the proposed program of study.

Several cross-discipline master's degrees are offered through cooperating departments. For example, the Master of Arts in Teaching is offered with emphasis in the following disciplines: biology, chemistry, elementary education, English, geology, history, mathematics, music, and physics; the Master of Science in general science is offered in mathematics, physics, chemistry, biology, and geology. Students interested in obtaining more information about these degrees and their requirements should also write to the Office of Graduate Studies.

Doctor of Philosophy Degree

There are well established Ph.D. programs in certain areas of physics, geophysics, geology, biological sciences, oceanography, zoophysiology, zoology and wildlife and fisheries biology.

Prospective candidates in these or other subject areas should write to the Office of Admissions and Records for application materials. Each application is reviewed by a committee for admissions both in the light of the applicant's qualifications and the faculty and facilities available on the campus relevant to the field of projected study.

WAMI Medical Education Program

Alaska WAMI students are registered concurrently at UAF and the University of Washington School of Medicine. Admission as a freshman medical student at the University of Washington School of Medicine is a prerequisite. Alaskan students may obtain their premedical training at UAF or any college/university. During the summer preceding the last year of premedical training, application for admission to the University of Washington School of Medicine is accomplished as follows:

1. Student must take the Medical College Admissions Test.
2. Student must complete the American Medical College Application Service forms indicating the University of Washington School of Medicine/University of Alaska WAMI Medical Education Program.

For further information about the WAMI Medical Education Program contact:

WAMI Program Office
University of Alaska-Fairbanks
Fairbanks, Alaska 99701, U.S.A.

Applying for Admission

When to Apply

It is recommended that graduate students make application for admission at least nine months prior to the beginning of the semester in which they plan to enroll at UAF. Applications for admission should be submitted not later than August 1 for the fall semester and December 1 for the spring semester. Applications received after these dates will be processed if time permits and space is available.

How to Apply — Read Carefully

Application forms may be obtained from the Office of the Director of Admissions and Records. Applications for admission will be considered only when the following credentials have been received by the Office of the Director of Admissions and Records:

1. Application for Admission — A $10 application fee must accompany the completed Application for Admission form.

2. Scholastic Records — An applicant is required to have complete official transcripts of all college credits sent to UAF in support of his/her application. The applicant is responsible for requesting that these transcripts be sent to the university but transcripts will not be accepted unless they are sent to the Director of Admissions and Records directly from the other college or university attended.

3. Letters of Recommendation — At least three letters of recommendation are required from people capable of describing the applicant's character and his/her ability to undertake graduate study and research. The letters should be forwarded to the Director of Admissions and Records.

4. A brief description of the proposed plan of study is required for those wishing to apply for admission into a Ph.D. program or an interdisciplinary master's program.

5. Results of the Graduate Record Examination (GRE) and/or other tests, when required, must be forwarded to the Office of Admissions and Records. Applicants should refer to the admission requirements of the specific degree program for which they are applying to ascertain what tests, if any, are required.

6. Graduate foreign student applicants also should refer to the admission requirements for foreign students on page 12.

Conditional and Final Acceptance

After the required credentials are received, reviewed and processed, a statement of acceptance will be mailed to the qualified applicant. The statement of acceptance will contain the conditions under which the applicant has been admitted.

A qualified applicant can be accepted for admission while currently enrolled in his/her last semester of college. However, the acceptance may be conditional upon receipt of an official transcript indicating satisfactory completion of the work in progress at the time of acceptance and completion of graduation requirements.

Final acceptance to the university for the purpose of earning scholastic credit becomes complete only when all credentials have been received and accepted by the Director of Admissions and Records.

GRADUATE DEGREE PROGRAMS OFFERED AT UAF

Master of Arts (M.A.)
- Anthropology
- Chemistry
- English
- Music

Master of Arts in Teaching (M.A.T.)
- Biological Sciences
- Chemistry
- Elementary Education
- English
- Geology/Geosciences
- History
- Mathematics
- Music
- Physics
- Secondary Education

Master of Business Administration (M.B.A.)
- Business Administration

Master of Civil Engineering (M.C.E.)
- Civil Engineering

Master of Electrical Engineering (M.E.E.)
- Electrical Engineering

Master of Education (M. Ed.)
- College Student Personnel Administration
- Cross-Cultural Education
- Elementary Education
- Guidance and Counseling
- Public School Administration
- Secondary Education
- Vocational Education

Master of Fine Arts (M.F.A.)
- Creative Writing

Master of Science (M.S.)
- Arctic Engineering
- Atmospheric Sciences*
- Biology*
- Botany
- Chemistry
- Civil Engineering
- Electrical Engineering
- Engineering Management
- Environmental Quality Engineering
- Environmental Quality Science
- Fisheries Biology
- General Science
- Geological Engineering
- Geology*
- Geophysics*
- Marine Biology
- Mathematics
- Mechanical Engineering
- Mineral Preparation Engineering
- Mining Engineering
- Natural Resources Management
- Oceanography*
- Petroleum Engineering
- Physics*
- Resource Economics
- Science Management
- Space Physics*
- Wildlife Management*
- Zoology*

*Ph.D. degree offered in these areas.

In addition to the programs listed above, individualized master's and doctoral degree programs may be arranged in some specialized areas for which there are not established programs or programs may be arranged for specific plans of study involving a combination of disciplines. An applicant for admission to this program must submit a brief description of the proposed program with his/her application.

Academic Regulations

Each student will be held responsible for the applicable University of Alaska-Fairbanks rules and regulations.

Academic Advising

The university considers the advising of students to be an integral part of the teaching function, and therefore, an important faculty responsibility. Advising provides an opportunity for close faculty-student interaction, serves to explain the university's programs and requirements and assists the student in the choice of a program consistent with his or her academic objectives and future goals.

The Director of Academic Advising is responsible for overall coordination of the advising program. Assignment of faculty members is based on the student's major. A program of special advising is provided for freshmen and students who have not declared majors. The advising of rural and Native students is available through Rural Student Services.

Access to Records

Under the Family Educational Rights and Privacy Act of 1974, students are entitled to review their records. Except for directory information, no personally identifiable information will be disclosed to agencies off-campus without the written permission of the student. Records are made available for legitimate on-campus professional use on a need-to-know basis.

Public information or directory information is disclosed on a routine basis unless the student requests, in writing, to the Director of Admissions and Records that such information not be released. Forms to request that directory information not be released are available in the Office of Admissions and Records. These forms must be completed each semester. No directory information will be released during the first five working days of each semester. After that time, such information will be released when appropriate, unless requested in writing not to do so. The following is considered directory information:

1. Name.
2. Address, telephone.
3. Home address (permanent).
4. Weight and height of athletic teams.
5. Date of birth.
6. Dates of attendance and current class standing.
7. Major field(s) of study.
8. Degrees and awards received, including dates.
9. Participation in officially recognized activities.

Attendance

Regular attendance is expected in all classes. Unexcused absences may result in a student receiving a failing grade. It is the responsibility of the student to confer with the instructor over absences and to work out acceptable arrangements for making up missed work.

Auditing

A student wishing to enroll in one or more courses for informational instruction only may register as an auditor. An auditor does not receive academic credit or have laboratory privileges and may not submit papers for grades and correction. Audited credit is not included in the computation of the study load for full-time, part-time determination or for overload status. At the instruction's discretion, an auditor not maintaining satisfactory attendance in class may be issued a "W" grade at the end of the semester. A person who has audited a class may not request credit via departmental (local) exams until the subsequent academic year.

Change of Grade Policy

Grades, other than incompletes and deferreds, submitted by the instructor upon completion of a course, are assumed to be the student's final grades and they become part of the student's permanent records. A grade may not be changed unless a legitimate error has been made on the part of the instructor in calculating the grade and such a change must be approved by the instructor's unit head and dean. Corrections of grading errors must be made within 30 days after the beginning of the next regular semester.

Class Standing

Class standing is determined on the basis of total credits earned. Students are classified as:

Freshmen	0-29 credits
Sophomore	30-59 credits
Junior	60-94 credits
Senior	95 credits

Transfer students will be given class standing on the basis of the number of transfer credits accepted by UAF. Special students are registered without class standing (WCS).

Credit by Examination

The credit by examination program is administered by the Department of Institutional Studies and Testing in the Office of Admissions and Records at the university. Credit by examination is available through the College Level Examination Program (CLEP) and through locally arranged examinations. All exams may be repeated after an interval of one year.

I. College Level Examination Program (CLEP)

A. CLEP General Examination

1. Only students currently enrolled at UAF or those students who have previously completed credit courses as part of a degree program at the university may be awarded credit.

2. Credit for CLEP General Examinations shall be awarded according to the following schedule:

English — No credit for any score
Mathematics — Three credits for 500 score
Natural Science — Six credits for 500 score
Humanities — Six credits for 500 score
Social Science/History — Six social science elective credits for 500 score
Maximum number of credits possible — 21

3. If as many as six semester credits have been earned in an area covered by a CLEP General Exam, no credit will be awarded for the successful completion of that exam.

B. CLEP Subject Examinations

1. Only students currently registered at UAF or those students who have previously completed credit courses as part of a degree program at the university may be awarded credit.
2. A course challenged for credit must not duplicate a course for which credit has already been granted or for which a student is currently enrolled.
3. Minimum passing scores of approval CLEP Subject Exams shall be 50. In the case of an essay, the appropriate department shall determine a grade based on the CLEP score plus the essay.
4. A person who has audited a class may not request credit by examination for that class until the subsequent year.

II. Credit by Examination Through Local Exams

A. Only students currently registered at UAF will be awarded credit.

B. Subject to departmental approval, all courses, except -90's (193, 292, 497, etc.) and practicums, may be taken by examination. A list of courses not available for credit by examination will be available in the Testing Office.

C. A course challenged for credit must not duplicate a course for which credit has already been granted or for which a student is currently enrolled.

D. A person who has audited a class may not request credit by examination for that class until the subsequent year.

E. As part of the application process, the instructor and the student will mutually agree upon the topics to be covered, type and date of examination and the method of grading.

F. Examinations must be completed within 90 days of the application date. A student not meeting this deadline must reapply and pay an additional fee.

G. The credit by examination fee is not refundable.

H. Grades from credit by examination do not affect GPA calculations.

Credit-No-Credit Option

The Credit-No-Credit option encourages students to explore areas of interest not necessarily related to their academic majors.

One "free" elective may be taken under this option each semester. The instructor will not be informed of the student's status in the course. The student will be given credit toward graduation if he/she performs at a C level or above. If performance falls below that level, the course will not be recorded on the student's transcript. In either case, the course will not be included in any GPA calculations. If the student later changes his/her major and the course becomes a requirement the course will be accepted by the new major department. The student may change from credit-no-credit status during the first two weeks of the semester by informing the Director of Admissions and Records of his/her desire to change status.

Drop/Add

A student is expected to complete the courses in which he/she is enrolled. The student, however, may withdraw from a course until the end of the ninth week of the semester by following the Drop/Add procedure. After that time, student initiated withdrawals from individual courses will not be accepted. Students wishing to add courses to their schedules may do so until the end of late registration by following the Drop/Add procedure. Information about the procedure and forms may be obtained from the Office of Admissions and Records.

Full-, Part-time Status/Study Load

An undergraduate student who registers for 12 or more semester credit hours is classified as full time. A graduate student registering for nine semester credit hours is classified as full time. Eighteen semester credit hours is the normal maximum study load. The approval of the dean of the specific college is needed for enrollment in 19-20 semester credit hours, and the approval of the chancellor is needed for enrollment in 21 or more semester credit hours.

Credits carried through all units of UAF are considered in the determination of study load hours and full- or part-time status. Courses that are audited and correspondence study courses are not included in the study load computations.

Grade Point Average (GPA) Computation/Grading System

For the computation of a GPA, the number of UAF credits attempted is divided into the number of grade points earned. To determine the number of grade points earned, the credit attempted is multiplied by a grade point factor. Credits attempted where grades of AU (audit), CR (credit), DF (deferred), I (incomplete), P (pass), S (satisfactory) or W (withdrawn) have been awarded are not included in the GPA computation. In addition, noncredit courses, transfer credits and credit by examination do not affect the GPA calculations. Undergraduate work is not included in the GPA for graduate students.

All grades (original and retakes) for a course completed at UAF will be shown on the transcript, but only the last grade achieved at UAF for a course will be computed in the GPA.

Grades in all courses are letter grades unless specified in the class schedule. The method of grading (letter or pass/fail) is an integral part of the course structure and is included in the course description. It is the same for all students taking the course. Grades appearing on academic records are as follows with grade point factors in parenthesis:

A An honor grade, indicates originality and independent work, a thorough mastery of the subject, and the satisfactory completion of more work than is regularly required (four grade points per credit).
B Indicates outstanding ability above the average level of performance (three grade points per credit).
C Indicates a satisfactory or average level of performance (two grade points per credit).
D The lowest passing grade, indicates work of below average quality and performance (one grade point per credit).
F Indicates failure (no grade points).
P **Pass** — Indicates passing work and carries no grade points.
S **Satisfactory** — Indicates satisfactory completion and is used only for graduate theses.

DF Deferred — Indicates that the course requirements cannot be completed by the end of the semester, that credit may be withheld without penalty until the course requirements are met within an approved time. This designation will be used for such courses as theses, special projects, etc., that require more than one semester to complete.

AU Audit — A registration status indicating that the student has enrolled for information instruction only (no academic credit).

W Withdrawn — Indicates withdrawal from a course after the first two weeks of a semester.

Cr Indicates credit was given under the credit-no-credit option.

I Incomplete — A temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of the work in a course, but for personal reasons beyond the student's control has not been able to complete the course during the regular semester. Normally, an incomplete is assigned when the student is in the class until at least the last three weeks of the semester or summer session. Negligence or indifference are not acceptable reasons for an "I" grade.

An incomplete must be made up within one year or it will automatically be changed to an "F" grade. The "I" grade is not computed in the student's GPA until it has been changed to a regular letter grade by the instructor or until one year has elapsed at which time it will be computed as an "F." A senior cannot graduate with an "I" grade in either a UAF or major course requirement. To determine a senior's GPA at graduation, an "I" grade will be computed as a failing grade.

Honors Lists

The Dean's List — To be eligible for the Dean's List, a student must be an undergraduate enrolled in at least 12 UAF credits graded with letter grades and must have earned a minimum GPA of 3.5 for the semester in UAF courses.

The Chancellor's List — To be eligible for the Chancellor's List, a student must be an undergraduate enrolled in at least 12 UAF credits graded with letter grades and must have earned a GPA of 4.00 in UAF courses.

Majors

A qualified student may declare a major when he/she is officially admitted to UAF. Any regular student who does not follow a curriculum leading to a specific degree will be enrolled with an "undeclared" major. A student with an interest in a particular school or college, but who has not selected a major, will be enrolled as a non-major within that division. Special students are not eligible to declare a major or be assigned class standing.

A student may change a major only at the beginning of a semester. A Change of Department and/or Major form, which may be obtained at the Office of the Director of Admissions and Records, must be completed and the student must obtain the written consent of the heads of the departments concerned.

Registration

Persons enrolling at UAF must complete registration according to the prescribed procedure and must pay required UAF fees in order to be eligible to attend classes and earn credit. A registration period is held at the beginning of each regular session on dates published in the official university calendar. Registration for special programs, short courses, seminars, and other classes that are not part of the regular academic calendar will be arranged prior to their starting.

Reserving Graduate Credit

A senior student at UAF who has only a few remaining requirements for his/her bachelor's degree may take courses for graduate credit and have them reserved for an advanced degree. To do this, a student must be in his/her final year of an undergraduate program and must submit a written petition during the first four weeks of the semester identifying which courses being taken that semester are to be reserved for graduate study and are not to be counted toward the bachelor's degree. (Reserving these courses, however, does not assure that they will be accepted by a graduate advisory committee as part of the student's eventual graduate program.)

Scholastic Action

UAF has set scholastic standards so students earning less than satisfactory grades will examine their objectives carefully before continuing. The scholastic standards are designed so that action is taken before a student's record deteriorates to the point that readmission to UAF or to another college or university becomes a problem. In all cases involving poor scholarship, students are encouraged to consult with their advisors, instructors or deans.

At the end of a semester, a student failing to earn a GPA of 2.00 in courses at UAF will be subject to scholastic action. Depending upon the circumstances, scholastic action may result in a student being placed on probation, continued on probation or disqualified from the university.

Probation — A student in good standing who earns a semester GPA of less than 2.00 will be placed on probation. A student previously on probation whose semester and/or cumulative GPA is less than 2.00 may be continued on probation if circumstances warrant. The probation determination, which is made by the dean of the college in which the student is majoring, may include conditions and/or credit limitations which the student is expected to fulfill during his/her next enrollment at UAF. In order to be removed from probation, a student's cumulative and semester GPAs must be 2.00 or higher.

Academic Disqualification — If a student's cumulative record indicates poor scholarship, the dean of the college in which the student is majoring may recommend that the student be disqualified from UAF. A student who is academically disqualified is not permitted to enroll in credit courses at UAF for the next regular semester following disqualification. After one regular semester, a student may enroll at UAF as a special student, limited to six credits or less per semester for any remainder of the disqualification period. A student under academic disqualification must reapply for admission to UAF when he/she wishes to be considered for readmission as a regular student. The application of readmission should include evidence that the student now has a high probability for success in college.

Good Standing — To be in good standing, a student must maintain both a cumulative and a semester GPA of 2.00 or better in UAF courses.

Veteran's Training

The university is approved for veteran's training by the Veterans Administration (VA). UAF will be held responsible for overpayments made to students receiving VA educational benefits when such overpayments result from excessive absences, discontinuance or interruption of courses by veterans, or by a veteran not meeting the academic standards of progress of the university. Therefore, UAF instructors will notify the Veterans' coordinator when a veteran is not attending or irregularly attending class or is not meeting the minimum UAF academic standards in their classes.

In compliance with VA requirements, UAF will report to the VA any veteran receiving VA educational benefits who is not maintaining a semester or cumulative GPA of 2.00 or above (3.00 for a veteran in graduate studies). Failure to maintain the required GPA may result in the suspension of VA benefits.

UAF does not have a Veterans Affairs Office on campus. However, a counselor visits the campus at regular intervals during the year. Veterans interested in further information about educational benefits should contact the Office of Admissions and Records.

Withdrawal

After the end of the ninth week of the semester, withdrawals from individual courses will not be accepted.

Total withdrawal from UAF must be initiated by the dean of the college/school where the student is majoring. The Dean of Students must initiate the withdrawal for non-majors.

The dean initiating the withdrawal will immediately notify the course instructors and the student's advisor of the withdrawal.

Withdrawal from UAF is the official discontinuance of attendance prior to the end of the semester or session.

Withdrawals after the second week, regardless of the type, will appear on the student's permanent record as the letter "W" but will have no effect on the student's GPA or any reference to the student's standing in the class.

All withdrawals must be acknowledged by the student in writing.

The above withdrawal policy deadline will be adjusted for courses shorter in time than the regular semester.

The appeals route for students or faculty regarding the dean's decision is the Chancellor, and then the Fairbanks Grievance Council.

Degree Requirements

To receive a degree from the University of Alaska-Fairbanks, a student must satisfy three sets of requirements: general university requirements, degree requirements, and program (major) requirements. General university requirements and degree requirements are described in this section of the catalog; requirements of the major are given in the Degree Programs section.

General University Requirements

Undergraduate — The minimum number of credits which must be earned, including those accepted by transfer, is 130 semester hours for a bachelor's degree.

For a bachelor's degree a student must earn in residence at UAF at least 24 credits in upper-division courses and at least 30 of the last 36 credits for the degree. Transfer students will ordinarily be required to earn at UAF a minimum of 12 semester credits in each major field and a minimum of three semester credits in each minor field. Credit by examination does not qualify for residence credit.

A minimum grade-point average of 2.00 (C) must be attained in all work as well as in the major and minor fields.

A student enrolled in an undergraduate degree program may elect to graduate under the requirements of the UAF catalog in effect during the year of graduation or in effect at the time he/she originally enrolled in the major, providing there has not been a time lapse of more than seven years. Only one catalog can be used for each degree.

Certification that the major (and minor, if any) requirements have been met is the responsibility of the faculty of the student's department or program. Department/program heads will indicate such certification in writing to the Director of Admissions and Records.

Graduate — A graduate student must have applied and been admitted to a specific degree program and, in addition, must later be admitted to candidacy for that degree and discipline major.

A graduate student must be registered for each semester in which he/she is actively working toward his/her degree.

Credit by correspondence or examination or courses taken under the "credit/no credit" option may not be used in fulfilling the basic course requirements of the degree program.

A cumulative grade point average of 3.00 (B) is required for good standing. An A or B grade must be earned in courses not primarily for graduate students (300 or 400); C will be accepted in graduate courses (500 or 600), provided the student maintains a B average both for all graduate courses and for 600-level courses. For the purposes of graduate study (good standing and meeting degree requirements), all grades, including those generated from retaking a course, will be included in the grade point average.

A graduate student must satisfactorily pass a final examination(s) according to the requirements for his/her degree.

Additional requirements and specific details concerning graduate degrees will be found in the *Manual of Information and Procedures for Graduate Studies.*

Residence Credit

Residence credit is defined as UAF credit that is earned by a student in formal classroom instruction or in individual study or research through any unit of UAF. Transfer credit, advanced placement credit, formal service school credit, military service credit and credit granted through nationally prepared examinations are not considered residence credit. Credit by examination earned through locally prepared tests is not normally considered residence credit.

Degree Requirements — Undergraduate

A maximum of 32 semester hours of work completed by correspondence may be accepted toward a bachelor's degree. Students wishing to obtain degree credits for correspondence courses must obtain approval of courses by the dean of the school or college from which they expect to graduate. Students not receiving prior approval for such courses take the risk of not having the courses accepted.

Since English 211, 213, and 311 are primarily courses in writing, and interchangeable, any one of them will satisfy the second half of the requirement in written communication for the bachelor's degree. A student who has taken one of these courses before declaring a major in which one of the other courses may be considered more appropriate, or a student who changes his/her major from a field in which one of these courses is considered more appropriate than the others, will not be required to take the other course.

A UAF graduate wishing to obtain a second bachelor's degree must complete 24 hours of credit beyond the first bachelor's degree, i.e., a minimum of 154 credits. All general university requirements, degree requirements, and requirements of the major must be met for both degrees.

A student who holds a bachelor's degree from a college or university other than UAF must apply for admission as a transfer student. All general university requirements, including residency requirements, degree requirements, and requirements of the major must be met.

Bachelor of Arts Requirements

Communication:	*Credits*
English 111 or equivalent, and English 211, 213, 311 or equivalent	6
Speech Communication	3
Humanities:	
Any combination of courses at the 100 level or above, selected from at least 3 disciplines, with a maximum of 9 credits from any one discipline	18
Social Sciences:	
Any combination of courses at the 100 level or above, selected from at least 3 disciplines, with a maximum of 9 credits from any one discipline	18
Mathematics and Logic:	
Any combination of courses at the 100 level or above from the Department of Mathematical Sciences (Mathematics, Computer Science and Applied Statistics), or Philosophy 204	6

Natural Sciences:
Any combination of courses at the 100 level or above which includes at least one laboratory course 7

Major Complex* ..... At least 30

Minor Complex* ..... At least 12

Minimum credits required for degree 130

Of the above, at least 48 credits must be obtained in the upper division (300 level or higher) courses.

*Courses specified by a major or minor complex which are not in the primary discipline of that complex may be used to fulfill the Humanities, Social Sciences, Mathematics and Logic, or Natural Sciences distribution requirements.

Majors Available for B.A. Degree: Alaska Native Studies, Anthropology, Applied Linguistics, Art, Biological Sciences, Chemistry, Earth Sciences, Economics, English, Eskimo, Foreign Language, Geography, Geography and Regional Development, History, Humanities, Interdisciplinary Studies, Journalism, Justice, Linguistics, Mathematics, Music, Northern Studies, Philosophy, Physical Education, Physics, Political Science, Psychology, Russian Studies, Sociology, Speech Communications, Theatre.

(Requirements of majors are listed in the Degree Programs section of this catalog.)

Minors Available for B.A. Degree: Accounting, Alaska Native Languages, Alaska Native Studies, Applied Linguistics, Athletic Coaching, Computer Information Systems, Computer Science, Anthropology, Art, Asian Studies, Biological Sciences, Business Administration, Chemistry, Economics, Secondary Education, Elementary Education, English, Eskimo, French, Geography, Geology, German, History, Humanities, Journalism, Linguistics, Mathematics, Military Science, Music, Philosophy, Physics, Physical Education, Police Administration, Political Science, Psychology, Russian, Russian Studies, Sociology, Spanish, Speech Communications, Theatre, Travel Industry Management.

The following associate degree programs are approved as minors for the bachelor of arts degree: Air Traffic Control, Business Administration, Chemical Science, Early Childhood Development, Electronics Technology, Fire Science, Food Technology, Justice, Library Technical Assistant, Petroleum Technology, Office Occupations, Paraprofessional Counseling, and Professional Piloting.

*A double major, which must be approved by academic petition, may be completed instead of a major and a minor. The student must complete 130 credits and satisfy all other general requirements plus all requirements for both majors.

Bachelor of Science Requirements *Credits*

Communications
English 111 or equivalent and
English 211, 213 or 311 6
*Speech Communication 3

Mathematics
One semester of college-level Calculus, Math. 203, or Applied Statistics 301 ..... 3 or more

Natural Science
Chemistry, Biology, Geoscience (Solid Earth Sciences), or Physics (minimum of 6 credits each in two disciplines), including 2 credits of laboratory 16

Social Science/Humanities
Social Science (minimum of 3 credits) and Humanities (minimum of 3 credits), exclusive of 9-credit communications requirement 15

Major Complex (see departmental curricula for specific requirements and for Minor Complex, if required)* ..... variable

Minimum credits required for degrees 130

Majors Available for B.S. Degree: Anthropology, Applied Physics, Biological Sciences, Chemistry, Civil Engineering, Computer Science, Economics, Electrical Engineering, Fisheries Biology, General Science, Geography, Geology, Geological Engineering, Interdisciplinary Studies, Mathematics, Mechanical Engineering, Mining Engineering, Natural Resources Management, Petroleum Engineering, Physics, Physical Education, Psychology, Sociology, Wildlife Management.

(Requirements of majors listed in the Degree Programs section of this catalog.)

*A double major may be approved by academic petition. The student must complete 130 credits and satisfy the requirements of both majors.

Bachelor of Technology Requirements *Credits*

*Must have completed an associate degree in a technical specialty (Associate of Technology, Associate of Applied Science). Students holding associate degrees of less technical depth (Associate of Arts) must make up the equivalent technical deficiencies before being admitted to the Bachelor of Technology degree program ..... 60 or more

Communication (may have been taken as part of the associate degree):
Engl. 111 and Engl. 211, 213, or 311 6
Oral Communication 3

General Education (courses taken as part of the associate program are acceptable):

12 credits in one area, 6 credits in a second area and 3 credits in each of the two other areas: Social Sciences, Humanities, Natural Science, Mathematical Science (Mathematics, Computer Science, Statistics) .. 24

Major Complex (must be beyond associate degree major, 30 credits):
Upper-division credits in technical specialty 0-12
Complementary area 24-30
Minimum credits required for degree 130

A minimum of 65 credits must be earned beyond those applied to the associate degree. Twenty-four upper division credits must be earned at UAF. All credits must be 100-level or above.

Major Complexes Available for the B.T. Degree: Education, Computer Science.

*The following technical specialties have been approved as acceptable associate degree programs for admission to a Bachelor of Technology degree program:

Aviation Technology
Automotive Technology
Computer Information Systems (for Computer Science major complex only)
Electronics Technology (must be Electronic Engineering Technology option for Computer Science major complex)
Food Service Technology
Welding/Materials Technology
Medical Technology
Science (for Computer Science major complex only)
Surveying Technology
Mineral and Petroleum Technology

*Only Computer Information Systems, Science, and Electronic Engineering Technology approved for Computer Science major complex.

Bachelor of Business Administration Requirements

Communications *Credits*
Engl. 111 3
Engl. 211, 213 or 311 3
Sp.C. Elective 3

Social Science *Credits*
Psy. 101 — Intro. to Psychology 3
Soc. 101 — Intro. to Sociology 3
P.S. 101 or 102 — Intro. to American Government 3
Econ. 201 and 202 6
History elective 3

Natural Science & Mathematics *Credits*
Natural Science elective (including 1 cr. of lab) 4
Math. 161 and 162 7

Humanities *Credits*
Humanities elective 6
(In addition to 3 credits of speech elective taken under "Communications" above)

Major Complex and Common Body of Knowledge
See department curricula for specific requirements.

Minimum Credits Required for Degree 130

Majors Available for B.B.A. Degree: Accounting, Economics, Finance, International Business, Management, Marketing, Travel Industry Management.

(Requirements of majors are listed in the Degree Programs section of this catalog.)

Bachelor of Education Requirements
See under Education in Degree Programs section.

Bachelor of Music Requirements
See under Music in Degree Programs section.

Bachelor of Fine Arts Requirements
B.F.A. general requirements are the same as the requirements for the B.A. (See page 24.)
Major Available for B.F.A. Degree: Art.

Course Classification

Courses that may be used in satisfying generally stated degree requirements (e.g., "Social Science elective") are classified in the course listings by the following designators: s-Social Sciences; n-Natural Sciences; and h-Humanities. For instance, Hist. 341, History of Alaska (3+0)s may be utilized to satisfy the "Social Science elective" requirement.

Academic Petition

Any deviation from academic requirements and regulations must be approved by academic petition. A petition form, which requires the signatures of the student's advisor, unit head, and dean, may be obtained from the Office of the Director of Admissions and Records.

Petitions to waive general university or degree requirements will be decided by the Vice-Chancellor for Academic Affairs.

Degree Requirements — Graduate

Specific requirements and procedures for graduate study are listed below and in the *Manual of Information and Procedures for Graduate Studies.*

A student will be permitted to continue graduate study from semester to semester only if his/her performance is satisfactory as judged by the student's advisory committee and the dean, but, minimally, a cumulative grade-point average of 3.00 in courses of the approved program (all courses if the program has not yet been delineated) is required for good standing.

Master's Degree

The minimum number of credits which must be earned for every and all master's degrees is 30 semester hours.

A maximum of 12 credits may be devoted to thesis or to thesis and research, or a maximum of 6 to research in non-thesis degrees. At least 9 credits in addition to thesis and research must be at the 600 level.

A maximum of 9 semester hours of credit from another institution may be transferred to UAF and applied toward a master's degree upon approval of the student's advisory committee and the dean of the college or school in which the student is enrolled.

A student may apply for admission to candidacy for a specific master's degree if he/she is in good standing and has satisfied the following requirements: the student must have (1) satisfactorily completed at least eight credits of graduate study at UAF; (2) received approval for the provisional thesis title if a thesis is required, and (3) received approval of the finalized Graduate Study Plan.

The candidate must pass a comprehensive/final examination, either written or oral; if a thesis is required, an oral defense of the thesis must be taken either in conjunction with or in addition to, the comprehensive/final examination. The examining committee shall consist of at least a candidate's advisory committee and, in the case of an oral exam, an examiner from outside the candidate's college, school or division, representing the Office of the Chancellor.

All work toward the fulfillment of the requirements of a master's degree must be completed within seven years. All courses listed on the student's program must be satisfactorily completed.

Educational Specialist Degree

The minimum number of credits which must be earned beyond the master's degree is 30 semester hours, 21 of which must be 600 level.

A maximum of 6 hours of credit may be accepted by transfer, with approval of the student's graduate committee and the Dean of the College of Human and Rural Development.

The student may apply for advancement to candidacy, provided he/she is in good standing and has (1) satisfactorily completed a minimum of nine credits of his/her program at UAF and (2) received approval of the finalized Graduate Student Plan.

The student must complete a 6-credit-hour internship or field study and must pass a written and/or oral comprehensive examination.

All work toward the fulfillment of the requirements for the educational specialist degree must be completed within seven years after first registering for the program.

BACCALAUREATE DEGREE REQUIREMENTS IN BRIEF

ACADEMIC DISCIPLINE	Bachelor of Arts	Bachelor of Science	Bachelor of Bus. Admin.	Bachelor of Education	Bachelor of Music	Bachelor of Technology	ACADEMIC DISCIPLINE
Written Communication	Engl 111 - 3 cr Engl 211, 213, or 311 - 3 cr	Engl 111 - 3 cr Engl 211, 213, or 311 - 3 cr	Engl 111 - 3 cr Engl 211, 213, or 311 - 3 cr	Engl 111 - 3 cr Engl 211, 213, or 311 - 3 cr	Engl 111 - 3 cr Engl 211, 213, or 311 - 3 cr	Engl 111 - 3 cr Engl 211, 212, 213, or 311 - 3 cr	Written Communication
Oral Communication	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Sp.C. elective - 3 cr	Oral Communication
Humanities	18 credits in any combination of courses at the 100 level or above selected from at least 3 disciplines with a maximum of 9 credits from any one discipline in both humanities and social science areas - 36 cr	15 credits including at least 3 credits from each area	Electives - 6 cr	electives - 14 cr (Mus 309 required for ECD and Elem. Education)	Non-Music elect - 15 cr		Humanities
Social Science			History - 3 cr Psy 101 - 3 cr Soc 101 - 3 cr P.S. 101 or 102 - 3 cr Econ 201, 202 - 6 cr	Electives 6-12 cr Hist 101-102 or 131-132 -6 cr Psy 101 - 3 cr Other required courses 6-9 cr	Electives - 15 cr (Psy 101 - 3 cr required for Mus. Educ.)	Gen. Educ. - 24 cr (12 cr in one area, 6 cr in 2nd area, and 3 cr in each of other two areas) Courses taken as part of associate program are accepted.	Social Science
Natural Science	Any combination of courses at the 100 level or above which includes one lab course - 7 cr	Chem, Biol, Geol, or Physics - 16 cr (6 cr in each of 2 disciplines incl. 2 cr of lab)	Nat. Sci - 4 cr (including 1 cr of lab)	ECD: Math 205 - 3 cr Math/NS elect - 6 cr Elementary: NS Elect - 6 cr Math - 6 cr Secondary: Math/NS elect - 8 cr			Natural Science
Mathematics	Mathematics and Logic: any combin. of courses at the 100 level or above from the Dept. of Mathematical Sciences (Math, Computer Sci, or Phil. 204) - 6 cr	One semester college level calculus, Math 203 or AS301 - 3 or more cr	Math 161-162 - 7 cr				Mathematics
Other	Of the total credits required for the degree, 48 must be upper-division (300 or 400 level) courses		Common body of knowledge - 33 cr	Required education courses 34-40 cr PE Elect 2-3 cr (Elem only) ECD only - 12 cr ECD courses		65 cr must be earned beyond assoc. degree, including a minimum of 30 cr in major complex.	Other
Major Complex or Specialty	At least 30 credits	Variable	33-42 cr	Credit and Structure varies	Variable		Major Complex or Specialty
Minor Complex	At least 12 credits						Minor Complex

Doctor of Philosophy Degree

The degree of doctor of philosophy is granted for proven ability and scholarly attainment. There are no fixed credit requirements for this degree at UAF. It is not policy to confer this degree upon anyone whose entire academic experience has been at this university.

The student chooses a major line of study and, with the advice of his/her advisory committee, such lines of study in related fields as are necessary for achievement of a thorough and scholarly knowledge of his/her subject. The committee and the student will prepare the student's graduate study plan for the degree which, including applicable and acceptable work transferred from other institutions, shall represent approximately three full years of study beyond the bachelor's degree.

UAF requires completion of a foreign language/research tool requirement set by the candidate's advisory committee. Refer to the **Manual of Information and Procedures for Graduate Studies** for details. The selection and administration of suitable proficiency tests will be under the direction of the graduate committee.

Admission to graduate study does not imply admission to candidacy for a degree. The student should seek admission to candidacy approximately one year before completing the requirements for the doctorate. A student may be accepted as a candidate by the advisory committee after (1) completing the full-time equivalent of two academic years of graduate study, (2) completing at least one semester in residence at UAF, (3) finalizing the graduate study plan, (4) passing the foreign language/research tool requirement, (5) obtaining approval by the advisory committee of the title and synopsis of the thesis, and (6) passing a written comprehensive examination administered on a departmental basis.

The thesis, which is required for the Ph.D. degree, is expected to represent the equivalent of at least one full academic year's work at UAF, must be a substantial contribution to knowledge.

After submitting the thesis, the candidate must pass an oral examination supporting the thesis. The examining committee will consist of the student's advisory committee supplemented by additional examiners, including one from outside the candidate's college, school or division representing the Office of the Chancellor.

All work toward the fulfillment of a doctor's degree must be completed within ten years.

Thesis — At least two copies of the thesis (original and best reproduction, both on thesis paper) must be submitted to the Office of Graduate Studies to be bound and filed in the university library. For further information regarding thesis preparation and submission, see the *Manual of Information and Procedures for Graduate Studies*. All work done and all specimens collected in connection with the preparation of thesis are the property of the university and the agency financing the work. That material which is the property of the university can be released with the permission of the head of the department and the dean after it has been reproduced by the university.

Doctor of Medicine

For further information contact the WAMI Medical Education Program Office, University of Alaska-Fairbanks, Fairbanks, AK 99701, U.S.A.

Extended Registration for Graduate Students

A graduate student must be registered each semester in which he/she is actively working for a degree. A student whose only remaining requirement is the completion of the final examination(s), the removal of a deferred grade from an earlier enrollment, or the completion of the thesis, may extend registration by completing the extended registration procedure and paying the appropriate fee during the regular registration period at the beginning of the semester. Upon completion of extended registration, the student is considered enrolled for the current semester.

Graduation

Responsibility — The responsibility for meeting all requirements for graduation rests upon the student.

Application for Graduation — Degree candidates must formally apply for graduation. The application for graduation must be filed with the Office of Admissions and Records during the semester the student plans to graduate, and not later than the application filing dates which appear in the UAF academic calendar.

Applications for graduation filed after the deadline date will be processed for graduation the following semester.

Diplomas and Commencement — UAF issues diplomas to degree candidates three times each year: in September following the summer session, in December at the close of the fall semester, and in May at the end of the spring semester.

All students who complete degree requirements during the academic year are invited to participate in the annual commencement ceremony which follows the spring semester.

Graduation with Honors — Undergraduate students who obtain a grade point average of 3.5 will be graduated *cum laude*; 3.8, *magna cum laude*; and 4.0, *summa cum laude*, provided they meet the honors as well as the general residence requirements.

Undergraduate students who meet honors requirements as well as residence requirements will graduate with honors provided they have been in attendance at UAF for at least 24 credit hours for an Associate Degree or 48 credit hours for a Bachelor's Degree.

Deadlines for Graduate Students

(*See also* 1983-84 and 1984-85 Academic Calendars, pages 4 and 5.)

	Fall 1983	Spring 1984	Summer 1984	Fall 1984	Spring 1985
Advancement to Candidacy forms to Office of Graduate Studies	Sept. 8	Jan. 19	July 2*	Sept. 6	Jan. 17
Final draft of thesis due chairman of advisory committee	Nov. 16	Apr. 5	July 6	Nov. 14	Apr. 4
Graduation Application due Admissions and Records Office	Oct. 14	Feb. 15	July 16	Oct. 15	Feb. 15
Final exam form due to Director of Admissions and Records	Dec. 14	May 3	Aug. 3	Dec. 12	May 2
Thesis due to Office of Graduate Studies	Dec. 14	May 3	Aug. 3	Dec. 12	May 2

*For summer 1985 graduation.

Fees and Financial Aid

Tuition

Students enrolled in undergraduate credit courses will be charged $25 per credit for residents and $65 per credit for non-residents to a maximum of 12 undergraduate credits. Students enrolling in graduate credit will be charged $50 per credit for residents and $100 per credit for non-residents to a maximum of 9 graduate credits. Maximum charge for any combination of undergraduate and graduate credits will not exceed $450 for residents and $900 for non-residents.

In addition to credit charges, non-resident students will be charged a non-resident tuition.

Tuition schedule (per semester):

Total Credit Hours	*Resident Undergraduate*	*Non-resident Undergraduate*	*Resident Graduate*	*Non-resident Graduate*
12 or more	$300	$780	$450	$900
11	275	715	450	900
10	250	650	450	900
0-9	25/cr.	65/cr.	50/cr.	100/cr.

Fee Definitions

Admission Application Fee — Fee of $10.00 shall be paid at the time an application for admission is submitted.

Campus Activity Fee — Students carrying three or more credits on campus will be charged $3.00 per credit hour for each on campus credit to a maximum of $24.00. This fee is not refundable.

Recreation-Athletics Program— Those paying the fee are entitled to the use of the Patty Building recreational facilities, and are admitted to university-sponsored athletic events on campus. (Part-time students and dependents of full-time students may voluntarily purchase a Recreation-Athletics Activity Card, entitling them to these privileges, for $5.00 a semester.)

Associated Students Program— Those paying the fee are entitled to participation in all student-managed social, educational, and governmental activities, including receipt of student paper, movies, student flying program, KSUA (student-run radio station), scheduled social events, student elections, and administration of student government.

Credit-by-Examination Fee — A fee of $15.00 shall be charged for each credit by examination. For more than three credits, additional charge of $1.00 per credit hour shall be charged.

Graduate Extended Registration Fee — Graduate students extending registration from previous semester must pay the graduate extended registration fee of $50.00 (see page 28 for details).

Student Health Insurance Fee — All students registered for 12 or more credit hours or living in university housing must purchase student health insurance upon registration. Those students who can provide evidence that the student health insurance duplicates other health insurance to which they subscribe may apply to the Director of the Center for Health and Counseling for a waiver. This application must be processed within two weeks after the end of the registration period.

The amount of the insurance fee will be quoted at registration. The fee covers participation in a medical plan that covers accidents and sickness.

The Student Health Program is administered by the Health Center under the direction of the Dean of Students and the Director. Hospital and medical treatment for extensive illness and injuries are provided in Fairbanks, under limits of coverage set forth in the student health insurance plan. Each student will be supplied with a brochure outlining the insurance coverage.

A married student may secure additional insurance coverage for spouse and children if desired. Rates for such coverage will be quoted at registration time. This additional coverage is for the insurance plan only and does not include services at the Health Center.

In addition to the insurance plan, all students enrolled for 9 credits or more must pay a $20.00 health center fee. This fee covers normal health center charges during the semester, including physician, laboratory, and counseling services.

Housing Fees —

Room Deposit — When applying for housing, a $50.00 reservation damage deposit, must be returned to the Housing Office, with the completed application.

Room Rent — Room rent, along with all other fees, is due in full at the time of registration (see Payment of Fees).

Meal Ticket — When registering, each resident is required to buy a meal ticket for cafeteria meals. Meal tickets become effective at the evening meal of the first day of upper-class registration for each semester.

For more information see Housing, page 35.

Late Placement and Guidance Test Fee — A charge of $5.00 shall be made for a placement and guidance test taken at a time other than the schedule time.

Late Registration Fee — Students registering later than the day designated for that purpose shall pay a late registration fee of $5.00 for the first working day, plus $2.00 for each succeeding working day to a maximum of $25.00. This fee is refundable only in the event that all classes for which the student registered are cancelled.

Material Use Fees — A material use fee may be charged for certain courses which require the use of special materials, supplies or services.

Music Course Fees — All music fees shall be waived for students enrolled for seven or more credit hours and taking a major in music, as certified by the department head. Fees for class lessons (including Functional Piano) $25. Fees for private lessons: $75.00.

Parking Fee — A fee is charged for on-campus automobile parking.

Program Plan Fee — The Office of the Director of Admissions and Records will provide without charge one plan for a schedule of courses leading to a degree. A second program plan will be provided for a fee of $5.00.

Residency Information — Definition of Residency — University of Alaska.

Alaska residents, members of the military and their dependents, as well as students from Hawaii, the Yukon Territory, and the Northwest Territories are exempt from a nonresident tuition fee. For purpose of nonresident tuition a resident is any person who has been physically present in Alaska for one year (excepting only vacations or other absence for temporary purposes with *intent* to return) and who declares intention to remain in Alaska indefinitely. However, any person who, within one year, has declared himself/herself to be a resident of another state, voted in another state, or did any act inconsistent with Alaska residence shall be deemed a nonresident for purposes of nonresident tuition. An unemancipated person under the age of 18 who has a parent of guardian who qualifies as an Alaskan resident, as defined above, shall be deemed a resident, and otherwise such unemancipated persons under the age of 18 shall be deemed a nonresident ~~tuition~~ for tuition purposes.

This definition of Alaska residency status is solely for the purposes of tuition payment at the University of Alaska-Fairbanks. The requirements of the University may or may not be the same as requirements of other agencies of the State of Alaska.

Persons wishing to apply for resident status should complete an *Application for Residency Status* form and supply copies of documentary proof of residency in Alaska for the *12 months* immediately prior to registration.

Acceptable Examples of Proof of Residency:

* Photocopies of rent receipts, well distributed throughout the twelve month period.
* Copies of cancelled checks, written throughout the past year, which were written to Alaskan merchants in payment for living expenses, rent, utilities services, etc.
* Copy of fee statement from an out-of-state school showing the payment of non-resident tuition while in attendance at the institution during the immediate past year. (In conjunction with other proof of Alaska residency.)
* Copy of a statement from an employer, on company stationary, indicating employment in Alaska during the past year.
* Copy of military orders to Alaska, current military I.D., or military dependent I.D.
* Copy of high school transcript which shows attendance in Alaska for the past year.
* University of Alaska-Fairbanks transcript (already on file) which shows attendance for the immediate past school year.

Textbooks — Students can expect to pay up to $250 per semester depending on the discipline.

Payment of Fees

At the announced time of registration each student is expected to pay all charges due for the entire semester. This includes tuition and fees, room rent, meal tickets, student activity fees, health fee, and deposits. In addition, any charges unpaid at the end of previous semesters are due and payable prior to reenrollment at the university.

All fees are approved by the Board of Regents, University of Alaska. The university reserves the right to change or add to its fees at any time. Fee assessments are subject to audit and correction, and any such adjustments will be made within forty days following the close of late registration. Students will be notified by mail of any adjustments.

Students have the alternative of requesting a deferred payment plan. The Office of Financial Aid accepts such applications. Requests for the deferred payment plan should be made in writing prior to registration. Applications submitted on the date of enrollment will be processed on a time-available basis and students run the risk of delayed registration and resulting late fees as well as closed classes.

When fees are to be paid by other persons or agencies after the registration process is completed, students should coordinate the fee payment arrangements in advance with the financial aid office. Failure to do so may delay the registration process.

Provisions for the deferred payment plan are as follows:

1. Fifty percent of the *total* charges must be paid at registration time.
2. The balance is due in two equal monthly payments. These are due thirty days and sixty days following the date of registration as a announced by the Director of Admissions and Records.
3. A processing fee of $2.00 for the initial contract and $2.00 per payment is added to the amount of the contract.
4. Delinquent payments are subject to an additional $25.00 charge.

Financial Obligations

The University of Alaska-Fairbanks reserves the right to withhold transcripts, diplomas, or final grade reports from students who have not paid all financial obligations to the institution. If a student is delinquent in payment of any amount due the university, registration for succeeding semesters may be withheld.

Registration of any student may be cancelled at any time for failure to meet installment contract payments or financial obligations. The registration process is not completed until all fees and charges due the university have been paid.

Other Fees

Admission Application Fee	$ 10.00
*Campus Activity Fee	3cr./$9 - Max. $24
Credit-by-Examination Fee	15.00 exam
Graduate Extended Registration Fee	50.00
*Health Service Fee	20.00/semester
*Health Insurance, student (approximately)	50.00/semester
Housing Fees:	
Residence Hall, Double Room	315.00/semester
Residence Hall, Single Room	360.00/semester
Married Student Apartments	179-302.00/month
Meal Ticket (approximately)	750.00/semester
Late Placement and Guidance Test Fee	5.00
Late Registration Fee	5.00 - 25.00
Material Use Fee	Variable
Music Course Fee	25.00 - 75.00
Parking Fee	6.00/Annual
Program Plan Fee	5.00

*These fees are dependent upon the number of credit hours the student is enrolled in. See specific fee description for further information.

Refunds — General University Tuition and Fees

A student who is withdrawing from courses or canceling enrollment must complete an official withdrawal and turn it in at the Office of the Director of Admissions and Records. Refunds will be made according to the following schedule:

Full or partial refund of undergraduate and graduate credit hour fees, and nonresident tuition will be made under the following circumstances.

1. In the event that courses for which the student is registered are cancelled by UAF, the above charges will be refunded in full.
2. If the student formally withdraws from a course, refunds will be made according to the following schedule as determined by the date of the formal withdrawal action.
   (a) Full refund — withdrawal prior to first day of instruction for the semester.
   (b) 90 percent refund — withdrawal on or after the first day of instruction but prior to the eighth calendar day thereafter.
   (c) 50 percent refund — withdrawal on or after the eighth calendar day of the semester but prior to the fifteenth calendar day.
   (d) No refund — withdrawal on or after the fifteenth calendar day of the semester.

For the purposes of this paragraph, "first day of instruction for the semester" is as stated in the official university calendar and is not necessarily the first meeting date of any individual course. Weekends are included in counting days for the partial refund periods.

3. Claim for a refund must be made in writing to the business office at the time of withdrawal. The certified date of withdrawal, as indicated on the official withdrawal slip, will determine the student's eligibility for a refund. Applications for refund may be refused unless they are made during the semester or term in which they apply.
4. Students whose registration is cancelled as a result of disciplinary action forfeit all rights to a refund of any portion of their tuition and fees.
5. Vocational/technical course fees shall be subject to this refund schedule.
6. Health service, campus activity, laboratory, materials, and miscellaneous fees shall not be subject to refund.
7. In case the operations of UAF are adversely affected by war, riot, natural act, action of civil authority, strike, or other emergency or condition, the university reserves the right to take action to curtail part or all of its operations, including action to cancel classes and action to discontinue services. In any case in which a significant curtailment is judged proper by UAF, the university's liability shall be limited to (at most) a refund of tuition and fees paid.

Refunds — Housing

Specific procedures followed by UAF in refunding to students payments which they have made for board and room as follows: "Residents withdrawing from the university or who must vacate their rooms for reasons beyond their control will be charged 10 percent of the semester room payment for each week of occupancy. Board refunds are based upon the number of days remaining in the semester during which the meal ticket will not be used, less a five-day service charge. Housing deposits are refunded less any valid assessments by the Office of Student Affairs when a person terminates occupancy. Housing deposits will be carried over for students with housing contracts to subsequent academic years."

Financial Aid

The Office of Student Financial Aid exists to provide counseling and financial aid to students in need of assistance. All students are encouraged to seek general financial counseling and help in the personal management of money.

Eligibility for Aid

Most aid is based upon need as determined by a careful analysis of the applicant's budget and resources. UAF utilizes the College Scholarship Service needs analysis system and requires that the student complete a Financial Aid Form (FAF).

The financial need of a *dependent* student is calculated on the basis of the student's and the parents' resources.

The financial need of an *independent* student is calculated on the basis of the student's financial resources.

For the purposes of student financial aid, a student is considered to be *independent* from parents if (s)he meets all of the following criteria:

For the calendar year prior to the academic year for which (s)he is applying for aid, and for the year(s) for which (s)he is applying, a student cannot have or plan to have

1. been claimed by his/her parents as a dependent on their income tax return.
2. received financial support in excess of $750 annually from parents.
3. lived with his/her parents for any period exceeding six weeks.

Applicants are required to complete the following forms:

1. University of Alaska-Fairbanks financial aid application.
2. Financial Aid Form (FAF) - Completed FAF's should be submitted to the College Scholarship Service; Box 380, Berkeley, CA 95701. UAF CSS code number is 4866. NOTE: All undergraduate applicants are required to apply for a Pell Grant. This can be done by simply checking "yes" in the Pell Grant box of the FAF. The Pell Grant applicant will receive a Student Aid Report (SAR) four to six weeks after applying. The SAR (all 3 copies) should then be mailed to the Financial Aid Office.
3. Financial Aid Transcript forms — For transfer students only.

All three forms can be obtained by contacting the Financial Aid Office. Financial Aid Forms (FAF) should also be available at high schools.

To receive financial aid, students must be making satisfactory progress toward their educational objective. The Financial Aid Office defines satisfactory progress as follows:

1. Full-time undergraduate students must complete at least 12 UAF credits with a 2.0 grade point average each semester and with a cumulative g.p.a. or 2.0 or above.
2. Full-time graduate students must complete at least 9 UAF credits with a 3.0 grade point average each semester and with a cumulative g.p.a. of 3.0 or above.
3. Part-time students must complete all courses they have registered for with at least a 2.0 grade point average for undergraduate students and at least a 3.0 grade point average for graduate students.

If a student fails to satisfactorily complete a semester, he/she is not eligible to receive financial assistance from the university until he/she satisfactorily completes one semester as at least a half-time student.

Financial Aid Deadlines

Financial Aid application forms will be available in March.

All applications which are complete by June 1 will receive first consideration. Applications which become complete after June 1 will be processed as long as funds are available.

*An application is complete when the Financial Aid Office has received all of the following forms:

1. UAF financial aid application.
2. Financial Aid Form (FAF).
3. Financial Aid Transcripts (for transfer students only).
4. Notification of applicants' acceptance by the Admissions Office (for new students only).
5. Basic Grant Student Aid Report (SAR) all three copies. (For undergraduate students only.)

Financial Aid Definitions

Full-time student — Undergraduate student enrolled for a minimum of 12 UAF credits or a graduate student enrolled for a minimum of 9 UAF credits during a semester.

Graduate student — Person who has received a bachelor's degree and is pursuing an advanced (Master's or Doctorate) degree.

Half-time student — Undergraduate student enrolled for at least 6 UAF credits but less than 12 UAF credits or a graduate student enrolled for at least 5 UAF credits but less than 9 UAF credits during a semester.

Parents — For financial aid purposes, "parents" is usually defined to be the student's mother and/or father, or adoptive parents, or legal guardian. Refer to current Financial Aid application forms for further information.

Post-baccalaureate student — Person who has received a bachelor's degree and is pursuing an associate or bachelor's degree in another field of study.

Undergraduate student — Person who has not yet received a bachelor's degree and is pursuing an associate or bachelor's degree.

Without Class Standing (WCS) — Students admitted WCS are not eligible for financial aid.

Who May Apply for Financial Aid?

Any UAF student who anticipates being short of financial resources to meet his/her college expenses should apply. The student must plan to enroll on at least a half-time basis (depending upon the type of aid being applied for) during the 1983-84 academic year, in a program leading toward a degree or certificate. To receive financial aid, a student must be accepted for admission in good academic standing or currently enrolled in good academic standing and making satisfactory progress toward their degree objective. By UAF academic policy, "to be in good standing, undergraduate students must maintain both a cumulative and a semester grade point average of 2.0 (C) or better and graduate students a 3.0 (B) or better." Students meeting SATISFACTORY PROGRESS standards are expected to reach their degree objective within specific time/credit limits. Associate degree students should earn their degree by the time they have earned 65 semester credits; Bachelors Degree students should earn their degree by the time they have earned 130 semester credits; Master's Degree students should earn their degree by the time they have earned 30-36 semester credings depending upon their

degree requirements; and Ph.D. candidates must earn their degree within a time frame determined by the student's committee and college.

Federal Financial Aid programs (Pell Grant, GSL/FISL) also require that the student be a U.S. citizen, national or permanent resident; a citizen of the Northern Mariana Islands, a permanent resident of the Trust Territory of the Pacific Islands; or in the U.S. for other than temporary purposes and intends to become a permanent resident. The student must not owe a repayment on a Pell Grant or SEIG and must not be in default on GSL/FISL received for attendance at this institution.

Only coursework undertaken in attendance at UAF may count toward financial aid requirements. Community College, Video, Correspondence and/or other college level work not offered by UAF may not be used to fulfill the full or part-time UAF Financial Aid requirements.

What Kinds of Financial Aid Are Available?

There are basically TWO TYPES of financial aid offered by the Financial Aid Office.

1. GRANTS AND SCHOLARSHIPS
   Grants and scholarships need not be repaid. Scholarship awards are based upon academic achievement as well as financial need and are available only to undergraduate students who have not yet earned a Bachelor's Degree.
2. LOANS
   Educational loan programs (Federal & State) allow students to borrow money to finance their education. All loans must be repaid at a later date. Loan interest rates range from 4% to 9%. Both graduate and undergraduate students may apply for educational loans.

Grants and Scholarships

Pell Grants may range from $213 to $1800 per academic year and are based upon the applicant's educational costs and family's financial situation. All undergraduate students who have not yet earned a Bachelor's degree are required to apply for a Pell Grant. Students apply for the Pell Grant by completing the "Application for Federal Student Aid" for the 1983-84 school year. Students should not file for the Pell Grant until their own or their parents' 1982 federal income taxes have been filed with the Internal Revenue Service. Applicants who use estimated 1982 income information to apply for the Pell Grant must submit a copy of their own or their parents' signed IRS 1040(A) to the Financial Aid Office, or must request the IRS to send a certified copy of the 1982 tax form to the Financial Aid Office. Note: All applicants for the Pell Grant are advised to keep a copy of their signed 1982 income tax form should their Pell Grant application be selected for validation.

Approximately 6-8 weeks after the student has submitted an application for the Pell Grant, the federal processor will mail the applicant a Student Aid Report (SAR). Eligible applicants must submit all three copies of the SAR to the Financial Aid Office before an award notification can be made or funds released to the student. Students not eligible for the Pell Grant should send one copy of the SAR to the Financial Aid Office as they may be eligible for other aid.

A student is eligible to receive a Pell Grant for the period of time required to complete the first undergraduate baccalaureate course of study being pursued by that student. Students must be enrolled on at least a half-time basis in order to receive a Pell Grant.

University Scholarships are based primarily on financial need, but academic competence is also considered. Applicants must be a 1983 Alaska High School graduate or must have completed at least two semesters as a full-time student in good standing at UAF. Applicants must enroll as a full-time student in order to receive a University scholarship or grant. UAF scholarship awards range from $200 to $1000 per academic year and are available only to students pursuing their first Bachelors Degree.

University Endowments The University of Alaska Foundation Office administers a number of scholarships in various fields of study at various times of the academic year. These scholarships usually require a separate application form which is available at either the UAF Financial Aid Office or the University of Alaska Foundation Office.

Fee/Tuition Waivers and **Talent Grants** are available in limited numbers to first time freshmen and new transfer undergraduate students with demonstrated abilities in numerous fields of study. Application should be made as early as possible to the Head of the Department in which the applicant wishes to study and to the Office of Admissions Counseling.

Bureau of Indian Affairs Grants-in-Aid are available to undergraduate Native American students with financial need. Information and application forms may be obtained from the student's local BIA area office.

Alaska State Educational Incentive Grant program provides grants to students enrolled in good standing in an undergraduate degree program. Grant awards range between $100 and $1500 per year and are dependent upon financial need. To be eligible, the applicant must have been an Alaska resident for at least two years immediately prior to applying. The applicant must also complete a Financial Aid Form (FAF) and request that results be sent to the Alaska Commission on Postsecondary Education (Code no. 0276). The SEIG form may be obtained from Alaska High Schools and Alaska postsecondary schools.

Loans

The Guaranteed/Federally Insured Student Loan Program enables a student to borrow directly from a bank, credit union, savings and loan association, or other participating lender who is willing to make the educational loan. The loan is guaranteed by a State or private nonprofit agency, or insured by the Federal Government. Students who are enrolled or have been accepted for enrollment at least half-time are eligible to apply. The maximum a dependent undergraduate may borrow is $2500 per year up to a maximum of $12,500; an independent undergraduate student may borrow up to $3000 per year up to $15,000 total. A graduate or professional student may borrow up to $5000 per year, up to a total of $25,000 for graduate or professional study, including loans made at the undergraduate level. Interest rates are approximately 9% and an origination fee may be charged. The Federal Government pays the interest on the loan as long as the student remains enrolled as at least a half-time student.

The loan must be repaid. Payments normally begin between 6 and 12 months after graduation or termination of at least half-time enrollment and the borrower may be allowed to take up to 10 years to repay the loan. The amount of the payments depends upon the size of the debt and ability to pay; but in most cases at least $360 a year is required unless circumstances as agreed upon by the lending institution warrant a lesser amount.

Repayment may be deferred for up to 3 years for service in the Armed Forces, Peace Corps or full-time volunteer programs conducted by ACTION (which includes VISTA, University Year for ACTION, ACTION Cooperative Volunteer Programs, Volunteers of Justice, and Program for Local Service). In addition,

deferment is available during full-time study at an eligible institution, or for study under a graduate fellowship program. A single deferment for a period of not more than one year is also provided for students who are unable to find full-time employment.

Information and application forms are available from the loan officer at your hometown bank. All applicants for Guaranteed/Federally Insured Student Loans must complete the University of Alaska Financial Aid Application and must be admitted to UAF in good academic-standing to a degree, or certificate program or currently enrolled in good academic standing in a degree or certificate program.

A **Parent Loan** program was established by Congress in October 1980, to provide up to $3000 annually and $15,000 cumulatively. The total amount borrowed by student and parent cannot exceed the total cost of education. The interest rate is 9%; repayment must begin within 60 days. Contact your local lending institution for more information.

Alaska Student Loans are restricted to applicants who have been Alaska residents for at least 2 years immediately prior to applying. Undergraduates may borrow up to $6000 per year and graduates up to $7000. Application is made directly to Juneau and no FAF is required. Write the Division of Student Financial Aid; Alaska Postsecondary Commission; Pouch F; Juneau, AK 99811, for further information and for application forms. Application forms are also available at Alaska high schools and Alaska postsecondary schools.

Students wishing to obtain information about their Alaska Student Loan application must contact the Alaska Student Loan office in Juneau rather than the school's Financial Aid Office.

University Loans are short-term loans for enrolled students and are made to cover unanticipated/emergency education-related expenses. Students who have completed at least one semester as a full-time student in good standing at the UA, Fairbanks, may apply for a maximum of $500 per academic year. Interest rate is 4% per annum. Loans must be repaid by December 1, 1983 for students who terminate studies at the UA at the end of the Fall 1983 semester; by April 15, 1984 for students leaving at the end of the Spring 1984 semester; or by July 15, 1984 for students who will be returning to the UA for the Fall 1984 semester.

Applicants must be in good academic standing and must have no outstanding debt with UAF. A co-signer is required and students are required to verify their need for the loan. Applications will be accepted from the first day following late registration until 30 days before the end of each semester.

Emergency Loans are available to regularly enrolled full-time students whose financial need is modest and temporary. Students may borrow up to $100 maximum to be repaid within 30 days. A $2 service charge is assessed for each loan.

Applicants must be in good academic standing and must have no outstanding debt with UAF. Applications will be accepted from the first day following late registration until 30 days before the end of each semester.

Independent or Dependent?

The financial need of a *dependent* student is calculated on the basis of the student's and the parent's resources.

The financial need of an *independent* student is calculated on the basis of the student's (and spouse's) financial resources. Marriage or age does not automatically establish independence.

Students answering "yes" to any of the six questions below are *dependent*. Students who can answer "no" to ALL of the questions are *independent* for financial aid purposes.

1. Did or will you live in your parents' home for more than 6 weeks in 1982? 1983?
2. Did or will you receive $750 or more in financial assistance from your parents during 1982? 1983?
3. Did or will your parents claim you as a Federal income tax exemption in 1982? 1983?

DEADLINES

All applications that are complete by *June 1, 1983* will receive first consideration for funding for the 1983-84 academic year.

In order to meet the *JUNE 1* priority deadline, students should obtain and complete THE APPLICATION FOR FEDERAL FINANCIAL AID by APRIL 1.

All applications which become complete after June 1, 1983 will be processed as long as funds are available.

For further information and forms contact:

FINANCIAL AID OFFICE
UNIVERSITY OF ALASKA-FAIRBANKS
5TH FLOOR, GRUENING BUILDING
FAIRBANKS, ALASKA 99701

or

UNIVERSITY OF ALASKA FOUNDATION
113 BUNNELL BUILDING
UNIVERSITY OF ALASKA
FAIRBANKS, ALASKA 99701
(907) 474-7687

Also, contact the chairman of the department of your intended major.

Housing Information

In General

All freshmen students under 21 years of age are required to live in a university residence hall during their first year on campus unless: (a) they live at home, or (b) they have special permission from the Dean of Students.

Each residence hall is staffed with a resident advisor and several student advisors. The resident advisor is responsible for the administration, programming and counseling within the hall. The student advisors are full-time students who work with the resident advisor in planning and administering a program of social, recreational and governmental activities.

Rooms

Student rooms are equipped with a bed, desk, chair, mirror and bureau for each resident. The university does not provide bedding (sheets, pillows, blankets), towels or face cloths. Each hall has a recreation-lounge, laundry and storage facility area. Regular custodial service is provided in common areas such as corridors, lounges and bathrooms. Skarland Hall is equipped to house handicapped students.

Room Assignment

Hall reservations are made on a first-come, first-served basis provided application and deposit requirements have been completed. Graduate students and upper-class students are given preference over new students in single room assignment. Specific room assignments will be given to the student upon his/her arrival in the residence hall.

UAF reserves the right to reassign individuals to different rooms, halls or apartments at any time in the event such reassignments are determined to be necessary.

Residence hall students are permitted to remain on campus during the Thanksgiving, Christmas and spring vacation periods at no additional cost.

Restrictions

Guns, ammunition and flammable or volatile materials are not permitted in residence hall rooms. Students bringing these items to campus will be required to keep them in a supervised storage room. THERE IS ABSOLUTELY NO EXCEPTION TO THIS POLICY. Animals are not permitted in campus student housing. Toll telephone calls may not be made from residence hall floor phones, nor should incoming toll calls be accepted. Pay telephones are available.

Automobiles

Only a limited number of electric outlets for automobiles are available. All motor vehicles garaged, stored or used on campus must be registered with and bear a University of Alaska-Fairbanks decal.

Residence Halls

The Housing Office is located in the lobby of Bartlett Hall. During the academic year, the office is open from 8 a.m. to 5 p.m. During registration, the office is open extended hours. The residence halls are listed below. Building completion dates are in parenthesis after the hall name.

ANDREW NERLAND HALL (1953) houses 94 students (24 years old and older) in double and single rooms on four floors. Nerland Hall is named for a pioneer Fairbanks merchant, long-time member of the Board of Regents, and president of the Board from 1935 until his death in 1956.

JOHN E. McINTOSH HALL (1956) houses 93 male students in double and single rooms on four floors. McIntosh Hall is named for a former president of the Board of Regents.

WICKERSHAM HALL (1957) houses 96 female students in single rooms and suites which consist of two sleeping rooms, a study and a bathroom. This three-story hall is named for Judge and Mrs. James Wickersham. Judge Wickersham introduced into Congress the bill that created the University of Alaska, and Mrs. Wickersham served on the Board of Regents.

MORTON STEVENS HALL (1958) houses 62 men and 31 women (19 and over) in double and single rooms on four floors. The hall is named for Morton Stevens who was president of the Board of Regents from 1921 to 1932.

AUSTIN E. LATHROP HALL (1962) houses 106 men in double rooms on the first four floors and 32 women in double and single rooms on the fifth floor. Lathrop Hall is named for a Fairbanks businessman who served as a member and later as vice president of the Board of Regents from 1932 until his death in 1950.

IVAR SKARLAND HALL (1964) houses 138 male and female students in double and single rooms on three floors. This hall is equipped to house handicapped students. Skarland Hall was named for a long-time professor of anthropology at the university.

TERRIS MOORE HALL (1966) houses 136 female and 182 male students in double and single rooms on eight floors. Moore Hall is named for the second president of UAF.

E. L. BARTLETT HALL (1969) houses 322 male and female students in double and single rooms on eight floors. Bartlett Hall is named for E. L. "Bob" Bartlett who served 24 continuous years as one of Alaska's U.S. Senators.

Graduate Student Housing

The Housing Office provides a residence restricted to graduate students and students more than 25 years of age in Nerland Hall. Unless otherwise requested, and as space allows, graduate and other mature, single students will be assigned to this hall.

Residence Hall Application Procedures

Applications for student residence hall housing will be mailed to all students with notification of acceptance from the Office of the Director of Admissions and Records. Student rooms

cannot be reserved until the student is accepted by the university. Continuing students may receive rooms during the spring semester for the following fall semester if they have not been disqualified from the UAF for disciplinary or scholastic reasons. In order to secure residence hall housing after acceptance, the student should complete the housing-board contract and mail it immediately to the Housing Office, UAF, Fairbanks, Alaska 99701 with a $50.00 reservation and damage deposit. Confirmation for residence hall housing is assured when the student receives written notification from the Housing Office. Specific room assignments will be made after August 15 for the fall semester. Spring semester assignments are made as space becomes available. The contract for single student housing in residence halls is for board and room.

Residence Hall Fees

Room Rent — Along with all other fees, room rent is due in full at the time of registration. Room charges are currently: $280.00, double room; $315.00, single room; and $360.00, double room occupied as a single. Room fees quoted are per semester and are subject to change. Room rental permits the use of all lounge, recreation, storage and laundry areas, and local telephone privileges.

Room Deposit — The completed application for housing, with a $50.00 reservation damage deposit, must be returned to the Housing Office, University of Alaska-Fairbanks, Fairbanks, Alaska 99701. If you decide not to attend the University of Alaska, and a written statement is received by the Housing Office, the deposit will be refunded.

Refund of Room Deposit — If all provisions of the contract have been complied with and no charges for damages have been assessed, the $50.00 deposit will be refunded at the end of the school year. If moving off campus after fall semester, notice of intent to vacate must be given to the Housing Office on or before December 15 in order to be eligible for a full refund.

The deposit may be used to pay outstanding hall dues and/or charges for repair or replacement of furniture or fixtures for which the student is responsible. Charges for loss or damage of equipment or for defacement of any area in community use, such as lounges, recreation rooms, corridors, or bathrooms, may be assessed equally against the residents of the area and deducted from the amount on deposit. In addition, the deposit may be used to pay other outstanding university bills or charges. Any balance remaining in the deposit after all charges have been paid will be refunded after the close of the contract period. If the resident elects to reapply for room in the residence hall for the following year, the deposit will not be refunded, but will be transferred to the renewal application.

Contracts — Room and board contracts are for one semester. An application for housing becomes a binding contract at the beginning of the fall semester. Contracts for fall semester are automatically renewed for spring semester on December 15 unless the Housing Office receives a notice of intent to vacate.

Contracts are voided only if the student doesn't attend UAF full time, cancels his/her contract prior to occupancy, or is released from the contract because of marriage, health reasons or other emergencies deemed appropriate by the Dean of Students.

Meal Ticket

During registration each resident student is required to purchase a meal ticket for dining hall meals in the University Commons. Full payment for a semester meal ticket is required at that time. There are 19 scheduled meals per week (breakfast, lunch and dinner are served Monday through Friday and brunch and dinner are served Saturday and Sunday). Students may choose to purchase a full board plan or a two-meals-per-day board plan.

Meal tickets are effective from the evening of the first day of upper-class registration through the last day of final exams. Limited food service is available on a cash basis during vacation periods, except on official university holidays.

Family Housing

Family housing is provided in several areas. All units are furnished except for personal items such as dishes, utensils and bedding. Laundry facilities are provided but not always on an individual basis for each unit. Storage facilities are extremely limited, and students are not encouraged to bring their own furniture. Parking areas are provided for each housing complex. Pets are not allowed.

The on-campus units with their completion dates in parentheses after their names are listed below.

MODULAR UNITS (1970) contain 31 efficiency units for married students without children.

HARDWOOD HALL (1964) houses 36 married student couples without children in one-bedroom and efficiency units. Harwood Hall is named for Boyd Harwood, a former member of the Board of Regents.

STUART HALL (1956) contains 12 units for married students. Stuart Hall is named for Walter T. Stuart who was a member of the Board of Regents.

WALSH HALL (1958) houses 12 married student couples without children in one-bedroom units. Walsh Hall is named for the late Michael Walsh, of Nome, who was a member of the Board of Regents.

NEW MARRIED STUDENT HOUSING (1972) contains 72 units consisting of: 16 one-bedroom; 48 two-bedroom; and eight three-bedroom units. Children are allowed and units are assigned according to family size.

The off-campus housing available is listed below.

YAK ESTATES (1971) townhouse apartment complex located four miles from campus on Chena Ridge. There are 48 two-bedroom and 48 three-bedroom units. Children are permitted.

Applications and Eligibility for Student Family Housing

Applications for student family housing are mailed upon request by the Housing Office. Assignments are not made for student family apartments unless the head of the household will be enrolled as a full-time student. Families may not change the head of household designation. A reservation deposit of $25.00 is due with the completed application. An additional $50.00 damage deposit is required upon assignment to the apartment.

Space is always at a high demand in student family housing, and the units are therefore assigned on a first-request, first-served basis.

For more information about housing write: Housing Office, Bartlett Hall, University of Alaska-Fairbanks, Fairbanks, Alaska 99701.


ASUA and Flippers Family Restaurant presents
Chinese Magic Circus
March 19
Shows: 3pm & 7pm
UAF Concert Hall
Advance Tickets
ASUA & Children $3.00
General $4.00
At the Door
ASUA & Children $3.50
General $4.50
Tickets Available at Flippers Wood Center & Fairbanks Visitor Convention Bureau
ASUA tickets are available only at Wood Center.
Associated Students of Tourism welcomes
Gary Danielson
Alaska Airlines
speaking
Thurs, Mar 17
1 pm
in the
Pub Videoroom
The University of Alaska
Department of Music
presents
JAMES JOHNSON
PIANIST
in a Faculty Recital
March 20 at 4pm
~ PROGRAM ~
Six Mazurkas
Suite op 13
Intermezzo op 118 no 2
PUB
Monday March 14 ~ 8pm
Tuesday March 15 ~ 8pm
Company
Vocal Trio
Wednesday March 16 ~ 8pm
COMMUTER
Thursday March 17 ~ 7:30pm
St. Patricks Day
FAIRBANKS RED HACKLE PIPE BAND
Friday & Saturday March 18 & 19
ROCK OUT with Anchorage
BAZAAR
10th Annual Festival of Native Arts
March 14-18
7pm in the
Great Hall
~ Monday ~
Introduction Variety
~ Tuesday ~
YUPIK
~ Wednesday ~
Athabascan
~ Thursday ~
INUPIAQ
~ Friday ~
Southeast/Athabascan
Admission Free!

Student Affairs

General Responsibilities

The university provides services to assist students in making their educational careers more profitable and meaningful. Mindful of its obligation to assist the total development of the student, the University of Alaska-Fairbanks continues to encourage individualization in the educational process.

Student services include: (a) orientation activities to assist new students in adjusting to the privileges and responsibilities of membership in the university community; (b) academic counseling and vocational testing; (c) counseling with students relative to their personal problems; (d) financial assistance by means of scholarships, loans, and part-time jobs; (e) support of student organizations, activities, and interest groups; (f) special services, advising, and tutorial assistance programs for students in need of these services; and (g) a full service health center available for medical and health education services.

Orientation to Higher Education

Orientation materials and sessions are designed to assist each student in adjusting to higher education, and provide essential information. They are generally scheduled just prior to registration and may extend well into an academic term.

Student Behavioral Standards

Education at the university is conceived as training for citizenship as well as for personal self-improvement and development.

Generally, UAF regulations are designed to help each student work efficiently in courses. They are not designed to ignore individuality, but rather to encourage the exercise of self-discipline, which is imposed by a sense of social responsibility. These regulations, in most instances, have been developed jointly by staff and students. The university prescribes to principles of due process and fair hearings as specified in the *Joint Statement on Rights and Freedoms of Students*. Students are encouraged to familiarize themselves with this document which can be found in the Dean of Student's office.

Most students find it relatively easy to adjust to the privileges and responsibilities of university citizenship. For those who find this process more difficult, the university attempts to provide such counsel as the student needs to gain insight and confidence in adjusting to his new environment. In some cases, when a student is unable or unwilling to assume his social responsibilities as a citizen in the university community, the institution may terminate his enrollment, or take whatever action deemed necessary and appropriate.

A student may be dismissed for cause by the president of the university after appropriate review.

Alumni Services

The statewide Office of Alumni Services is located in the Bunnell Building on the Fairbanks campus. All graduates of the University of Alaska and all former students who have taken courses for credit at any of the university's locations, and whose classes have graduated, are eligible to belong to the University of Alaska Alumni Association. There are no dues, but members are asked to contribute to the Alumni Fund each year.

Athletics and Recreation

Students may participate in supervised programs of intramural sports and intercollegiate athletics, or in unsupervised, open recreational and fitness activities in the Patty Building and adjacent facilities. The Patty Building has multipurpose areas which allow participation (but not always at the same time) in badminton, basketball, calisthenics, dance, gymnastics, handball, jogging, judo, karate, paddleball, and gym weight training. The air-supported structure called the Beluga (white whale) allows for tennis (four courts) in the summer. The new Patty Ice Arena provides year-round ice skating and hockey activities.

University trails are available for cross-country running and skiing, including a lighted ski trail. A ski hill with rope tow is used for winter downhill skiing.

In the intramural sports program, men and women students (and faculty, too) from the different living groups participate in more than twenty different team and individual competitions each year.

UAF sponsors intercollegiate athletic teams (the "Nanooks") at the NCAA Division II level in men's and women's basketball, men's and women's cross-country running and skiing, men's ice hockey, women's volleyball, and co-ed rifle. Students may try out for these teams by contacting the appropriate coach.

Career Planning and Placement

Career Planning and Placement offers the student and alumni a variety of services. Ideally upon entry to the university each student should continue to develop life style and career goals. In cooperation with faculty and advisors, the staff in Career Planning and Placement works with any interested student to insure a well-planned academic program, developed so as to maximize successful attainment of the student's life and career goals. The Career Planning and Placement staff offers counseling assistance, provides a variety of career information, and assists the student in finding summer jobs, and in some cases academic internships, which help toward employment after graduation.

Students are encouraged to make use of the various job hunting aids available at the center. These include placement files, tips on writing a resume, help in preparing for interviews, and information on current job openings. Each year many employers visit the campus to recruit students and alumni. The Career Planning and Placement office coordinates this activity. Many employers place job openings with Career Planning and Placement and an attempt is made to match the needs of the employer with those of the students and alumni making use of the center.

Center for Health and Counseling

Once health was viewed as merely the absence of physical illness and it was seen as the responsibility of health professionals. Now health is viewed as a positive growing condition of the total person and people take more responsibility for their own health.

Preventive, educational, diagnostic, and remedial medical and psychological services are offered by the center staff, i.e. —

Medical Services — Outpatient service is provided by full-time registered nurse practitioners and a physician. The primary care benefits that you receive by paying the health fee include all routine office care or outpatient services including family planning, routine physical examinations, and immunizations.

Diagnostic services including laboratory procedures are available at the health center. The health fee does not cover the "Pap" test or some other routine examinations or the cost of medications, but these are available on a fee-for-service basis. X-ray services are not available on campus, but are available at any of the medical care facilities in Fairbanks.

Personal Counseling — Counseling is a process that allows individuals to explore their own personal feelings, doubts, and problems without being judged, evaluated, or pressured. The counseling staff believes in the idea that one does not need to be sick in order to get better. Counseling occurs with individuals, with couples, with families, or within small groups of concerned students. These counseling interactions are kept confidential.

Special Groups — The center periodically offers special groups for students with similar needs, such as: a group to develop study skills, a group to reduce anxiety, a group for overweight people, an assertiveness group, a pre-marriage workshop. Students are encouraged to suggest areas of concern where special groups may be helpful.

Cocurricular Activities

In coordination with the Associated Students of the University of Alaska (A.S.U.A.), the student self-governing body, the Office of Student Affairs promotes and provides staff guidance for the development of a wide range of cocurricular activities. A.S.U.A. specifically sponsors the newspaper *Sun Star*, KSUA radio station, and numerous recreational, social, educational, and service activities. Additionally, many groups representing recreational, religious, departmental, social, and special interests are available for student involvement.

The university recognizes the importance of a proper balance between curricular and cocurricular activities.

Handicapped Students

Coordinator of Services for Handicapped Students

The University of Alaska-Fairbanks seeks to assist and encourage all students to participate in program offerings, activities and services. Numerous modifications have been made to the campus environment in order to accommodate the special needs of the handicapped student.

The Coordinator of Services for Handicapped Students has been appointed to assist you with orientation and coordination of services and to act as a liaison with faculty, staff and external agencies. He is located in the Dean of Students Office, 5th Floor Gruening Building, Room 514B.

Section 504 Coordinator

Section 504 of the Rehabilitation Act of 1973 mandates equal opportunity for qualified handicapped persons in education programs and activities of all recipients of federal financial assistance. The law prohibits discrimination on the basis of handicap.

The campus Section 504 Coordinator is located in Room 112 Bunnell Building. All concerns and/or allegations that relate to Section 504 are to be directed to the Section 504 Coordinator.

Rural Student Services

In response to the needs of students from rural areas of Alaska and students whose cultural background is different from that of the majority of the campus student body UAF has developed a program called Rural Student Services. The primary concern of this program is helping the student make the transition from a small-school and rural environment to the complexities of university life. The program offers services to students from all cultural backgrounds. The program is especially responsive to the needs of the Alaska Native student.

Rural Student Services staff offers a place for the student to seek counseling, information, tutoring, and help on many aspects of university life. The program offers help and advice to the student during registration. Entering freshmen may choose to use RSS staff members for academic advisement until a time when they have found an academic area of special interest to them. A lounge is open for students and faculty in which they may relax and visit.

Recruitment activities in rural Alaska, as well as special strategies developed in conjunction with rural schools to better prepare students for college will be an emphasis of Rural Student Services.

William Ransom Wood Center

The *William Ransom Wood Center* is UAF's answer to cabin fever. The bold, massive architecture complements modern Alaska and, at the same time, recalls her frontier ruggedness.

Facilities and services of Wood Center are designed to meet the varied out-of-class needs of the campus community — whether recreational, cultural, leisure, personal, or facilitative. Food service, meeting rooms, and lounge and exhibit areas, in addition to providing their specific functions, also lend themselves to additional special programming.

Service-oriented functions of Wood Center include campus information, facility scheduling, lost and found, sundry sales, and campus switchboard. Showers, laundry facilities, and rental lockers are available for use by university students and faculty. Darkrooms, a reloading room, and a general-purpose workroom provide students with areas for developing specific skills. The games area is equipped with foosball, pocket and carom billiards, snooker, bumper pool, table tennis, and bowling lanes. The area is regularly used for tournaments, classes, and open play. The Pub, which serves beer, wine and non-alcoholic beverages, is also located in Wood Center. The Pub provides a wide variety of entertainment for the university community.

A.S.U.A., the *Sun-Star*, and Wood Center administrative offices, located on the mall level, make up the hub of student activities on campus.

The Women's Center

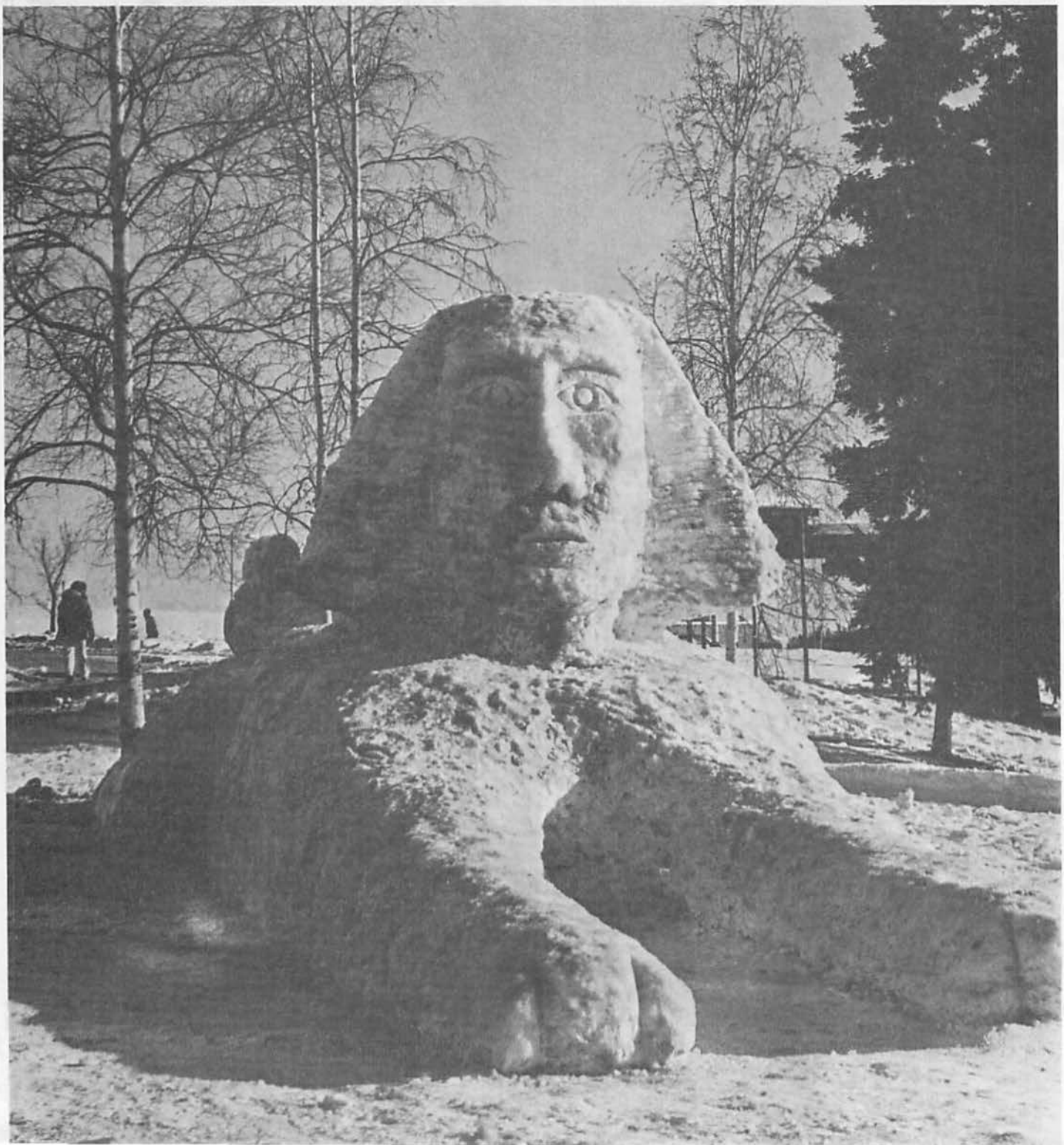
The Women's Center, located adjacent to the Student Health and Counseling Center, serves as a gathering place for groups

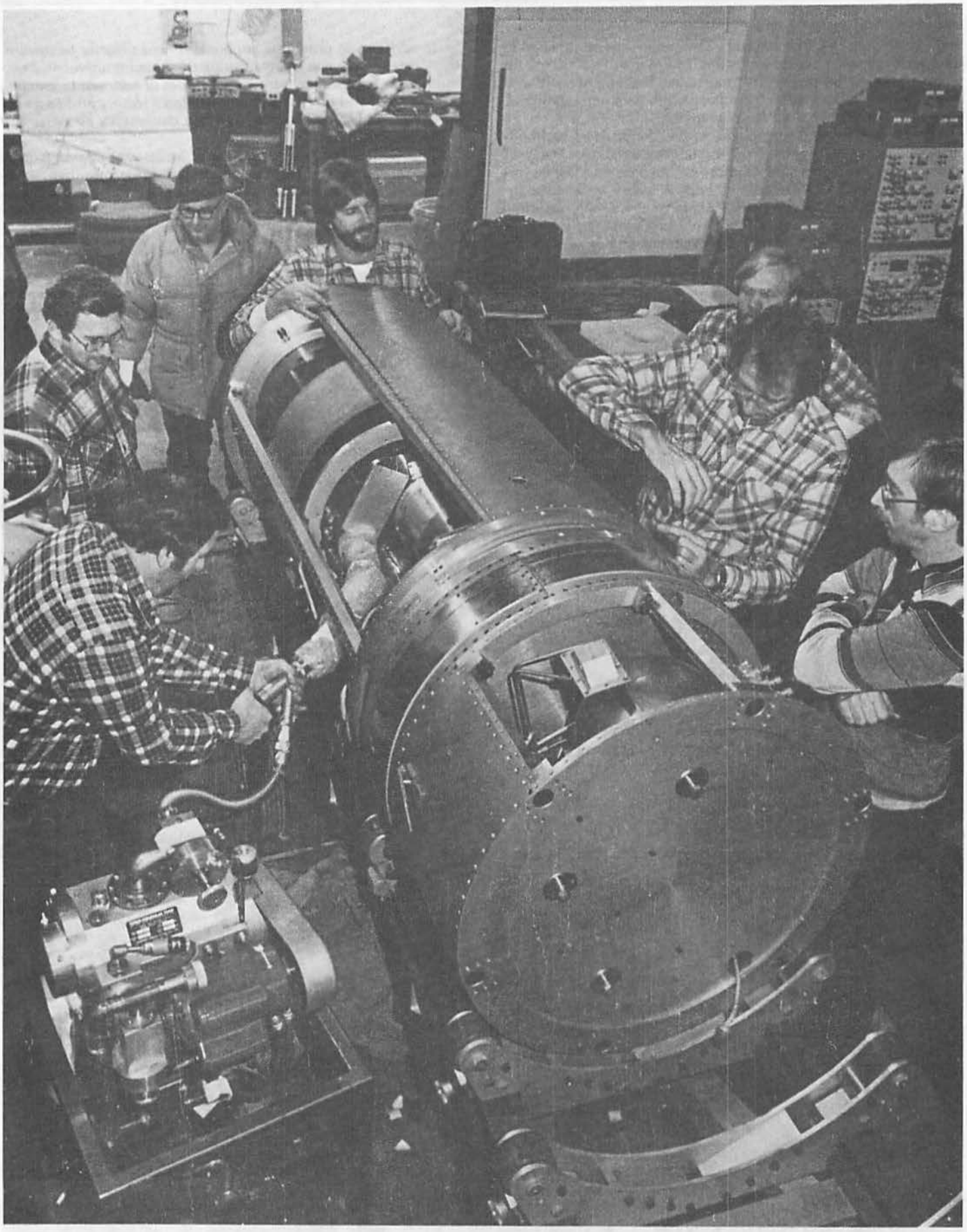
and a resting place for individuals. The center was established as a response to needs expressed by the UAF Women's Network for a department of the University to serve as a focal point for identifying and addressing issues of educational, economic, political, social and emotional concern to women.

Although the primary emphasis of the Center is on responding to the needs and priorities of women students, resources and activities are also provided to address concerns specific to women faculty, staff and family members. A variety of forums, including workshops, seminars, speakers, publications, informal group interactions, counseling and entertainment are utilized to stimulate personal growth and development and to explore the changing roles of men and women.

In addition to providing support services directly to women, the Center serves as a catalyst within the broader university community for exploring controversial issues of concern to women, encouraging an understanding of women's history and as an information and referral center for other community agencies and organizations.

The Center is open daily as well as several evenings each week. Students are encouraged to drop in for information, assistance or respite. A monthly newsletter details the various activities and events sponsored by the Women's Center as well as activities of other groups that are of special interest to women.





Research

The research programs of the University of Alaska-Fairbanks take advantage of the university's unique location in the subarctic of interior Alaska, with easy accessibility to the oceans from the Pacific to the Arctic, accessibility to glaciers and permafrost areas, and a location near the auroral zone, the region in which maximum effects are seen from the bombardment of the earth by charged particles from the sun.

In addition to some research carried out in its academic departments, the university has a number of research institutes and centers that focus upon problems of the Arctic and subarctic concerning the environment of the Earth, renewable and nonrenewable resources, energy sources, and the peoples of the North.

Agricultural Experiment Station — The research of the Agricultural Experiment Station in Alaska is directed toward increasing the production of food and wood products, and wisely using the state's lands for agriculture, forestry and recreation. Specifically, the objectives are: (1) to increase the efficiency of production systems for food and wood products, including energy conservation and the development of new lands: (2) to improve processing, transportation and marketing of food and wood products in Alaska for markets in Alaska and for export: (3) to improve resource inventories and develop land-use planning for agriculture and forestry that will enhance environmental quality and (4) to develop resource management for improving the quality of life, including revegetation procedures, landscaping and home gardening, and outdoor recreation. Work toward these objectives is carried out in cooperation with the U.S. Department of Agriculture.

Research centers of the Agricultural Experiment Station (AES) are located on the UAF campus, at Palmer in the Matanuska Valley, and near Homer on the Kenai Peninsula. A plant-materials center, established cooperatively by AES and the state's Department of Natural Resources, is located near Palmer. An agronomy research project is located within the Delta Agricultural Project. Research on revegetation is underway along the petroleum transportation corridor in northern Alaska. In addition, the Forest Soils Laboratory of AES is conducting studies within various kinds of forests in interior Alaska in cooperation with federal scientists from the Institute of Northern Forestry, U.S. Forest Service.

The Fairbanks Research Center of AES has a staff representing the disciplines of agricultural engineering, agronomy, animal science, botony, economics, forestry, horticulture, outdoor recreation, plant pathology, range science and resource management. The Palmer Research Center has scientists in agronomy, animal science, agricultural engineering, horticulture and range science. Scientists from the Agricultural Research Service, USDA, representing the disciplines of agronomy and soil science are located at the Palmer Research Center and work cooperatively with AES. Winter feeding trials and summer grazing trials with beef cattle are underway at the Homer Research Center under the direction of an animal scientist.

Research programs at these various locations provide research opportunities for graduate students.

Alaska Cooperative Park Studies Unit — The objectives of the Alaska Cooperative Park Studies Unit are to conduct a general program of research and teaching relating to park, wild land, and cultural resource management. The University of Alaska and the National Park Service recognized mutual interest in developing greater understanding of man's cultural past and present life ways in relation to natural resources, ecology, and resource management of areas in the national park system, the State of Alaska, and similar regions elsewhere. There are two programs within the unit: anthropology and historic preservation, and biology and resource management. The unit is staffed by a university biologist, one or more National Park Service scientists, and a varying number of workers assigned to particular projects as need arises. A major objective of the unit is to promote an interest in park management problems, and to encourage faculty and students in existing university programs to conduct research in National Park Service areas to the extent that such research is compatible with the constraints associated with park management philosophy. Graduate work leading to both masters and doctoral degrees in regular university programs may be supported through the unit.

Alaska Cooperative Fishery Research Unit — This is a cooperative venture between the University of Alaska, the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service. The purpose is to conduct education and research programs on the structure and function of arctic and subarctic freshwaters as they relate to fishery resources, with emphasis on interior Alaskan streams and lakes.

Research projects deal with all aspects of a fishery — organisms, habitat and society — in pursuit of basic knowledge and management-oriented results. Staff activities emphasize graduate student training, personal research, and technical assistance to other agencies and individuals. In addition to classroom instruction, the unit sponsors an annual workshop as in-service training for professional fishery biologists. Most research projects are field-oriented; current projects are aimed at local habitats such as the Chena and Tanana Rivers.

Graduate work for advanced degrees may be performed within the unit program or in cooperation with other research institutes and departments.

Alaska Cooperative Wildlife Research Unit — This unit is jointly sponsored and financed by the University of Alaska, the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service, and the Wildlife Management Institute. The program of the unit involves financial support and guidance for graduate training in wildlife biology and management; research related to graduate training; extension education in wildlife conservation and management through lectures, workshops and conferences; and consulting services to state, federal and other agencies and organizations.

Research emphasis is on ungulate habitat relationships, carnivore ecology, wetland bird ecology, wildlife habitat evaluation, and assessment of the impact of northern development on wild animals and their habitats. Most research is conducted in the field using temporary camp facilities. Unit staff and graduate students cooperate closely with biologists of state and federal agencies and with other faculty of the university.

Graduate work leading to advanced degrees may be performed at the unit in cooperation with relevant departments or programs.

Alaska Native Language Center — A linguistic research center based on the Fairbanks campus and administered under

the Division of Community Colleges, Rural Education and Extension. The Alaska Native Language Center was established by state legislation in 1972 to document the native Indian and Eskimo languages of Alaska. ANLC is the major center in the United States for the study of Eskimo and Northern Athabaskan. Many of the twelve to fifteen staff members, in addition to doing research, also teach courses in the Alaska Native Language Program [ANLP] of the College of Arts and Sciences or through the Community Colleges, Rural Education and Extension.

Institute of Arctic Biology — Following the recommendation of a national committee of biologists, the institute was established in 1963 for studies of life in the special climates of arctic and subarctic regions. Research is directed towards understanding the structures and functions of natural ecosystems of Alaska, the impact of the increasing levels of human activities upon these systems, and the effects of Alaskan climates on man, and particularly on his health and well-being.

The ecology sector researches include biological monitoring at taiga and tundra sites and studies of ecosystem structure and function, and of the functional interactions and interdependencies of plants and animals. These ecosystem researches are closely tied to studies of the physiology and biochemistry of micro-organisms, plants and animals which occur in arctic environments, including their nutrients, and to veterinary investigations of diseases in Alaskan wildlife.

The interest in man has largely related to anthropologic and archeologic studies of native Alaskans (present and past) and to improvements in reindeer herd management and productivity. The study of man is now being extended to include investigations of the particular social and health problems, and the industrial and other hazards of living and working in these climates.

The institute is located in the Laurence Irving Building which provides a variety of technical and instrumental facilities and services. Special field sites include the 40-acre Experimental Biological Campus Reserve, the Cantwell Reindeer Station near Mr. McKinley National Park, a new reindeer facility at Nome, the Homer and Halibut Cove shore stations on Kenai's Kachemak Bay, an arctic tundra research station at Toolik Lake, and the alpine tundra station at Eagle Summit. There is a staff of approximately 75 persons serving the Institute of Arctic Biology.

As a part of the Division of Life Sciences, institute faculty participate in the offering of courses and in graduate programs leading to both M.S. and Ph.D. degrees in a variety of subjects related to arctic biology and anthropology.

Arctic Environmental Information and Data Center — The Alaska Legislature established the Arctic Environmental Information and Data Center (AEIDC) in 1972 in recognition of the need for a resource and science information and referral center in Alaska. Located in Anchorage, AEIDC is involved primarily in the exchange of scientific information and the practical application of scientific research to problems we face today in Alaska in the areas of environment, natural resources, wildlife, fisheries, social sciences, climate, geology, and geomorphology.

The Center offers three complementary services—information referral, resource and science analysis, and graphics and production. Also, in 1981 the Alaska Legislature passed a bill which formally established and funded a Climate Center within AEIDC. The Center is now home base to the state's climatologist.

AEIDC maintains comprehensive in-house data files, but an additional function is to help people find needed sources of scientific information. By linking itself to other information sources around the nation, AEIDC is able to tell people what data is available and where to find it.

For the past decade, AEIDC scientists have worked together looking at resource and science questions in Alaska from a multidisciplinary point of view. They study the problems, analyze the pertinent aspects, and present the issues and facts without advocating any biased position. The work of the production and communications staff is to take the scientific material and present it in a way that makes it interesting, understandable, and useful to a wide variety of audiences. Presentations include reports, maps, profiles, publications, film series, television and radio programs, and briefings for various government agencies, industry, universities, Native corporations, and the general public. AEIDC does not conduct a graduate program but offers its services to students.

Geophysical Institute — The institute was established by an Act of the U.S. Congress in 1946 as a cooperative venture by the Federal government and the University of Alaska. The federal obligations and property were transferred to the University of Alaska in 1960.

The research program deals with phenomena that can best be studied at high latitude or which present special problems in Alaska. Programs are established in upper atmospheric physics and chemistry, the aurora, the earth's magnetic field, radio communications, solar-terrestrial physics, meteorology, glaciology, seismology, volcanology, and several fields of geology and geochemistry. An important aspect of much of the work is the application of existing knowledge to polar problems — for example, improving radio communication services in the arctic, assessing the earthquake risk in Alaska, studying ice movements and stresses off the north coast as a basis for engineering design of shore facilities, developing alternative energy sources, reducing the effects of ice fog and air pollution, and providing advisory services to local government.

It is housed in the C.T. Elvey Building on the West Ridge of the Fairbanks campus. The present staff numbers approximately 215 including 51 members of the faculty. Financial support is obtained mainly from federal agencies.

Research facilities include Ester Dome Observatory for auroral studies, the radio transmitter Sheep Creek Station, the Chena Valley Radio Facility, the Poker Flat Research Range, a potassium-argon geochronology laboratory, and an electron microscope laboratory. In addition to these local facilities, the institute uses many field stations throughout Alaska, such as the Augustine volcano station, the network of seismic sites and the meridian chain of optical and magnetic sites. The institute's library and archives offer an excellent coverage of geophysics. Specialized technical shops provide services in electronics, machine work and carpentry, photography, drafting, data processing, and digital computing.

There are assistantships for well-qualified students to work with the Geophysical Institute faculty toward the master's and doctor's degrees.

Institute of Marine Science — The Institute of Marine Science was established in 1960 by the Alaska State Legislature for the purposes of advancing oceanographic knowledge with emphasis on problems of high-latitude seas, of training graduate students in modern oceanography and of providing both basic and applied marine research. Subsequent expansion has included research and training in marine biology, fisheries oceanography, and special problems in limnology.

Research programs now include: water circulation in the Gulf of Alaska, environmental studies at the oil pipeline terminus of Valdez, fishery systems, seagrass ecology, marine mammals, shellfish and finfish biology, sea- and lake-icing, the geochemistry of lakes, upwellings of sea waters, carbon and nutrient cycles, Recent and Pleistocene sedimentation, and the origin of the continental shelf of Alaska.

Research facilities include modern advanced laboratories on the Fairbanks campus and at Seward. The Seward Marine Center includes a high quality running seawater system, as well as biological and chemical laboratories. Ship operations are also based at the Seward Marine Center. The Institute uses other Alaskan coastal facilities as needed. The Institute's research vessel, *ALPHA HELIX*, routinely operates in the Chukchi and Bering Seas, in Aleutian waters, and in the Pacific waters adjacent to Alaska.

Financial assistance for graduate students is provided through State research assistantships and stipend support coming from industry and foundation grants to the Institute.

Mineral Industry Research Laboratory — The 1963 Alaska State Legislature authorized a mineral industry research program at the University, resulting in the establishment of the Mineral Industry Research Laboratory within the School of Mineral Industry. The Laboratory conducts basic and applied research in many phases of the mineral industry, all directed toward the development of Alaska's mineral resources and energy sources.

Work to date includes studies of beneficiation of Alaskan ores, geology and mineral deposits of the state, computer applications in exploration, feasibility studies for various Alaskan minerals and mineral deposits, transportation system for minerals, geologic mapping of areas of economic interest, and development of a data storage and retrieval system for mineral deposits. A large part of the program is devoted to studies of Alaska's coals. Such studies include characterization, petrography, distribution and beneficiation. The rapidly expanding Alaskan coal industry has made coal research more important than ever.

In addition, cooperative efforts on various projects are maintained with state and federal mineral agencies and the mining industry. Publications pertinent to the public and industry are issued periodically.

Opportunities exist for graduate study in these fields.

Center for Cross-Cultural Studies — The purpose of the Center is to integrate university instructional and research programs in the general field of cross-cultural education, particularly those addressing issues in rural Alaska.

Current research and development topics, all focused upon Alaskan interests, include intercultural communication processes which affect university teaching, programs for small rural secondary schools, salient features of youth organizations, decentralization of rural schools, impact of telecommunications on instruction, identification of effective teaching practices, and Alaska Native music.

The Center's instructional programs all have three components, a cross-cultural perspective, an interdisciplinary orientation, and are primarily field-based. Both graduate and undergraduate instructional programs are offered.

Opportunities are available for graduate assistants in both instruction and research projects.

Alaska Sea Grant Program — Established in 1970, the Alaska Sea Grant Program represents a partnership between the National Sea Grant Program within the National Oceanic and Atmospheric Administration and the University of Alaska. Its purpose is to provide people with the knowledge and means of developing, utilizing and conserving the marine resources of the state and nation through a program of teaching, research and advisory activities.

The Alaska Sea Grant Program is headquartered in the Chapman Building on the Fairbanks campus.

Institute of Social and Economic Research — ISER was established in 1961 by the Alaska State Legislature for the purpose of conducting policy -and problem - oriented research in the social sciences and related fields. Research interests include economic planning and development; utilization of natural resources; human ecology; educational needs and problems; governmental institutions and political processes; community organization and development; communications; transportation; environmental policy; and the political, sociological, and psychological dimensions of culture change. While concentrating primarily on Alaska, ISER work and interests also extend to northern Canada; the North Pacific Rim, including Japan; and the circumpolar regions, including Siberia.

In addition to research directed toward socioeconomic problems, ISER carries out a broad program of technical assistance to public and quasi-public agencies, collects and disseminates statistical data and other information on Alaska's population and economy, and otherwise serves the needs of the general public. The institute has a multidisciplinary professional staff. It collaborates with the staffs of the various institutes and centers of the University of Alaska and with other universities in the U.S. and overseas.

ISER's publication series include *The Alaska Review of Social and Economic Conditions, ISER Reports, Occasional Papers,* and *Research Summaries.*

Graduate students may be accepted for studies with the ISER staff in certain social science fields, including economics.

Institute of Water Resources — The Institute of Water Resources was established in 1965 to conduct an integrated program of research in problems dealing with water resources in Alaska. Studies undertaken by the institute have encompassed many areas including waste treatment, arctic hydrology, water quality hydrogeochemistry, limnology, microbiology, biotechnology, environmental effects of mining and petroleum development, northern engineering and alternative (especially solar) energy technologies.

The current interests of the professional staff include: aquatic and terrestrial microbiology, phytoplankton growth, biogeochemistry of sulfide minerals, biotechnology, groundwater hydrology, snow hydrology, hydraulics, northern engineering, hydrogeochemistry, zeolites, statistical applications, water and wastewater treatment, environmental modeling, fluid mechanics, arctic estuarine oceanography, solar applications, alternative energy technologies, and energy conservation.

The institute's laboratories and offices are available to interested graduate students who desire to work on problems dealing with the water resource environment. The present staff of 25 includes many graduate students who are completing their research programs in cooperation with the various academic colleges on the Fairbanks campus. The institute maintains a vigorous interest in graduate and undergraduate teaching; most of the professional staff hold joint appointments with one or more academic departments.

WAMI Medical Education Program — The WAMI (Washington, Alaska, Montana, Idaho) Medical Program serves as Alaska's medical school. It is accredited as a component of the University of Washington School of Medicine. The first-year medical curriculum is taught on the Fairbanks campus. Portions of the fourth-year curriculum are offered in Anchorage and Ketchikan.

Research activities of the Program fall into two major areas — environmental health hazards and rural health services. The prevalence of *Giardia lamblia* infection has recently been measured in selected bush villages. Asbestos levels in certain major rivers are being measured to assess the hazard of this potential carcinogen. Bacterial skin flora of village residents is being analyzed in collaboration with the University of Washington. Potential hazards and benefits of petrochemical industrial development in Alaska are under study.

Rural health services studies include an analysis of major factors in personnel turnover in regional health corporations. Two projects seek to bring more Alaska Natives into health careers. One brings university science faculty members into lower Yukon high schools and measures the effect of this enrichment. Another

helps recruit and retain students for MEDEX physician assistant training at the University of Washington while studying the need for physician assistants in rural Alaska.

Academic and Research Support

Located on the University of Alaska-Fairbanks campus are numerous research and academic support resources, including state and federal agencies. The support units provide students with research and informational material.

Computer Network

The University of Alaska Computer Network (UACN) provides statewide distributed computing resources for all members of the university community. The computer network is independent of any specific research, administrative, or educational department.

The UACN is a statewide computer network based on large Honeywell Level 66 dual processors, located on the Fairbanks campus. User services are provided through "nodes" at the Anchorage, West Ridge, Fairbanks, and Juneau campuses. Additional access points are available at the Kodiak and Kenai campuses, with plans for additional access points at other campuses. Batch, remote batch, and extensive time-sharing services are available on the network computer. The network spans, by microwave and satellite, an area fourteen hundred by eleven hundred miles.

Two unique aspects of the University of Alaska Computer Network are the extreme distances spanned by the network and the fact that all users are treated equally. All users access the system through minicomputer driven "nodes," therefore assuring physically equal facilities. Remote node users are not charged extra for communication and all users are assigned equal priority on the system.

Machines

Honeywell Level 66 — Dual processors. 1.5 million character memory with 2 billion characters of fast disk storage and 6 9-track ASCII/EBCDIC 800/1600 BPI tape drives. HIS 707 and 606 minicomputers serve as "nodes" in providing more than 170 time-sharing ports (public and private), 6 printers, 5 card readers, and tape facilities at the West Ridge, Anchorage, Fairbanks, and Juneau campuses.

Software — Programming Languages: BASIC, FORTRAN, COBOL, APL, SNOBOL, B, PASCAL, PL/I, GMAP, ALGOL, JOVIAL; Math/Statistics: SPSS, BMDP, BMD, IMSL, TSP, Honeywell TSS Library; Simulations: GPSS, Dynamo Simscript, CSMP, SCEPTRE, ECAP, CORNAP; Data Management: IDSII, DataBASIC, FAMULUS, SELGEM. Also QED, ROFF electronic MAIL, mini- and microcomputer cross assemblers and simulators; graphics including Calcomp, Tektronix, PLOT10, Hewlett Packard, Contour, SURFACEII, mapping.

User Services — Each node provides consulting services, access to documentation, seminars and classes and acts as a "one stop" source for all user help.

Conferences and Institutes

Conferences and Institutes was established by UAF in response to the growing and changing needs of the people of Alaska. As a part of its commitment to public service, the university assists governmental, educational, professional, business, and other groups in fulfilling their needs for continuing education through a vigorous program of conferences and institutes offered to students of all ages, before and after graduation, on or off the campus, with or without credit, formally and informally.

Conferences offered may originate from requests received from governmental, educational, professional, business, or special interest groups, or they may originate within the department from a recognition of special needs that can best be met through this channel. These short-term activities permit attendance by those whose crowded schedules prevent longer participation.

Conferences and Institutes offers a wide range of services through its professional faculty and staff from program planning, use of facilities, equipment and supplies, to registration services, final evaluation, and publication of proceedings.

To arrange for a conference, institute, workshop, or seminar, contact Conferences and Institutes, UAF, Fairbanks, Alaska 99701, (907) 479-7800 or 479-7882.

Elmer E. Rasmuson Library

The university library, named for Elmer E. Rasmuson moved into the five level, 10.6 million-dollar library, fine arts, and humanities complex in the fall of 1969. The library collection consists of more than 1,000,000 volumes including books, periodicals, serial titles, government documents, microfilm, microcards, microfiche, maps, phonorecords, and cassettes. Book holdings are available on open stacks for the convenience of users.

The library facility provides seating, including lounge areas, for all users and a limited number of closed carrels for use by graduate students and faculty members. Smoking rooms are located on floors 4 and 5.

The main book collection is housed on the fourth and fifth floors. Materials are classified according to the Library of Congress system.

Floor 4 also houses the federal documents and maps collection and the juvenile collection. The documents collection is arranged by Superintendent of Documents classification and constitutes over one-fourth of the total library collection.

The map collection, adjacent to the federal documents section, includes an extensive collection of polar regions maps and the U.S. Geological Survey topographic series for Alaska, as well as maps of the United States and the world. Atlases, gazetteers, and other cartographic reference works are also available.

The juvenile collection on 4th floor contains children's books which are used primarily by education students.

The entrance to the library is at floor 3 which contains the circulation and the information desks, the card catalog, the separate Reserve Book Room with its record and cassette collections, typewriters, computer terminals, and calculators, the reference area with indexes to periodicals and newspapers, telephone directories, a current collection of college and university catalogs, a student lounge area, and study tables for student use.

Also, the Reader Services department and other library administrative offices are on floor 3. A special collection of books and periodicals on Alaska and the polar regions is housed on this level, along with a collection of national bibliographies.

Noncirculating collections which are housed on floor 2 include current periodicals, bound periodicals, newspapers, and

periodicals in microform. Other microform collections include the Human Relations Area Files (HRAF) and the Educational Research Information Center (ERIC). Microfilm readers and coin-operated self service photocopy machines are available. A computer printout of all serial and periodical titles held by the library gives call numbers for locating journals, and a serials record file lists complete holdings for each title. Current and back issues of local, national, and foreign newspapers are available, including the complete run of *The New York Times*.

Floor 1 houses the rare book collection, the university archives and manuscripts collections, including the historical photograph collection and rare maps. The university archives and manuscript collection includes university records and historical Alaskan material.

The library's participation in the Washington Library Network provides the library with access to over 2.25 million catalog records of 130 libraries in the Pacific Northwest and of the Library of Congress. Subject searches can be conducted on the data base for the cost of the search.

Interlibrary loan service is made available to students and faculty through the Reader Services department of the library. The library's membership in the University of Washington Library Resource Sharing Program and computer mail communication make the resources of the larger university libraries in the nation quickly available to augment the library resources at UAF.

Computerized literature searches are also available at actual cost plus $1.00 through the Reader Services Department. The computer data bases provide access to a wide variety of subject fields.

The library's Department of Media Services is divided into five areas: (1) photographic services, including cinematography; (2) graphic services; (3) video services and studio; (4) 16 mm film library; and (5) equipment services.

The department also provides many special services, such as transparency making, laminating, equipment consulting, audio transfer, and the like. The Media Services department is located in the Eielson Building and is organized as a support function to the academic program.

The Bio-Medical library on the West Ridge campus became a part of the university library in 1973. The Bio-Medical library has approximately 25,000 books, but the greater part of its collection consists of periodical literature. Journal titles cover the fields of medical research, biology, fisheries, veterinary medicine and the environment as it relates to cold-regions research. The circulation policies are the same as those of the Elmer E. Rasmuson Library.

The *Library Handbook* is available at the reference desk on the main floor of the Elmer E. Rasmuson Library.

KUAC

KUAC-FM broadcasts on 104.7 mHz and KUAC-TV on television Channel 9. Newcomers to the Fairbanks area will find many of their favorite NPR and PBS programs in the schedules of the KUAC stations.

Now in its third decade of service to Greater Fairbanks and the outlying areas, KUAC-FM was Alaska's first public radio station when it signed on in 1962. KUAC-FM is principally a fine arts station, but it broadcasts a balanced mixture of public affairs, information, and specialty programs. Its schedule draws from a number of sources, including National Public Radio and the Alaska Public Radio Network.

KUAC-TV began broadcasting in 1971. Through a system of translator repeater transmitters, the station reaches east to the Canadian border and west to Manley Hot Springs and Healy. KUAC-TV's schedule includes entertainment, information, and public affairs programs. These programs come from the Public Broadcasting Service, the Pacific Mountain Network, the Public Television Network of Alaska, and direct from various syndicators and distributors.

Both stations enhance their schedules of network and acquired programs with local productions. KUAC's local productions originate from studios in the Theatre Building, or through the stations' remote production capacity from field location across the state.

The Alaska Public Radio Network and the Public Television Network of Alaska provide mechanisms for close cooperation between KUAC and other public broadcasting entities in Alaska. Through its memberships in national and regional broadcasting organizations, KUAC has ready access to audiences beyond its local service area. Program material from both stations is broadcast throughout Alaska and the lower 48.

In addition to its broadcast activities, KUAC also provides limited laboratory facilities for students in the Department of Journalism and Broadcasting. Most apprentice-level positions at KUAC are filled by part-time student employees.

On a facilities-available basis, KUAC offers a full range of radio and television production services - at cost - to university and other non-profit users.

University of Alaska Museum

The University of Alaska Museum is a center for the collection, preservation, and dissemination of information pertaining to the North. The museum, moved to new, expanded facilities, has a staff of curators, technicians, and student assistants to collect, preserve, and interpret the cultural and natural history of Alaska.

While more than 80,000 people visit the exhibits area each year, the museum is more than a place to look at interesting objects. The museum is a research center, and the staff conducts field work, teaches university courses, and operates a small publishing program. The museum is accredited by the American Associations of Museums.

The permanent exhibit program represents the diverse cultural and natural history of Alaska. Exhibits follow an inter-disciplinary approach and provide the visitor with an integrated view of Alaska. Public service programs complement the permanent exhibits through school lectures, guided tours, and traveling exhibits. Increasing numbers of local school children, university students, Alaska residents, and visitors from around the United States and the world have shared these programs.

The curator and professional staff of the Archeology Collection conduct research focusing on Alaska's early history. They maintain laboratory and support facilities for students, faculty, and other scholars conducting archeological research.

The Ethnographic Collection contains over 13,500 objects that include a wide range of objects made and used by Alaska Native people from the turn of the century to the present. Exceptional artifacts include baskets, beadwork, ivory carvings, masks, games, and toys.

The Art Collection consists of over 400 paintings and lithographs of Alaska subjects dating from the late 19th Century to the present. The works of Laurence, Ziegler, Heurlin, Lambert, Machetanz, and Crumrine are well represented.

The History Collection has over 2,500 items including Russian-American material, mining equipment, an airplane flown by Ben Eielson, household goods and tools used in early Fairbanks, folk art, firearms, and other items.

The Herbarium preserves systematically stored and mounted plant specimens.

The Herbarium has two sections with over 77,000 specimens; the nonvascular and the vascular collections. These collections

represent the United States, Scandinavia, Finland, Greenland, Canada, Japan, and the Soviet Union, providing data for comparative studies of Alaska plants. In conjunction with surveys by national professional societies, and/or the National Association of Systematic Collections, the herbarium has achieved the status of "National Resource Collection."

The Aquatic Collection, established in 1970, contains over 44,000 specimens of aquatic invertebrates, fishes and algae and is located at the university's Marine Station at Seward. The research effort of the curator is directed toward a basic inventory of Alaska's marine flora and fauna. This inventory is often used as a basis for environmental impact assessments.

The Paleontology Collection includes Pleistocene mammal specimens from central and northern Alaska, fossil invertebrates and plant specimens, and microfossil samples.

The Geology Collection includes a series of Alaska mineral ore samples and the gold collection.

The Terrestrial Vertebrate Collection has 3,700 bird study skins and over 24,000 mammal specimens of skins, skulls, and skeletons. The bird collection is ranked, nationally, in "Category I" (largest of three size categories). The mammal collection is recognized as one of 32 mammal collections in the United States meeting the requirements for a national repository.

State and Federal Agencies

The following is an alphabetical listing of the state and federal agencies located on the Fairbanks campus.

Branch of Alaskan Geology of the U.S. Geological Survey — This branch conducts a program of geological exploration and research in Alaska. Some of the functions are geologic mapping studies and evaluation of metallic, nonmetallic, coal, and oil deposits; regional studies of structure and stratigraphy; detailed studies of selected type-areas; application of geology to engineering and related problems; and research in the use of new geologic methods. The Alaskan maps and geological reports are available to the public for use in the office.

Bureau of Mines, U.S. Department of the Interior — The Alaska Field Operation Center, with headquarters at Juneau, maintains a field office in the O'Neill Building. The field office provides support for the center's primary concern for mineral resources and environmental development. The functions that relate to this concern include surveillance and evaluation of industrial and commercial outlook for minerals and fuel deposits; studies to determine the relationship of mineral supply, demand, and technology to the national economy; studies and projects concerning the relationship of the mineral industry to environmental problems; and engineering studies regarding effective mining practices.

The field office responds to diverse inquiries from the public and governmental agencies relating to mineral resources and environmental problems; assists in the monitoring of research projects that are conducted by the Mineral Industry Research Laboratory for the Bureau of Mines through contracts with the University of Alaska; and maintains liaison with local federal and state agencies in regard to efforts of mutual interest.

College Observatory — The College Magnetic and Seismological Observatory is operated by the Branch of Electromagnetism and Geomagnetism of the U.S. Geological Survey, with the main facility on the West Ridge of the Fairbanks campus and an outpost facility near Farmer's Loop Road. Originally constructed in 1947, the observatory has expanded to 30 buildings and operates various instruments that continuously gather data for studies in the fields of geomagnetism and seismology. From 1941 to 1946 the observatory was operated by the Department of Terrestrial Magnetism, Carnegie Institution of Washington, in cooperation with the University of Alaska, and then by the U.S. Coast and Geodetic Survey until 1948. Operation of the seismic equipment dates back to 1935.

In 1973 the observatory was transferred from the National Oceanic and Atmospheric Administration of the Department of Commerce to the U.S. Geological Survey of the Department of the Interior. The general mission of the observatory is to produce accurate and comprehensive data in the field of geomagnetism and seismology and to cooperate with other scientists and organizations in making studies in various scientific disciplines within the capability of personnel and facilities. The observatory monitors seismic and magnetic activity 24 hours a day. The facility plays a major part in keeping the people of Interior Alaska informed of current earthquake activity and informing scientists and organizations of the occurrence of major world magnetic events. The observatory also operates the Barrow Observatory at Barrow, Alaska, with logistic support provided by the university's Naval Arctic Research Laboratory.

Cooperative Extension Service — The program is a cooperative educational service of the university and the U.S. Department of Agriculture. The broad purposes of the service are to provide informal education to residents of the state. District offices and field staff are located in Fairbanks, Palmer, Juneau, Homer, Ketchikan, Soldotna, Petersburg, Cordova, Kodiak, Anchorage, Nome, and Bethel. University extension specialists and district extension agents extend the results of research by the university and a broad range of research institutions to the public. Local people are helped to identify and solve problems and to apply the results of scientific research to the improvement of businesses, homes, and communities. Work with young people is conducted through the 4-H and Youth programs. Marine Advisory and Fisheries Extension programs are directed toward commercial fishermen, marine resource developers and users, and the more general marine environmental publics.

Audiences for extension programs include both rural and urban residents. Extension educators serve the consumer, as well as resource production, marketing, agri-business, and marine audiences. Extension educators help citizens of the state to plan and to organize for broader economic and social development. Their teaching is carried out informally through television; radio; newspaper and newsletter media; publications; business, home and community visits; special interest meetings and short courses.

Institute of Northern Forestry, U.S. Department of Agriculture — The institute is a unit of the U.S. Forest Service, Pacific Northwest Forest and Range Experiment Station. Research is focused upon understanding the ecology of, and developing methods for managing, Alaska's boreal forests. Programs are underway to determine the succession of boreal forests and the effects of fire on soil, water, flora and fauna. Field work is conducted throughout the boreal forests in Alaska. The 12,500-acre Bonanza Creek Experimental Forest and the 26,000-acre Caribou-Poker Creeks Experimental Watershed provide convenient research locations for Forest Service and university scientists.

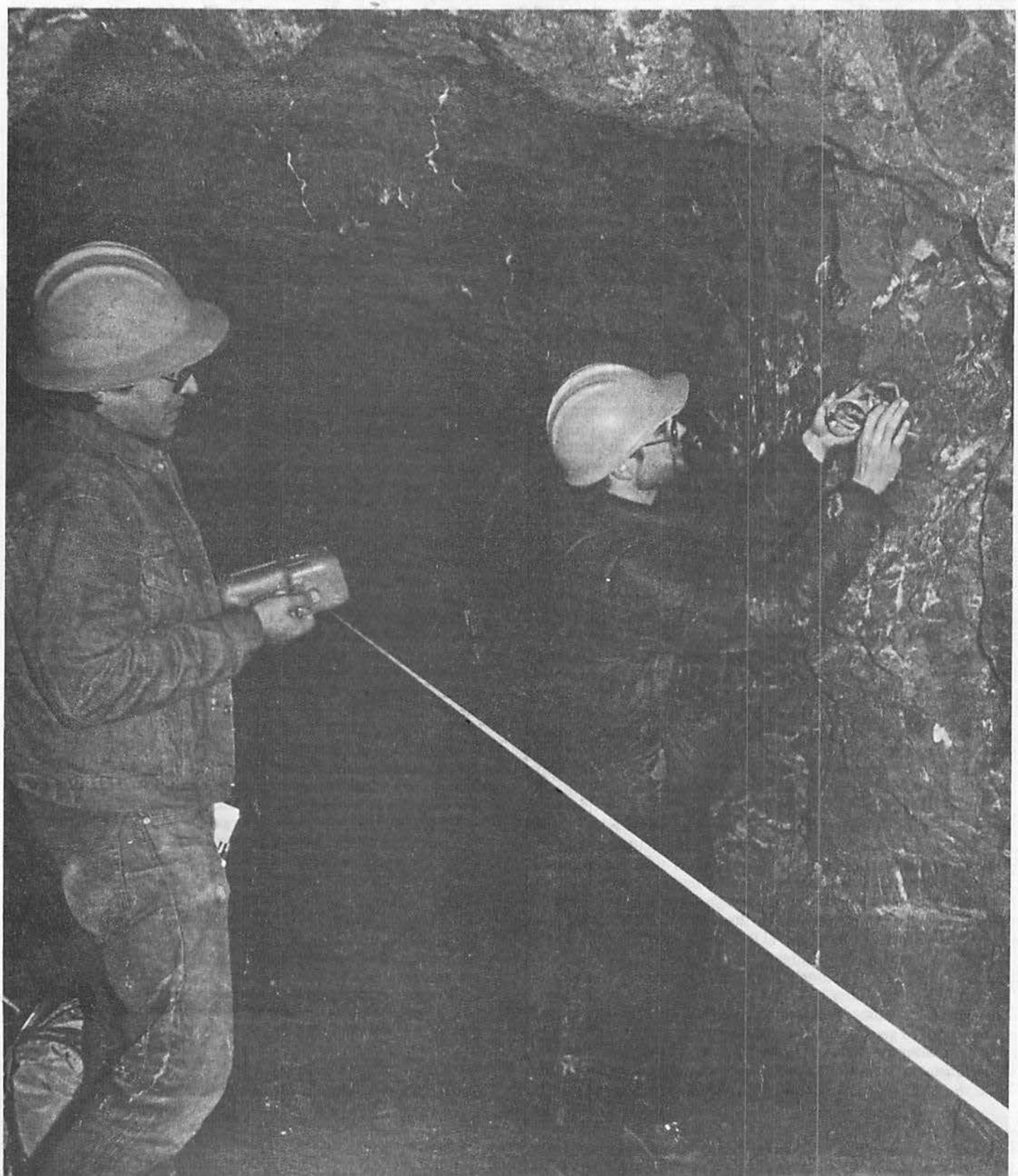
State Division of Geological and Geophysical Surveys — This division of the Alaska Department of Natural Resources, which conducts cooperative investigations with university personnel and with government agencies to contribute to the knowledge of Alaskan geology, maintains offices on campus in the O'Neill and Services Buildings. The UAF-campus staff numbers 23, including geologists, a mining engineer, minerals-laboratory personnel, mining-information specialists, and publications personnel.

The laboratory provides analytical services to the staff and public and also conducts independent research. Field programs are carried out by the geologists and the engineer. Technical information and advice is available to prospectors and exploration companies. An up-to-date file of mining claims and mineral occurrences is maintained in the Services Building, as is a host of

technical reports and maps that are both free and for sale. Quarterly bulletins, project reports, maps, and pamphlets summarize the division's activities.

State Office of Research and Academic Coordination — This office is maintained on campus by the Alaska Department of Environmental Conservation. It provides services as a staff function within the department. ORAC's objectives include improving and strengthening research and academic contributions to environmental conservation. In cooperation with the university and other governmental agencies, it also provides assistance in the solution of environmental engineering problems encountered in water supply, waste disposal, housing, community development, etc., in the far north.

Transportation Research Laboratory — The Alaska Department of Transportation and Public Facilities operates a research laboratory in conjunction with the Department of Civil Engineering. The state provides equipment and personnel for routine testing of highway materials and for highway research.



Other Educational Opportunities

Alaska Native Programs

Alaska Native Programs is a group of six programs and related activities in Native education which were consolidated in 1981 in the College of Arts and Sciences. The six programs are the Alaska Native Art Center, the Alaska Native Language Program, Alaska Native Studies, Cross-Cultural Communications, Special Services, and the Student Development Program. Related activities include THEATA Magazine, written by students enrolled in Cross-Cultural Communications courses, the Festival of Native Arts, and Tuma Theater. The Student Development Program is a new program designed to improve the University's efforts to meet the needs of the Native Community, and includes the Rural Alaska Honors Institute, the Native Leadership Seminar Series, and the Elders Seminar Series.

The mission of Alaska Native Programs is twofold. It is first, to promote Alaska Native student college completion through staff development and student skills development, and second, to promote understanding of the Native community through research, curriculum development and instruction. Courses are available in arts, languages, education, and a variety of other disciplines. Degrees are available in Alaska Native Studies, Applied Linguistics, Yup'ik and Inupiaq languages. Courses taught in Alaska Native Programs also meet certain requirements for other degree programs at the University.

The Director of Alaska Native Programs and the rest of the faculty and staff of ANP are located on the 5th floor of the Gruening Building (474-7181), the third floor of the Chapman Building (474-7874 for the Language Program), and in the Fine Arts Building (474-7725 for the Art Center). Course descriptions can be found in this catalog under the specific academic program in which they are included.

Continuing Studies

Continuing Studies is an extensive public service out-reach program conducted primarily off campus and oriented toward the "nontraditional" student. Continuing studies are designed to meet the needs of the adult student who must mesh educational objectives with work and family responsibilities. This program permits degree completion and professional development to those in Interior Alaska who otherwise would be constrained by geographic factors, occupational and/or family obligations.

Given the availability of faculty and suitable meeting facilities, university education can take place at a variety of times and locations. Several branches host university instruction, including Fort Wainwright, North Pole Community School, Eielson Air Force Base, and the Fairbanks community. Courses are also offered at the Fairbanks Correctional Facility.

The variety of mediums used in academic instruction is also an important part of the Continuing Studies programs. The use of newspaper, radio and television has created a new type of course that can enhance traditional university programs.

The Continuing Studies staff is interested in assisting individuals and groups who seek academic services to further their personal and professional objectives. For further information contact the Director, Department of Continuing Studies, University of Alaska-Fairbanks, Fairbanks, Alaska 99701 (907) 474-7221.

The Honors Program

The Honors Program at the University of Alaska-Fairbanks, offers a special educational opportunity to those students willing to accept the challenge of a broad and comprehensive intellectual experience. Highly motivated undergraduate students are given the opportunity to acquire an appreciative understanding of the natural and social sciences, the arts, and the humanities in an atmosphere that promotes intellectual curiosity and maximizes independent learning.

The program is designed to attract and retain outstanding students and to provide them with a stimulating intellectual experience in an environment worthy of their academic abilities.

Eligibility

Undergraduate students from all disciplines are eligible for admission to the Honors Program. For admission, new freshmen must have attained a high school grade point average of no less than 3.50, a composite ACT score of no less than 26, and no individual ACT score of less than 23. National Merit Semi-finalists and Finalists are automatically eligible, regardless of their high school grade point average.

Admissions to the Honors Program will be limited to the beginning of the fall semester. Credentials for admission to UAF must be on file with the Office of Admissions and Records by August 1. Invitations to apply for admission to the program will be issued to all first-time freshmen who meet the honors admissions criteria.

Privileges Granted to Honors Program Students

1. Admission to Honors course.
2. Pursuit of graduation "With Honors," so designated on diploma (or on a separate Certificate of Honors Completion) and commencement program.
3. Special living arrangements - a "quiet" floor or floors in a residence hall.
4. Use of an Honors Study Center.

Program Features

Honors Program students must be regularly enrolled undergraduate students pursuing the baccalaureate degree. An Honors Program student must meet general University requirements, degree requirements, and major and minor (if appropriate) requirements. Most Honors courses will be taken in lieu of, rather than in addition to, normal graduation requirements.

The program offerings will include special sections of regular courses, several interdisciplinary topics, and Honors Seminar, a Senior Honors Seminar, and a Summer Reading Program or Laboratory Internship and field experiences when appropriate. Offerings will include the following:

English — An Honors section of English will be offered every semester.

In addition to the English offering, *one Honors section of one course from each of between six and eight disciplines* will be offered each semester, except 1983-84, when there will be a total of three sections each semester. The following disciplines should be considered for offering Honors sections: Anthropology, Art, Biology, Chemistry, Economics, Geography, Geoscience, History,

Humanities, Literature, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Sociology, and Speech Communication.

Honors Seminar — One semester hour. Offered every semester. Varying topics. May be repeated for credit.

Senior Honors Seminar — Three semester hours. Offered every fall semester beginning fall 1985. Restricted to senior Honors students. Research Methods. In-depth study of a selected topic, resulting in an Honors paper.

Summer Reading Examination — Offered every fall semester beginning fall 1984. Credits variable between one and three, depending upon extent and quality of summer reading, as agreed upon between student and instructor. May be repeated for credit.

For more information and application forms write to:

Dr. Suzanne Summerville, Director
The Honors Program
University of Alaska-Fairbanks
Fairbanks, Alaska 99701
Telephone (907) 474-6612

Nursing

The UAA School of Nursing is the only baccalaureate nursing program in Alaska and the majority of the coursework is available on the Fairbanks campus. The School of Nursing has been designed with the unique health care of needs of Alaskans in mind. A combination of climate, geography and divergent cultural backgrounds creates the opportunity - and necessity - for nurses to provide creative health care.

With this situation in mind, the curriculum at the School of Nursing has been developed to foster creativity and independent judgment as part of the role of the professional nurse. The program is built upon the nursing process model and is geared to socialize the student gradually into the role of professional nurse. The first three semesters provide the general education foundation for the nursing courses. Five clinical courses, each building upon the previous one, follow over the next five semesters. The first two courses deal with nursing care of the essentially well client. The student learns basic theory and physical assessment, communication, nursing process and community health concepts, as well as screening procedures, health teaching and well child care. The third and fourth clinical courses are the only courses not available on the UAF campus. RNs may receive credit for these two clinical courses by successfully completing the credit by examination process. The third course deals with nursing care of clients experiencing temporary disruptions of health, primarily in the hospital setting. During the fourth course the student focuses on nursing care of clients experiencing long-term disruptions of health in both hospital and community settings. Theory and practice include working with groups of clients and community planning programs. The final course synthesizes the principles and practice learned in the previous courses. The student spends a concentrated amount of time in a clinical area of professional interest or need, integrating, expanding, and practicing concepts and skills learned throughout the nursing curriculum. The School of Nursing has received full national accreditation for this program.

For further information on the baccalaureate nursing program and continuing education offerings in nursing, please contact:

UAA School of Nursing
Arctic Health Research Building, Suite 106
University of Alaska-Fairbanks
Fairbanks, Alaska 99701
Phone: 474-7764

Special Summer Activities

Special summer institutes are often funded by federal and state agencies and private foundations. Summer institutes in the teaching of languages, counseling, guidance, English, science and mathematics have been held.

Special workshops and institutes open to high school age students are also presented. These include the music camp and a youth leadership conference.

An extensive recreation program is planned for summer sessions students by the Student Activities Office. Typical recreational activities include trips to Eskimo and Indian villages, goldpanning exhibitions, hiking, dances, movies, and a riverboat excursion.

Summer Sessions

Summer Sessions offers a wide variety of academic and non-academic programs to residents and visitors who wish to continue their education, both at the campus and nearby military bases, during the summer and throughout the regular academic year.

Summer session classes are open to candidates for graduate or undergraduate degrees and to unclassified students wishing to take special classes without reference to degrees.

In addition to the regular sessions, numerous courses and workshops are available throughout the summer period. Students choose from teacher-oriented coursework, cross-cultural education, arctic-oriented studies, special 1-2-3-credit-hour workshops, and wilderness and field experiences in addition to regular curricula.

A special feature of summer sessions is the popular Workshop on Alaska. The workshop is an intensive five-day course composed of lectures, demonstrations, and discussions presented by authorities in specific fields, such as anthropology, education, history, natural resources, and other Alaskan topics. One full day is devoted to a field trip. The workshop is to be offered once or twice during the summer sessions.

The summer sessions faculty is composed of members of the regular teaching staff, supplemented by outstanding visiting instructors.

For more information on summer sessions, write Summer Sessions, University of Alaska-Fairbanks, Fairbanks, Alaska 99701.

Study-Abroad Programs

The University of Alaska - Fairbanks offers students in all disciplines several opportunities to study abroad at the undergraduate level. For detailed information on the following programs, contact Head, Department of Linguistics and Foreign Languages, Eielson 209, telephone (907) 474-7396.

(1) Under an exchange agreement with Nagoya Gakuin University, NGU, UAF sends three to four students every year to Nagoya (an important urban center in Japan) and receives in turn three to four students from NGU. The program focuses mainly on the Japanese language and culture. It begins with an intensive language training (6 weeks) which is designed to prepare the exchange student to take courses in a number of disciplines ranging from intermediate and advanced Japanese language, literature, or civilization to sociology, business, art, etc. NGU is a business school but cooperates, for its foreign student programs, with other local colleges. Applications for admission to the NGU exchange program for the spring semester should be presented to the NGU Exchange Committee chairman in

late September or early October. One to three semesters of college Japanese, or the equivalent, are highly recommended before departure. Academic credits earned in the Nagoya program are considered UAF credits. No credit transfer is involved. Alaska student loans are fully applicable.

(2) The University recently joined the Northwest Interinstitutional Council for Study Abroad, NICSA. Under this consortium, a group of universities of the Pacific Northwest have jointly operated, for about 20 years, liberal-arts programs in England (London), Germany (Cologne) and France (Avignon). A fourth program, in Mexico (Guadalajara), has been added in 1982. All NICSA-UAF programs offer liberal-arts, interdisciplinary courses, with an emphasis however, for each quarter, on a particular discipline or disciplinary perspective. In recent years focal disciplines have been: history, architecture and urban planning, literature, international business, music, geography, philosophy, theatre, and others. Applications for admission can be submitted for one quarter, two quarters or three quarters in one, two or three sites. In conjunction with the academic courses, several excursions are offered each term. Students live with local families. For the Avignon program a minimum of two college semesters of French prior to departure is required. For the Cologne program the language prerequisite is one college semester of German. Applications for the fall term should normally be submitted in April or early May. Those for the winter and spring terms can be submitted in September. However, it is advisable to apply as early as possible. All NICSA courses are considered UAF courses. No credit transfer is involved. Alaska student loans are fully applicable.

(3) A student exchange agreement with Soong Jun University in Seoul, Korea has just been concluded and a similar agreement with a university in Taiwan is being negotiated. Details will soon be available.

(4) Self-initiated, "customized" study abroad usually requires previous arrangements with the department in which the student majors, to facilitate credit transfer and general advising. In order to be formally admitted to a university in a non-English speaking country, the student must normally demonstrate a working proficiency in the language.

Tanana Valley Community College

Tanana Valley Community College was established in 1974 and has brought to the people of Alaska, of Fairbanks and the surrounding Tanana Valley, a broad range of instructional programs.

TVCC embraces the philosophy of an open door comprehensive community college dedicated to serving the continuing educational needs of all individuals and communities in the Fairbanks North Star Borough. Recognizing the importance of providing opportunities for people to develop to their maximum potential, TVCC provides various educational options, including college transfer programs, vocational programs, continuing education and refresher offerings and special interest, non-credit self-support community service courses.

College of Arts and Sciences

Mary Elizabeth Shutler, *Dean*

The purpose of the College of Arts and Sciences is to educate students to recognize the possibilities and limits of the human intellect. The instructional principle of the college is the advancement of knowledge.

Undergraduate Degrees — Bachelor of arts in applied linguistics, Alaska Native studies, Yupik Eskimo, Inupiaq Eskimo, chemistry, English, geography, history, humanities, interdisciplinary studies, journalism, languages, linguistics, mathematics, music, northern studies, philosophy, physical education, physics, justice, political science, psychology, Russian studies, sociology, speech, and theater. Bachelor of music, bachelor of science in chemistry, computer science, general science, geography, physical education, mathematics and physics. Bachelor of technology in computer science.

Graduate Degrees — Master of arts in English and music, Master of arts in teaching, in chemistry, English, history, mathematics, music, and physics. Master of fine arts in creative writing. Master of science in chemistry, general science, mathematics and physics.

Doctor of philosophy in physics.

Alaska Native Languages Program

Degree: B.A.
Minimum Requirements for Degree: 130 credits

There are nearly 20 different Alaska Native languages: Aleut, Alutiiq (also called Aleut or Sugpiaq), Central Yupik Eskimo, St. Lawrence Island Eskimo, Inupiaq Eskimo, Tsimshian, Haida, Tlingit, Eyak, and 11 Athabaskan languages. These languages are becoming recognized as the priceless heritage they truly are. Since the passage of the Alaska Bilingual Education Law in 1972 there has been a great demand for teachers who can speak and teach these languages in the schools throughout the state where there are Native children. Professional opportunities for those skilled in these languages are many in teaching, research, and cultural, educational, and political development.

Central Yupik Eskimo is spoken by the largest number of people, and Inupiaq by the next largest. In these two languages major and minor curricula are now offered. For work in all other languages, individual or small-group instruction is offered under special topics. Thus there have frequently been instruction, seminars, and workshops also in Tlingit, Haida, St. Lawrence Island Eskimo, Aleut, Kutchin and Koyukon Athabaskan, comparative Eskimo, and comparative Athabaskan.

UAF is, of course, unique in offering this curriculum, which benefits also from the research staff and library of the Alaska Native Language Center.

Faculty

Chairman and Professor: Michael E. Krauss
Assistant Professors: Steven Jacobson, Edna Maclean

Requirements

Yupik Eskimo — B.A. Degree
1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Esk. 101-102 — Elementary Yupik Eskimo	10
Esk. 201-202 — Intermediate Yupik Eskimo	6
Esk. 301 — Advanced Yupik Eskimo	3
Esk. 415 — Additional Topics in Advanced Yupik Eskimo	3
Ling. 101 — Nature of Language or Anth. 204 — Language and Culture	3
Complete two of the following:	
Esk. 415 — Additional Topics in Advanced Yupik Eskimo	3
ANL 387 — Bilingual Methods and Materials	3
Ling. 112 — Structure of Language	3
Anth. 242 — Native Cultures of Alaska	3
Hist. 100 — History of Alaska Natives	3
P.S. 263 — Alaska Native Politics	3
Engl. 349 — Aleut, Eskimo & Indian Literature of Alaska in English Translation	3
ANL 216 — Indian Languages of Alaska	3
A Course in Inupiaq Eskimo or other approved subject	3
Mus. 223 — Native Alaskan Music	3
ANS 320 — Language and Ethnicity	3
A.L. 300 — Applied Phonology	3
A.L. 310 — Applied Morphology and Syntax	3
A.L. 400 — Practicum	3
A.L. 450 — Policy and Planning for Alaska Native Languages	3

Inupiaq Eskimo — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Esk. 111-112 — Elementary Inupiaq Eskimo	10
Esk. 211-212 — Intermediate Inupiaq Eskimo	6
ANL 215 — Eskimo-Aleut Languages	3
Esk. 417 — Advanced Inupiaq Eskimo	3
Ling. 101 — The Nature of Language or Anth. 204 — Language and Culture	3
Complete three of the following:	
Esk. 417 — (Additional) Adv. Inupiaq Eskimo	3
ANL 387 — Bilingual Methods and Materials	3
Ling. 112 — Structure of Language	3
Anth. 242 — Native Cultures of Alaska	3
Hist. 100 — History of Alaska Natives	3
P.S. 263 — Alaska Native Politics	3
Engl. 349 — Aleut, Eskimo and Indian Literature of Alaska in English Translation	3
ANL 216 — Indian Languages of Alaska	3
A course in Yupik Eskimo or other approved subject	3
Mus. 223 — Native Alaskan Music	3
ANS 320 — Language and Ethnicity	3
A.L. 300 — Applied Phonology	3
A.L. 310 — Applied Morphology and Syntax	3
A.L. 400 — Practicum	3
A.L. 450 — Policy and Planning for Alaska Native Languages	3

A minor in Alaska Native languages requires 15 credits in Eskimo or Alaska Native language courses.

Alaska Native Studies Program

Degree: B.A.
Minimum Requirements for Degree: 130 Credits

The Alaska Native studies program seeks to provide the student with (1) a keen awareness of the scope, richness, and variety of Alaskan Native cultural heritages, and (2) a series of critical perspectives on the contemporary Native experience in the plural society of North America. The student's academic program will be interdisciplinary as it is built upon a combination of appropriate courses currently offered in other specialized disciplines and of an integrated set of core courses offered by the Alaska Native studies program.

The Alaska Native studies program has been principally designed to offer a second major or a minor for many bachelor's degree candidates. It seeks students from many fields of specialization who anticipate either direct or indirect future professional involvement in Alaskan Native communities specifically and in multicultural settings generally. Only under special circumstances reviewed by the head of the program will students be advised to consider Native studies as a sole major, and they will be required to have a substantial minor in a specialized discipline.

Faculty

Program Director: Michael J. Gaffney
Associate Professor: David S. Case
Assistant Professors: J. Stephen Crosby, Patricia Kwachka

Requirements

Alaska Native Studies — B.A. Degree
1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Prerequisites	*15 Credits*
ANL 215 — Eskimo-Aleut Languages or ANL 216 — Indian Languages of Alaska	3
ANS 120 — Cultural Differences in Institutional Settings	3
Anth. 242 — Native Cultures of Alaska	3
Hist. 100 — History of Native Alaska	3
P.S. 263 — Alaska Native Politics	3

Core Courses:	*18 Credits*
A. Complete the following required courses (9 credits):	
ANS 310 — The Political Economy of ANCSA	3
ANS 320 — Language and Ethnicity: Applications to Alaska	3
ANS 415 — Comparative Economic Development Processes: Applications for Native Alaska	3

B. Complete 9 credits of the following:

	Credits
ANS 251 — Practicum in Native Cultural Expression	1-3
ANS 301 — Native Cultural Heritage Documentation	3
ANS 375 — Native American Religion and Philosophy	3
ANS 425 — Federal Indian Law and Alaska Natives	3
ANS 430 — Alaska Native Education	3
ANS 475 — Alaska Native Social Change	3
Art 365 — Native Arts of Alaska	3
Engl. 349 — Aleut, Eskimo and Indian Literature In English Translation	3
Mus. 223 — Native Alaskan Music	3
Soc. 408 — American Minority Groups	3

Minor in Alaska Native Studies

A minor requires a minimum of 15 credits in Alaska Native studies. All minor programs must be approved by the head, Alaska Native studies.

Applied Linguistics

Degree: B.A.
Minimum Requirements For Degree: 130 Credits

Applied linguistics extends the insights and theories of general linguistics to social, cultural, historical, and political concerns. Current international activities center on problems of language shift, language planning, bilingualism, translation, the preservation of minority languages, and the more traditional focus, language teaching. In addition, applied linguists play a central role in task forces dealing with the equitable delivery of legal, medical, economic, and educational services. In Alaska there is a strong need for qualified applied linguists. A central issue with which they have been asked to deal is communication in public contexts involving Alaska Native people. In some situations this communication is in English and between Alaska Natives and non-Natives. In other cases this communication is in Alaska Native languages. Thus the need is for both expertise in Alaska Native languages and in communication between Natives and non-Natives.

Faculty

Associate Professor: Russell Currier
Assistant Professor: Pat Kwachka

Requirements

Applied Linguistics — B.A. Degree
1. Complete the general university requirements and the B.A. degree requirements as listed on pages and
2. Complete the following foundation courses:

	Credits
Ling. 101 — Nature of Languages	3
ANS 120 — Cultural Differences in Institutional Settings	3
ANL 215 or 216 — Alaska Native Languages	3

Foundation courses may be used to satisfy general degree requirements where applicable.

2. Major requirements:

Core courses:	
Esk. 101, 102, 201, 202 — Yup'ik Eskimo (16 credits) *or*	
Esk. 111, 112, 211, 212 — Inupiaq Eskimo (16 credits) *or*	
ANL 141, 142, 241, 242 — Alaska Native Lang. (12 credits)	12-16
A.L. 300 — Applied Phonology	3
A.L. 310 — Applied Morphology and Syntax	3
A.L. 400 — Practicum	3
A.L. 450 — Policy and Planning for Alaska Native Languages	3

Complete one option:

Option A — Research, Documentation and Communication:

ANS 301 — Native Cultural Heritage Documentation	3
Engl. 318 — Modern English Grammar	3
Anth. 204 — Language and Culture	3
ANS 320 — Language and Ethnicity: Applications to Alaska	3

Satisfactory completion of a language proficiency test to be administered after the Alaska Native Language sequence is completed.
(Suggested electives for this option: J-B 215 or 216; Engl. 271 or 311; Mus 223 or Engl 349.)

Option B — Bilingual Education:

Ed. 303 — Language Development, or	
Ed. 304 — Literature for Children or	
Ed. 315 — Elementary Methods: Classroom Management	3-6
ANL 387 or 388 — Bilingual Methods and Materials	3
Engl. 462 — Applied English Linguistics	3

Satisfactory completion of a language proficiency test to be administered after the Alaska Native Language sequence is completed.

Requirements for a Minor in Applied Linguistics

A.L. electives	9
Electives approved by program coordinator	6

Applied Statistics

The applied statistics program is designed to strengthen and consolidate the applied statistics teaching and consulting functions. The program is supervised by the chairman of the Department of Mathematical Sciences or his/her designee. An interdisciplinary advisory committee, selected from staff members from the academic colleges and research institutes, makes recommendations concerning the applied statistics course offerings, provides a mechanism for statistical consulting services for other units of the university, and serves as a focal point for applied statistics related activities.

The applied statistics courses are taught by faculty members from various units of the university. As demand warrants, short courses or seminars covering specialized areas of applied statistics will be presented by professionals.

Although the applied statistics program is a non-degree-granting program, a bachelor of science degree or a bachelor of arts degree in mathematics with an emphasis in statistics is offered by the Department of Mathematical Sciences. Several applied statistics courses are included in this degree program.

Faculty

Program Head and Assistant Professor: Dana Thomas
Professors: Samuel Harbo, Philip A. Van Veldhuizen

Art

Degrees: B.A., B.F.A.
Minimum Requirements for Degrees: 130 credits

The program of the Art Department recognizes the responsibility of the fine arts within the humanities. Courses in art further encourage independent, original, and creative thinking.

The bachelor of fine arts is a professionally oriented degree designed to prepare students for careers in art. This degree is also the usual prerequisite for graduate studies in art. Enrollment in the B.F.A. program is recommended only for those students willing to make the considerable commitment of time and energy necessary to strive for professional competence in their major areas.

Faculty

Department Head and Professor: Ronald Senungetuk
Professors: L. Stanley Zielinski, Terence T. Choy
Associate Professors: Glen C. Simpson, Arthur William Brody
Assistant Professors: Barbara Alexander, Kessler Woodward, Catherine Zuelsdorf

Requirements

Art — B.A. Degree
1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

A. Lower Division (27 credits)	*Credits*
Art 105 — Beginning Drawing	3
Art 205 — Intermediate Drawing	3
Art 161, 162 or 163 — Design and Color Theory (2 out of 3 courses)	6
Art 261-262 — History of World Art	6
Art 211 — Beginning Sculpture	3
Art 213 — Beginning Oil Painting	3
One elective chosen from:	3
Art 201 — Beginning Ceramics	
Art 207 — Beginning Printmaking	
Art 209 — Beginning Metalsmithing	

B. Upper Division (12 credits)
Nine (9) credits in upper-division courses in one subject area, selected from one of these major concentrations: 9

Drawing	Sculpture
Painting	Ceramics
Printmaking	Metalsmithing

Upper-division Art History or Humanities 332 or Art 365 3

Minimum Required Credits: 39

Transfer students who are candidates for the B.A. degree or a B.F.A. in Art must complete a minimum of 18 hours of credits in art courses while in residence.

Art — B.F.A. Degree
1. Complete general university requirements and B.A. degree requirements; a non-art minor is not required for this degree.
2. Complete the following program (major) requirements:

A. Lower Division (27 Credits)	*Credits*
Art 105 — Beginning Drawing	3
Art 205 — Intermediate Drawing	3
Art 161, 162 — 2-D Design, Color and Design or Art 163 — 3-D Design (two of the three)	6
Art 261, 262 — History of World Art	6
Art 211 — Beginning Sculpture	3
Art 213 — Beginning Painting	3
One of the following	3
Art 201 — Beginning Ceramics	
or Art 207 — Beginning Printmaking	
or Art 209 — Beginning Metalsmithing	

B. Upper Division (45 Credits)	
*Upper Division Art History	6
Two areas of specialization in Art:	
Major specialization	21
Minor specialization	9
Art Electives	6
Thesis Project	3

Major available for the B.F.A. are painting, drawing, printmaking, sculpture, ceramics, and metalsmithing.

*Humanities 332 or Art 365 may apply toward this requirement.

A minor in Art by non-art majors requires 12 credits of approved Art courses.

Art Program for Teachers
Students who are preparing to teach Art must complete the requirements for an education minor as required by the Department of Education.

Asian Studies

Interdisciplinary Minor Program

A minor in Asian Studies provides instruction in the varieties of Asian languages and cultures through an interdisciplinary approach, and enables students to consolidate various course offerings into a meaningful and cohesive program relevant to several major fields of specialization.

Requirements

Requirements for Asian Studies Minor
Complete 15 semester credits in approved courses in Asian Studies, distributed among at least three departments, and including material on at least two Asian countries.

Asian Studies courses: Hist. 121-122, 330, 331, Geog. 311; Jpn. 101-102, 201-202; Phil. 202.

Chemistry

Degrees: B.A., B.S., M.A., M.A.T., M.S.
Minimum Requirements for Degrees: B.A., B.S. — 130 credits; M.A., M.S. — 30 additional credits; M.A.T. — 36 additional credits

Graduates in chemistry qualify in many fields as teachers of chemistry; supervisors in industry; technical sales personnel; research chemists in federal, state, municipal, academic, or industrial laboratories; in pre-medicine; or as laboratory technicians. The rapid introduction of chemical techniques in all branches of

commerce and the creation of the many synthetic products has caused substantial growth in the profession. In addition to the traditional employment opportunities in chemistry, well-qualified graduates find positions in the fields of environmental science, oceanography, and related interdisciplinary fields.

The curriculum in chemistry offers an opportunity for broad scientific study. All students specializing in chemistry will meet basic requirements in general inorganic, analytical, organic, and physical chemistry, as well as mathematics and physics. These may be supplemented by courses in biology, education, engineering, geophysics, geology, and advanced courses in biology, chemistry, mathematics, and physics according to the interest of the individual student.

The primary purpose of our program is to provide the educational basis for creative scientists who are so vital to the future development of the nation and the state of Alaska. In particular, the Chemistry Department encourages study of chemical problems associated with the Arctic in order to provide qualified staff for all schools and laboratories in Alaska. After the introductory courses, the curriculum is planned first for the student majoring in the broad field of chemistry and second, for the nonmajor who is primarily interested in other aspects of the physical or biological sciences, but who requires competency in the theories and techniques of contemporary chemistry to succeed in his chosen field. Such service courses and programs are an outstanding feature of the department.

The department offers the student well-equipped laboratories housing instrumentation for nuclear magnetic resonance spectrometry, infrared, ultraviolet/visible, laser Raman, and atomic absorption spectrophotometry, mass spectrometry, gas chromatography, and carbon-hydrogen-nitrogen analysis. Additional equipment such as gas chromatograph/mass spectrometer, x-ray diffractometer, electron microscope, and liquid scintillating counters are available in cooperation with other departments and institutes at UAF.

Faculty

Department Head and Professor: L. Claron Hoskins
Professor: Paul R. Reichardt
Associate Professors: Charles Genaux, Donald Lokken, Richard Stolzberg
Assistant Professor: John Keller

The Chemistry Department's four-year B.S. curriculum is accredited by the American Chemical Society.

Requirements

Chemistry — B.A. Degree

1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Chem. 105-106 — General Chemistry	8
or Chem. 211* — Chemical Principles	4
Chem. 212* — Intro. Quantitative Analysis	4
Chem. 321-322 — Organic Chemistry	6
Chem. 324 — Organic Laboratory	3
Chem. 331-332 — Physical Chemistry	6
Chem. 433-434 — Instrumental Methods in Chem	6
Chem. 492 — Seminar (seniors)	2
C.S. 201 — Computer Programming	
or E.S. 201 — Computer Techniques	3
Math. 200-201-202 — Calculus	12
Phys. 103-104 or 211-212 — General Physics	8

Chemistry — B.S. Degree

1. Complete the general university requirements and B.S. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Complete the courses required for a B.A. degree with a major in Chemistry as listed above. Complete the following additional Chemistry courses:

	Credits
Chem. 402 — Inorganic Chemistry	3
**Chem. 421 — Adv. Organic Chemistry	
or **Chem. 431 — Adv. Physical Chemistry	
or **Chem. 451 — General Biochemistry	3-4
Chem. 492 — Seminar (Juniors)	0
**Chem. 498 — Research	4

Suggested Curriculum for a B.S. Degree

First Year

Fall Semester	*15 to 18 credits*
Chem. 105 — General Chemistry	
or Chem. 211 — Chemical Principles	4
Phys. 103 or 211 — General Physics	4
Math. 200 — Calculus	4
Engl. 111 — Methods of Written Comm.	3
***Social Sci./Humanities elective	0-3

Spring Semester	*15 to 18 credits*
Chem. 106 — General Chemistry	
or Chem. 212 — Intro. Quantitative Analysis	4
Phys. 104 or 212 — General Physics	4
Math. 201 — Calculus	4
Sp.C. 111 — Fund. of Oral Communication	3
***Social Sci./Humanities elective	0-3

Second Year

Fall Semester	*16 or 17 credits*
E.S. 201 — Computer Techniques	3
Chem. 321 — Organic Chemistry	3
Math. 202 — Calculus	4
Engl. 211 — Intermediate Expos. and Modes of Lit.	
or Engl. 213 — Intermediate Exposition	3
***Social Sci./Humanities elective	3-4

Spring Semester	*16 or 17 credits*
Chem. 212 — Intro. Quantitative Analysis	4
Chem. 322 — Organic Chemistry	3
Chem. 324 — Organic Laboratory	3
E.S. 201 — Computer Techniques	3
***Social Sci./Humanities electives	6-7

Third Year

Fall Semester	*16 or 17 credits*
Chem. 331 — Physical Chemistry	3
Chem. 433 — Instrumental Methods in Chemistry	3
Chem. 492 — Seminar	0
***Electives	10-11

Spring Semester	*15 or 16 credits*
Chem. 332 — Physical Chemistry	3
Chem. 434 — Instrumental Methods in Chemistry	3
Chem. 492 — Seminar	0
***Electives	10-11

Fourth Year

Fall Semester	*16 or 18 credits*
**Chem. 421 — Adv. Organic Chemistry	
or **Chem. 431 — Adv. Physical Chemistry	
or **Chem. 451 — General Biochemistry	3-4
Chem. 492 — Seminar	1
**Chem. 498 — Research	2
***Electives	7-10

Spring Semester	*16 or 18 credits*
Chem. 402 — Inorganic Chemistry	3
Chem. 492 — Seminar	1
**Chem. 498 — Research	2
***Electives	10-12

*Completion of the Chem. 211-212 sequence with grades of "C" or better results in 4 credits of advanced placement credit.

**Advanced courses in chemistry, mathematics, geology, physics, or biological sciences may be substituted with the approval of the Department of Chemistry.

***A minimum of 130 credits must be earned. This curriculum meets the suggested minimum standards of the American Chemical Society, but additional advanced courses in chemistry may be elected with the approval of the Department of Chemistry. Graduates are certified by the American Chemical Society on completion of appropriate courses. A reading knowledge of a foreign language, although not required for professional undergraduate education in chemistry, is strongly recommended, particularly for students planning advanced study in science. German is especially useful.

Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement for the B.S. degree with a major in Chemistry.

Requirements for a Minor in Chemistry

A minor in chemistry requires 12 credits above the foundation courses (Chem. 105-106 or Chem. 211) approved by the head of the Chemistry Department.

Chemistry — M.A. or M.S. Degree

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits of approved courses.

A graduate student seeking a master's degree with a major in chemistry must develop a program in one of the general divisions of chemistry: analytical, biochemistry, inorganic, organic or physical. A student entering without preparation to take these courses may require additional time to earn his degree.

M.A.T. Degree

Persons interested in this degree program should see the head of the department.

Computer Science

Degrees: B.S., B.T.
Minimum Requirements: 130 credits

The Computer Science program is administered by the Department of Mathematical Sciences within the College of Arts and Sciences. Computer Science is the study of information handling and its application to the problems of the world. Computing is widely used in support of activities in science, engineering, business, law, medicine, education, and the social sciences. The potential for employment is one of the highest in the entire range of subjects spanned by the College of Arts and Sciences.

The curriculum for the B.S. in Computer Science consists of a core of courses which introduces the student to the fundamentals of computer programming, hardware, theory, and applications. Mathematics and Engineering play critical roles in the core. The student selects one of several elective packages leading to career opportunities and opportunities for further study. Throughout the curriculum the emphasis is on problem solving and applications of general principles to real-world problems. A solid background in fundamentals enables the graduate not only to understand today's computers and their uses, but also to understand and participate in future developments.

The B.T. degree program provides for a variety of student backgrounds. It is designed as a 2-year upper-division program to follow an appropriate associate degree; however, it may be used as part of a 4-year curriculum or as a program for a second bachelor degree for students with bachelor degrees in related fields.

Faculty

Program Head and Professor: Barbara M. Lando
Professors: Ronald W. Gatterdam, Thomas J. Head
Visiting Professor: William Viavant
Associate Professors: Patricia A. Andresen, Clifton A. Lando
Assistant Professor: Robert A. Sullivan

Sample Elective Packages:
Software: (Math 307, 314) C.S. 401 and two courses from the following: C.S. 381, 405, 411, 442, 621, 631.
Hardware: (math 202, 314) C.S. 448, E.E. 442 and one of the following: C.S. 442, 621, E.E. 443.
Theory: (Math 307, 314) Math 308, C.S. 451, C.S. 651.
Math. (Applied): (Math 202, 314) Math 302, 421, and 310 or 422.
Math. (Modeling): (Math 202, A.S. 301) Math 371, 460 and one of the following: Math. 408, A.S. 302, 402, C.S./Math 661.
Business: (Math 203, A.S. 301) B.A. 201, 310, Acct. 316.

Requirements

Computer Science — B.S. Degree

1. Complete the general university requirements and B.S. degree requirements, pages and .
2. Complete the following mathematics requirement:

	Credits
Math. 200 — Calculus	4
Math. 201 — Calculus	4
Math. 210 — Calculus and the Computer	1
Math. 211 — Linear Algebra and the Computer	1
Two of the following:	
Math. 202 — Calculus (4 credits)	
Math. 203 — Finite Math (4 credits)	
Math. 307 — Discrete Mathematical Structures (3 credits)	
Math. 314 — Linear Algebra (3 credits)	
A.S. 301 — Elementary Probability and Statistics (3 credits)	6-8

3. Complete the following major requirements:

C.S. 201 — Computer Programming I	3
C.S. 202 — Computer Programming II	3
C.S. 301 — Computer Organization and Assembly Language	3
C.S. 311 — Data Structures and Algorithms	3
C.S. 321 — File Structure and Operation Systems	3
C.S. 331 — Programming Languages	3
E.E. 341 — Computer Organization I	4
E.E. 342 — Computer Organization II	4
Approved Electives	9-11
Elective selected from the following:	
Any C.S. course (except C.S. 101) *or*	
Math. 210 *and* Math. 211 — Calculus/Linear Algebra & Computer *or*	
E.E. 341 — Computer Organization I *or*	
B.A. 201 — COBOL *or*	
B.A. 310 — Management Information Systems *or*	
Acct. 316 — Accounting Information Systems *or*	
Other elective approved by advisor	2-3

Computer Science — B.T. Degree

1. Complete the general university requirements and B.T. degree requirements, pages 23 and 25. The associate degree must be completed in science, computer science, computer information systems, or electronic engineering technology; and must include these courses or equivalent courses:

C.S. 201 — Computer Programming I (FORTRAN)	3
B.A. 201 — COBOL	3
Math. 161-162 *or* 271-272 *or* 200-201	7-9
A year's sequence in Physics	8

If not included, these courses can be made up as a technical deficiency.

2. Complete the following major complex requirement beyond the associate degree major:

(a) Core requirements:	Credits
C.S. 202 — Computer Programming II	3
C.S. 311 — Data Structures and Algorithms	3
C.S. 321 — File Structure and Operating Systems	3
C.S. 401 — Software Engineering	2-6
E.E. 442-443 — Digital System Analysis and Design I and II	8
Math. 203 — Finite Math	4

(b) Specialty requirements: 9 credits of departmentally approved courses. The following list is already approved. No course or equivalent used in the student's associate program may be included.

E.S. 301 — Engineering Analysis	3
E.S. 307 — Elements of Electrical Engineering	3
E.S. 308 — Instrumentation and Measurement	3
E.E. 333 — Physical Electronics	3

Office of Admissions and Records
University of Alaska Fairbanks
August 15, 1983

CATALOG CORRECTIONS

Information about the requirements for the B.S. in Computer Science and the minor in Computer Science appearing on pages 60 & 61 in the 1983-84 UAF catalog has been garbled. The correct requirements are as follows:

Computer Science - B.S. Degree

1. Complete the general university requirements and B.S. degree requirements.
2. Complete the following mathematics requirement: Credits

Math 200--Calculus.....4
Math 201--Calculus.....4
Math 210--Calculus and the Computer.....1
Math 211--Linear Algebra and the Computer.....1
Two of the following:
Math 202--Calculus (4 credits)
Math 203--Finite Math (4 credits)
Math 307--Discrete Mathematical Structures (3 credits)
Math 314--Linear Algebra (3 credits)
A.S. 301--Elementary Probability and Statistics (3 credits).....6-8

3. Complete the following major requirements:

C.S. 201--Computer Programming I.....3
C.S. 202--Computer Programming II.....3
C.S. 301--Computer Organization and Assembly Language.....3
C.S. 311--Data Structures and Algorithms.....3
C.S. 321--File Structure and Operation Systems.....3
C.S. 331--Programming Languages.....3
E.E. 341--Computer Organization I.....4
E.E. 342--Computer Organization II.....4
Approved Elective Package.....9-11
Sample Elective Packages:
Software: (Math 307, 314) C.S. 401 and two courses from the following: C.S. 381, 405, 411, 442, 621, 631
Hardware: (Math 202, 314) C.S. 448, E.E. 442 and one of the following: C.S. 442, 621, E.E. 443.
Theory: (Math 307, 314) Math 308, C.S. 451, C.S. 651.
Math. (Applied): (Math 202, 314) Math 302, 421, and 310 or 422.
Math. (Modeling): (Math 202, A.S. 301) Math 371, 460 and one of the following: Math 408, A.S. 302, 402, C.S./Math 694D.
Business: (Math 203, A.S. 301) B.A. 201, 310, Acct. 316.

Minor in Computer Science

C.S. 201--Computer Programming I.....3
C.S. 202--Computer Programming II.....3
C.S. 301--Computer Organization and Assembly Language.....3
C.S. 311--Data Structures and Algorithms or
C.S. 321--File Structure and Operating Systems.....3
Elective selected from the following:
Any C.S. course (except C.S. 101) or
Math 210 and Math 211 - Calculus/Linear Algebra & Computer or
E.E. 341--Computer Organization I or
B.A. 201--COBOL or
B.A. 310--Management Information Systems or
Acct 316--Accounting Information Systems or
Other elective approved by advisor.....2-3

E.E. 334 — Electronic Circuit Design 4
E.E. 353-354 — Circuit Theory I and II 6
A.S. 301 — Elementary Probability and Statistics 3
A.S. 302 — Analysis of Experimental Design and Regression 3
A.S. 402 — Scientific Sampling 3
Geos. 430 — Statistics and Data Analysis in Geology 3
Acct. 361-362 — Intermediate Accounting 6
B.A. 220 — Basic Programming Languages 3
B.A. 310 — Management Information Systems 3
Math. 302 — Differential Equations 3
Math. 307 — Discrete Mathematical Structures 3
Math. 310 — Numerical Analysis 3
Math. 314 — Linear Algebra 3
C.S. 281 — Computer Graphics 3
Any 300 or 400 level C.S. course ..... 3+

Minor in Computer Science
C.S. 201 — Computer Programming I 3
C.S. 202 — Computer Programming II 3
C.S. 301 — Computer Organization and Assembly Language 3
C.S. 311 — Data Structures and Algorithms *or*
C.S. 321 — File Structure and Operating Systems 3

Cross-Cultural Communications

Recognizing that the transition to university communications patterns often presents challenges which vary in type as well as degree, depending on a student's cultural background, CCC offers several courses designed to capitalize on the similarities of experience brought to the university by Alaska Native and rural students. It aims to enable such students to make the transition more quickly than might otherwise be the case.

Faculty

Chairman: Pat Kwachka
Associate Professor: Russell Currier
Assistant Professor: Catherine Stone
Instructors: Betsy Hart, Linda Nichols

English

Degrees: B.A., M.A., M.F.A., M.A.T.
Minimum Requirements for Degrees: B.A. — 130 credits; M.A. — 30 additional credits; M.F.A. — 45 additional credits; M.A.T. — 36 additional credits

The work of the Department of English includes the two functions traditionally associated with the discipline — teaching basic and advanced courses in written composition and offering survey and advanced courses in English, American, and world literature both to English majors and minors and to students in other fields who may choose the courses as electives. In addition, the department offers courses in English linguistics and in Alaskan literature.

The department also offers several programs of graduate study, including work in research and scholarship, original writing, and preparation for teaching English.

Faculty

Department Head and Associate Professor: Frank Buske
Professors: John W. Bernet, I. June Duncan
Associate Professors: Mary Baron, Alice Harris, John Morgan, David Stark, Russell Stratton, Russell Tabbert
Assistant Professors: Joseph A. Dupras, LeRoy, Michael Schuldiner

Requirements

English — B.A. Degree
A. Emphasis: Literature
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program major requirements: 36 credits in English besides Engl. 111 and Engl. 211 or 213, including:

Credits

a. Engl. 301 — Continental Literature in Translation: From the Ancient World through the Renaissance 3
Engl. 310 — Literary Criticism 3
b. One course chosen from each of the following sequences:

American Literature:
Engl. 306 — Survey of American Literature: From the Colonial Period to the Civil War
or Engl. 307 — Survey of American Literature: From the Civil War to the Present 3

British Literature:
Engl. 308 — Survey of British Literature: Beowulf to the Romantic Period
or Engl. 309 — Survey of British Literature: Romantic Period to the Present 3

Periods of British and American Literature:
Engl. 403 — American Writers of the 19th Century: Romantic Period
or Engl. 404 — American Writers of the 19th Century: Rise of Realism
or Engl. 405 — British Writers of the 19th Century: Romantic Period
or Engl. 406 — British Writers of the 19th Century: Victorian Period
or Engl. 407 — English Writers of the 18th Century: Restoration and New-Classical Period
or Engl. 408 — American Writers of the Colonial and and Federal Periods 3

c. Engl. 422 or 425 — Shakespeare 3

d. One course from the following:
Engl. 421 — Chaucer *or* Engl. 426 — Milton 3

e. One course from the following:
Engl. 318 — Modern English Grammar, Engl. 462 — Applied English Linguistics
or Engl. 472 — History of the English Language 3

f. Four courses chosen from 300-400 levels in English with at least two courses on 400 level 12

B. Emphasis: Forms and Techniques of Writing
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements: 36 credits in English besides Engl. 111 and Engl. 211 or 213, including:

Credits

a, b, and c as listed in the requirements for a major with emphasis on literature 18

d. Two courses from the following:
Engl. 445 — 20th Century Drama: From Checkhov to Ionesco
or Engl. 446 — 20th Century British and American Poetry
or Engl. 452 — The British Novel to 1900
or Engl. 448 — 20th Century American Literature, Exclusive of Poetry
or Engl. 447 — 20th Century British Literature, Exclusive of Poetry
or Engl. 449 — American Fiction to 1900 6

e. Two courses from the following:
Eng. 481 — Craft of Poetry
or Engl. 482 — Craft of Fiction
or Engl. 483 — Craft of Drama
or Engl. 484 — Craft of Non-Fiction Prose 6

Two courses chosen from 300-400 level English Department Writing Courses 6

Requirements for a minor in English:

Complete 21 credits in English besides Engl. 111 and Engl. 211 or 213, including:

a, b, and c as listed in the requirements for a major with emphasis on literature 18
d. One 400-level English course 3

English — M.A. Degree

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 approved credits on 400-600 levels, distributed as follows:

Credits

Engl. 601 — Bibliography, Meth., and Criticism 3
Six courses in English chosen in consultation with and approved by the graduate committee 18
3. Pass a qualifying examination before advancement to candidacy and in order to remain in good standing. The examination will normally be taken during the second semester of graduate study. A student who fails may be permitted to take the qualifying examination again, depending on the nature of the failure.
Engl. 692 — Seminar, or any other 600 level English course 3
Engl. 699 — Thesis 6
4. The need for a language requirement shall be determined by the student and his/her advisory committee.

English — M.A.T. Degree

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 36 approved credits including at least 15 in English taken at the University of Alaska-Fairbanks.

This degree is designed to serve the baccalaureate graduate who has qualified or who can qualify for the Alaska secondary school certificate; who intends to make secondary school classroom teaching a career; and who wishes to take additional work in English as well as in education. A student's graduate committee will assist in planning a program.
3. Pass a qualifying examination before advancement to candidacy and in order to remain in good standing. The examination will normally be taken during the second semester of graduate study. A student who fails may be permitted to take the qualifying examination again, depending on the nature of the failure.

English — M.F.A. Degree

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 45 approved credits on 400-600 levels, distributed as follows:

Credits

a. Engl. 601 — Bibliography, Meth., and Criticism 3

b. Five courses chosen from the following group, including two "craft" courses and two other courses, and representing poetry, fiction, & drama at least once each* 15
Engl. 445 — 20th Century Drama: From Checkhov to Ionesco
Engl. 446 — 20th Century British and American Poetry
Engl. 447 — 20th Century British Literature, Exclusive of Poetry
Engl. 448 — 20th Century American Literature, Exclusive of Poetry
Engl. 449 — American Fiction to 1900
Engl. 452 — The British Novel to 1900
Engl. 481 — Craft of Poetry
Engl. 482 — Craft of Fiction
Engl. 483 — Craft of Drama
Engl. 484 — Craft of Non-Fiction Prose

c. Engl. 671 — Writers' Workshop** 3

d. Engl. 692 — Seminar or any other 600 level English Course 3

e. Three elective English courses 9

f. Two elective interdisciplinary courses (to be approved by the graduate committee, with each course in a separate area unless the committee approves both in the same area) 6
Engl. 699 — Thesis 6

3. Pass a qualifying examination before advancement to candidacy and in order to remain in good standing. The examination will normally be taken during the second semester of graduate study. A student who fails, may be permitted to take the qualifying examination again, depending on the nature of the failure.

4. The need for a language requirement shall be determined by the student and his/her advisory committee.

*If the student has met any or all of this requirement as an undergraduate, English or interdisciplinary electives may be substituted, subject to approval by the graduate committee.

**The student may take Engl. 671 a second time for credit, as one of the three elective English courses.

General Science

Degrees: B.S., M.S.

Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits

The major in general science has been designed, as its name indicates, to provide an opportunity to become familiar with a considerable number of natural sciences and thus provide a firm background for specialization in any one of them as well as in certain technical professions. The fields lying on the borders between the older sciences provide excellent opportunity for research. An acquaintance with the fundamentals of all the natural sciences is of value in teaching science in high school and college and also in preparing for specialization in certain of the social disciplines.

Requirements

General Science — B.S. Degree

1. Complete the general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

First Year

Fall Semester — *17 credits*

Engl. 111 — Methods of Written Comm. 3
Math. 107-108 — Elementary Functions and Trigonometry 6
Chem. 105 — General Chemistry
or Phys. 103 — College Physics 4
Biol. 105 — Fundamentals of Biology 4

Spring Semester — *15 credits*

Sp.C. 111 — Fund. of Oral Communication 3
Math. 200 — Calculus 4
Chem. 106 — General Chemistry
or Phys. 104 — College Physics 4
Biol. 106 — Fundamentals of Biology 4

Second Year

Fall Semester — *17 credits*

Phys. 103 — College Physics
or Chem. 105 — General Chemistry 4
Econ. 201 — Principles of Economics I 3
Geos. 101 — 101L — General Geology 4
Psy. 101 — Intro. to Psychology 3
Department elective 3

Spring Semester — *16 credits*

Phys. 104 — College Physics
or Chem. 106 — General Chemistry 4
Geos. 112 — 112L — Historical Geology 4
Soc. 101 — Intro. to Sociology
or Anth. 101 — Introduction to Anthropology 3
Electives 5

Third and Fourth Years

By the beginning of his/her junior year, each student in general science must decide upon his major field and, with the assistance of the person in charge of administering the curriculum in general science, make out a program for his third and fourth years of study.

Directions for making out the program:

1. Include the following courses: *Credits*

Engl. 211 — Intermed. Exposition with Modes of Literature or Engl. 213 — Intermed. Exposition 3

Social Science and/or Humanities electives (3 credits must be Humanities) 6

2. A major may be elected in anthropology, biological sciences, chemistry, geosciences, mathematics, or physics. Courses to be used to meet major requirements must be approved in writing not later than the beginning of the junior year and a copy of the approval must be filed with the Office of Admissions and Records. Although the minimum number of credits required for a general science major is 20, many of the majors require specific courses which total more than 20 credits. Therefore, a general science student should contact the head of the major department as early as possible to determine major requirements.
3. The electives must include either two minors of at least 12 credits each above the foundation courses included in the General Science curriculum, or a second major. Minors may be selected in any of the major departments listed or in the fields of economics, education (minimum 24 credits), English, French, German, Russian, history, or political science.
4. All prerequisites of courses elected must be met.
5. One year of German or Russian is recommended.
6. Courses selected to complete the requirements in the social sciences must be chosen from the following: anthropology except archeology; sociology; economics; history; and political science.
7. Physics 211-212 may alternate for Physics 103-104 and Chem. 211 may alternate for Chem. 105-106.
8. A total of 130 credits is required.

General Science — M.S. Degree

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits of approved courses.

The Departments of Mathematics, Physics, Chemistry, Biological Sciences, and Geology offer work toward the master of science degree with a major in general science. This degree may be described as a "breadth" rather than a "depth" degree, and a candidate is ordinarily pursuing a course of study in which one of these departments is cooperating with at least one other department within the university. A prospective candidate must meet the general requirements for admission and for the awarding of the degree. At least 21 credits must be earned in science and mathematics. At least 12 credits must be earned in the department giving the degree. A thesis (maximum of three credits) or project (no credit) must be completed in the major department. It is not intended that the individual courses merely satisfy the credit requirements; each course should contribute to the specific aim of the candidate, and the thesis or project should reflect this aim.

Geography

Degrees: B.A., B.S.

Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits

The department offers undergraduate courses and degrees in geography and in geography and regional development. Geography provides an organized picture of the earth as a whole and of its interrelated regions and activities. It deals both with the natural resources of the earth and with man's use of them. Its methodology includes the observation, measurement, description, and analysis of places or areas — their likenesses, differences, interdependence and significance. Geography serves as a bridge between the physical sciences and the social sciences. At UAF, geography is offered as: (a) part of a broad cultural background in a liberal arts curriculum; (b) as part of a comprehensive program in biological and earth sciences; (c) as background for studies in economics, history, political science, and other social sciences; (d) as preparation for teaching geography, earth science, or social science in elementary or secondary schools; (e) as technical training for professional geographic work in government, business, or industry; (f) as preparation for further graduate study in geography, regional planning, and related disciplines. Students majoring in geography may elect such advanced work in this and other departments as will provide a concentration either in physical science or in social science.

Faculty

Department Head and Professor: Donald F. Lynch
Associate Professor: Roger W. Pearson

Requirements

Geography — B.A. Degree

1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

A. Complete 24 credits in geography, including the following: Geog. 101 or 103; 205; 202 or 302; 339 or 401; 305 or 311; 306 or327; 492; geography elective.

B. Complete 20 credits of the following or approved alternative courses with groupings to emphasize cultural, economic, physical, or regional geography. (Can also be used to meet basic degree requirements and to apply toward minor requirements.):

Cultural Geography
- Anthropology 101, 205, 206, 242, 321, 428
- Sociology 251, 307, 309, 363, 406

Economic Geography
- Economics 201, 235, 435, 437, 463

Physical Geography
- Geosciences 101, 112, 261, 304, 407, 408, 422
- Biology 271
- Agriculture and Land Resources 101, 350, 380, 430

Regional Geography
- History 261, 315, 316, 331, 341, 344, 350, 450
- Political Science 201, 315, 321, 322, 415, 435, 436, 480

C. Approved electives to complete 130 credits.

Geography — B.S. Degree

1. Complete general university requirements and B.S. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

A. Complete 12 credits in approved mathematics courses.
B. Complete two minors.
C. Complete the requirements A, B, and C as stated above for the B.A. degree with emphasis in either economic or physical geography.

Geography and Regional Development — B.A. Degree

1. Complete the general university requirements and B.A. degree requirements listed on pages 23 and 24.
2. Complete the following program (major) requirements:

A. Complete 36 credits in the following core courses:
- Geography 103, 205, 301, 404, 492
- Economics 235 or 324, 335
- Biology 271
- Agriculture and Land Resources 101
- Political Science 211, 301

B. Complete 6 credits from each of the following five (5) groups (30 credits):
1. Geography 202, 302, 311, 327
2. History 341, 440, 450
3. Sociology 201, 307, 309
4. Geosciences 101, 112, 304, 408
5. Agriculture and Land Resources 380, 460
   Wildlife and Fisheries 333

C. Approved electives to complete 130 credits

A minor in geography requires 15 credits in geography including Geography 101 or 103 and 205.

History

Degrees: B.A., M.A.T.
Minimum Requirements for Degrees: B.A. — 130 credits; M.A.T. — 36 additional credits

The History Department seeks to make the student aware of the cultural heritage of mankind, the great problems that man has faced throughout history and how he has sought to solve them.

The department also trains the student in applying the historical method which offers analysis based on the dimension of time. Discussion, focused on concrete, specific events, persons and judgments explains why things are as they are. Students will learn effective historical research and writing.

Through the study of history, students may prepare for careers in public service agencies; as members of management teams, particularly in the area of policy analysis; for careers in teaching, or for advanced work in history and other social sciences.

Faculty

Department Head and Associate Professor: Peter Cornwall
Professor: Clause Naske
Associate Professor: John Whitehead
Assistant Professor: Carol Gold

Requirements

History — B.A. Degree
1. Complete general university and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Complete any four of the following:	*Credits*
Hist. 101-102 — Western Civilization	6
Hist. 121-122 — East Asian Civilization	6
Hist. 131-132 — History of the U.S.	6
Complete 21 upper-division credits in history, including:	
Hist. 475-476 — Historiography and Intro. to Historical Method	6

History — M.A.T. Degree
Refer to general requirements for M.A.T. degree on page 94. Persons interested in this degree program should contact the head of the department.

A minor in history requires the completion of 18 credits in history, six of which must be at the 300 level or above.

Humanities

Degree: B.A.
Minimum Requirements for Degree: 130 credits

One main objective of the humanities program is to enable the student to go beyond specialization and achieve integration of knowledge. Others are to deepen an appreciation of all the arts, to develop critical thinking, and to heighten an awareness of self and role in society.

The humanities program is set up in such a way as to offer a solid second major for many bachelor of arts and bachelor of science degree candidates. It aims at students from virtually all fields of specialization.

Requirements

Humanities — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete two years at the college level in a non-English language.
3. Complete the following program (major) requirements:

Prerequisites:	*12 credits*
Hist. 101-102 — Western Civilization	6
Ling. 101 — The Nature of Language or Ling. 216 — Languages of the World	3
Phil. 201 — Introduction of Philosophy or Phil 202 — Introduction to Eastern Philosophy	3
Core Courses:	*24 credits*
Hum. 201 — Unity in the Arts	3
Hum. 202 — Unity in the Sciences	3
Hum. 329 — The Modern Media	3
Hum. 332 — Varieties of Visual Expression	3
Hum. 342 — Synthesis in Musical Expression	3
Hum. 411 — Dimensions of Literature	3
Phil. 481 — Philosophy of Science	3
Hum. 492 — Senior Seminar	3
Electives:	*21 credits*

Courses chosen from the three major areas: arts, natural sciences, social sciences; three courses to be taken in one of these areas, and two in each of the remaining ones, totaling 21 credits. A list of recommended courses, drawn up and periodically updated by the Humanities Standing Committee after consultation with all departments in all colleges that wish to cooperate, will assist the student in making the choice of electives.

Minor in Humanities

Prerequisites:	*6 credits*
Hist. 101-102 — Western Civilization	6
Core Courses:	*18 credits*
Hum. 201 — Unity in the Arts	3
Hum. 202 — Unity in the Sciences	3
Upper-division Humanities electives	12

Interdisciplinary Studies

Degrees: B.A., B.S.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits

The exceptional student with well-defined goals which do not fit into the established bachelor's program of the university should have an opportunity to achieve baccalaureate recognition for carrying out an approved interdisciplinary program which approximates the requirements for a baccalaureate degree in an established discipline. For this purpose the bachelor of arts or bachelor of science degree in interdisciplinary studies is offered.

Upon completion of 15 credits at UAF and at least 60 credits prior to graduation, a student may submit to the chancellor, or his designated representative, an interdisciplinary curriculum leading to a B.A. or B.S. degree in interdisciplinary studies. The proposed curriculum must differ significantly from established degree programs at UAF and will require evidence that the

necessary facilities and faculty are available to ensure an approximation of a normal bachelor's degree. All general requirements for the B.A. or B.S. degree must be met.

The chancellor will appoint to review the proposal a committee of at least three faculty members familiar with the interdisciplinary subject. If the curriculum is approved by the chancellor, he will, in consultation with the student, appoint an advisory committee of at least three faculty members to assist the student in planning and carrying out his program. The degree title will be chosen by the advisory committee in concert with the student and with the approval of the chancellor. Changes within the approved curriculum would be made only with the approval of this advisory committee.

Journalism and Broadcasting

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The curriculum in journalism and broadcasting is designed to prepare students for a challenging profession which calls for a high degree of proficiency in communicating with words and pictures for the print and broadcast media, while being versatile enough to provide a broad liberal arts education.

Students in the department gain valuable practical experience by working on the Sun-Star, the campus newspaper, on Alaska Today magazine, at KUAC-TV and KUAC-FM, both situated on campus, and through internships at other media.

The department also provides excellent facilities for learning, including a modern photography lab, typography lab, audio production lab, and video production equipment.

Faculty

Department Head and Associate Professor: George M. Winford
Associate Professor: Dean M. Gottehrer
Assistant Professors: Patrick J. Daley, Douglas L. Dill, David W. McCarty, Gerald E. Weaver

Requirements

Journalism — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

A. Complete the following courses in journalism:

	15 Credits
J-B 101 — Introduction to Mass Communications or J-B 102 — Broadcasting and Society	3
J-B 301 — Basic Newsgathering and Processing	4
J-B 320 — Journalism in Perspective	3
J-B 400 — Media Practicum	2
J-B 413 — Mass Media Law and Regulations	3

B. Complete one of the following sequences:

News-Editorial *18 Credits*
J-B 444 — Advanced Newsgathering and Processing 4

One of the following:
J-B 204 — Basic Photojournalism 3
J-B 215 — Audio Production 3
J-B 316 — Television Production 3

Four of the following:
J-B 204 — Basic Photojournalism 3
J-B 303 — Intermediate Photography 3
J-B 311 — Magazine Article Writing 3
J-B 323 — Magazine Editing 3
J-B 324 — Typography and Publication Design 3
*J-B 326 — Principles of Advertising 3
J-B 402 — Advanced Photography 3
J-B 411 — Advanced Magazine Article Writing 3
J-B 420 — Book Writing 3
J-B 424 — Magazine Production 3
J-B 433 — Public Relations 3
J-B 492 — Seminar 2 or 3

****Broadcast** *18 Credits*
J-B 215 — Audio Production 3
J-B 316 — Television Production 3

Four of the following:
J-B 204 — Basic Photojournalism 3
J-B 317 — Broadcast Journalism 3
*J-B 326 — Principles of Advertising 3
J-B 372 — Instructional Television 3
J-B 407 — Programming and Production 3
J-B 415 — Videography 3
J-B 416 — Advanced Broadcast Production 3
J-B 433 — Public Relations 3
J-B 492 — Seminar 2 or 3

C. Complete at least 3 credits in each of the following areas:
Economics Sociology
Political Science History
Psychology

D. Although not required, it is strongly recommended that every journalism student study another language, both to help gain a better perspective of English and to better comprehend the changing world.

E. To assure the journalist of a broad liberal arts education, no more than 33 hours in journalism and broadcasting courses may be included in the 130 hours required for the B.A. degree.

*Cross-listed with B.A. 326, Principles of Advertising.
**Note: It should be understood that this broadcast option is primarily a news and production curriculum and is not intended as a dramatic or performing arts option.

Requirements For A Minor In:
Journalism and Broadcasting

Complete at least 16 credits of approved journalism and/or broadcasting courses, including the following:

	Credits
J-B 101 — Introduction to Mass Communications or J-B 102 — Broadcasting and Society	3
J-B 301 — Basic Newsgathering and Processing	4

Justice

Degree: B.A.
Minimum Requirements for Degrees: B.A. — 130 credits

It has been said that the quality of a nation's civilization can be largely measured by the methods it uses to enforce its criminal law.

We in the United States deal with our criminals through a complex maze of organizations commonly referred to as the criminal justice system. This system is composed of police, courts, corrections, and a multitude of supportive professions which are more or less actively engaged in dealing with criminals within the guidelines of our federal and state constitutions.

Only through an active educational effort by criminal justice personnel and students planning to enter the profession can we

hope to attain the high degree of professionalization so necessary to create and maintain a criminal justice system which will mirror our otherwise advanced civilization.

Faculty

Director and Assistant Professor: Kendall Stockholm
Associate Professors: Gary Copus, Andrea Helms
Instructor: Carl Shepro

Requirements

Justice — B.A. Degree
1. Complete the general university requirements and general requirements for the B.A. degree, pages 23 and 24.
Electives chosen to fulfill the general requirements for the B.A. degree must be approved in advance by the director of the justice program.
2. Complete the following program (major) requirements:

	Credits
Justice Core Course Requirements	21
Just. 110 — Introduction to Justice	3
Just. 221 — Justice Organization and Management	3
Just. 250 — Development of Law	3
Just. 251 — Criminology	3
Just. 330 — Justice and Society	3
Just. 451 — Research, Planning and Policy Analysis	3
Just. 460 — Justice Processes	3

Justice Emphasis Area Requirements:
15 credits in justice courses of which at least 12 credits must be upper division. Possible special emphasis areas might include:

Justice Administration	Security Administration
Corrections	General Justice
Legal Studies	

Requirements for a Minor in Police Administration
1. Complete 12 credits in justice including:

	Credits
Just. 110 — Intro. to Criminal Justice	3
Just. 251 — Criminology	3
Just. 352 — Criminal Law	3
Just. 354 — Procedural Law	3

2. Complete 9 credits of approved electives in justice.

Library Science

In this age of dramatic increases in recorded knowledge, it is crucial that students make effective use of information for their coursework in all fields and for their lifelong learning needs. The expanding library science program addresses these needs by teaching the principles of information organization used in libraries. In addition these courses present strategies for accessing information, study and analysis of specific resources for scholarly research and communication, and an examination of developing information philosophies and technologies. As demand warrants, special topics courses and individual studies also are offered.

Faculty

Program Head and Assistant Professor: Rheba A. Dupras
Professor: Paul McCarthy
Associate Professor: David A. Hales, Thomas J. Hassler, Sharon M. West, Marvin Falk
Assistant Professor: Edmund S. Cridge, Pauline Gunter, Tamara P.K. Lincoln, M. Diane Raines, Dennis J. Stephens, C. Eugene West, Bill Schneider
Instructor: Brenda S. Artman

Linguistics and Foreign Languages

Degree: B.A.
Minimum Requirements for Degree: B.A. — 130 credits

In a shrinking world Americans increasingly need to communicate directly with other peoples in order to achieve mutual understanding. Whether it be Japanese or English, the language of a people embodies its unique culture and its way of thinking and feeling. Therefore, to know only one language is to think in only one way.

Linguistics is the science of language. The study of linguistics and of foreign languages and literatures liberates the student from the confines of his own culture and makes his own culture more meaningful to him.

Faculty

Department Head and Professor: Wolf Hollerbach
Professor: John Koo
Assistant Professors: Serge Lecomte, Victoria J. Moessner, Nijole Rukas

Requirements

Foreign Language — B.A. Degree
1. Complete the general university requirements as listed on page 23.
2. Complete the B.A. degree requirements as listed on page 24.
3. Complete the following program (major) requirements:

	Credits
I. Background-related Requirements	24
Option A (Liberal Arts Option)	
a. Ling. 101; Hum. 201-202, 411	12
b. 6 credits in literature courses other than those of the field of specialization	6
c. 6 credits from among the following: Phil. 201; Hist. 101, 102, 315 or another major-related course; Art 261-262; Geog. 305 or 402 or equivalent	6
Option B (Career-oriented Option)	
a. Ling. 101 The Nature of Language	3
b. 21 credits in major-related courses in other disciplines, such as business, education, journalism, political science, etc. (to be specified by the advisor according to the student's career preferences)	21
II. Major Requirements (two languages required) First Language (French, German or Spanish) (above 100 level)	24

Complete the following courses:

201 — 3 credits	387 — 2 credits
202 — 3 credits	432 — 3 credits
288 — 2 credits	487 — 2 credits
301 — 3 credits	488 — 3 credits
303 — 3 credits	

Second Language (French, German, Russian or Spanish) (above 100 level) 13

Complete the following courses:

201 — 3 credits	301 — 3 credits
202 — 3 credits	or 303 — 3 credits
288 — 2 credits	387 — 2 credits

Where appropriate, courses listed under I and II may be counted toward fulfillment of B.A. requirements listed under 2.

A minor in a foreign language requires 12-21 credits. If all are at the 200 level or higher, 12 credits will fulfill this requirement.

Linguistics — B.A. Degree
1. Complete the general university requirements as listed on page 23.

2. Complete the B.A. degree requirements as listed on page 24.
3. Complete the following program (major) requirements:

	Credits
I. Background-related requirements	24
a. Hum. 201-202; Phil. 204 or 341	9
b. Complete a minimum of 12 credits in one foreign language	12
c. Complete one of the following: Hum. 411; A.S. 301 or 402	3
II. Major Requirements	24
Complete the following Linguistics courses:	
a. Ling. 101, 216	6
b. 2 upper-division courses in Linguistics	6
c. English 318 and 472	6
d. Eskimo 101 and 102; or Eskimo 111 and 112; or Alaska Native Languages 215 and 216	6

Where appropriate, courses listed under I and II may be counted toward fulfillment of B.A. requirements listed under 2.

A minor in linguistics requires 12 credits in linguistics.

Audio-lingual practice in the language laboratory is an integral part of all elementary and intermediate language courses.

Mathematics

Degrees: B.A., B.S., M.A.T., M.S.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; M.A.T. — 36 additional credits; M.S. — 30 additional credits.

The number of new fields in which professional mathematicians find employment grows continually. The department offers a variety of programs for students majoring in mathematics. Options exist for those who are planning careers in industry, government, or education. The Department of Mathematical Sciences also administers a degree program in computer science.

In addition to the major programs, the department provides a number of service courses for the various units of the university. Current and detailed information on mathematics degrees and course offerings is available from the department.

Faculty

Department Head and Professor: John O. Distad
Professors: Ronald W. Gatterdam, Thomas Head, Barbara Lando, Philip A. Van Vehdhuizen
Associate Professors: Patricia Andresen, Gary Gislason, Clifton Lando, Walter R. Tape
Assistant Professors: James T. Burnham, Patrick J. Lambert, Robert J. Piacenza, Susan Royer, Robert Sullivan, Dana Thomas
Instructors: Elaine C. Ensign, Martin P. Getz, Margaret A. Morris, Nan M. Worum
Distinguished Visiting Professor: Edwin Hewitt

Requirements

Degree Requirements
In addition to meeting all the general requirements for the specific degree, certain mathematics courses are required of all mathematics majors. (At least 12 approved mathematics credits at the 300 level or above must be taken while in residence on the Fairbanks campus.) All electives must be approved by the department. Students preparing to teach mathematics in secondary schools should contact the Department of Education for a list of mathematics and education courses necessary to obtain an Alaskan teaching certificate. (All mathematics majors — including double majors — must have an advisor from the Department of Mathematical Sciences.)

Mathematics — B.A. or B.S. Degree
1. Complete the following major requirements:

	27 Credits
Math. 200, 201, 202 — Calculus sequence	12
Math. 302 — Differential Equations	3
Math. 308 — Abstract Algebra	3
Math. 314 — Linear Algebra	3
Math. 401-402 — Advanced Calculus	6

2. Complete one of the following degree options:

A. B.A. or B.S. in mathematics.

	9-11 Credits
i. A minimum of three courses chosen from:	
Math. 307 — Discrete Mathematical Structures	3
Math. 305 — Geometry	3
Math. 310 — Numerical Analysis	3
Math. 404 — Topology	3
Math. 421 — Applied Analysis I	4
Math. 422 — Applied Analysis II	4
ii. A three credit approved Math./A.S./C.S. elective	3
Minimum total major credits for degree	39-41

B. B.A. or B.S. in mathematics with a statistics emphasis.

Major Requirements:	
Math. 371 — Probability	3
Math. 408 — Mathematical Statistics	3
A.S. 301 — Elementary Probability and Statistics	3
A.S. 302 — Analysis of Experimental Design and Regression	3
A.S. 402 — Scientific Sampling	3
Minimum total major credits for degree	42

C. B.A. or B.S. with two majors, one of which is mathematics.*

	3-4 Credits
A minimum of one course chosen from:	
Math. 307 — Discrete Mathematical Structures	3
Math. 305 — Geometry	3
Math. 310 — Numerical Analysis	3
Math. 404 — Topology	3
Math. 421 — Applied Analysis I	4
Math. 422 — Applied Analysis II	4
Nine credits of departmentally approved courses having strong mathematical content (even if they are not offered by the Department of Mathematical Sciences)	9
Minimum total major credits for degree	39

*A double major must be approved by petition.

A minor in mathematics requires completion of Math. 200-201-202 in addition to six approved credits at the 300 level or above.

Mathematics — M.A.T. Degree
1. Complete the general university requirements and master's degree requirements, pages 23, 25 and 94.
2. Complete 36 credits in courses approved by the student's graduate committee.

Mathematics — M.S. Degree
1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete 30 credits in courses approved by the student's graduate committee.
3. Complete a final examination, including a demonstration of proficiency in mathematics at the graduate level. The means of such demonstration will be determined by the candidate and his/her graduate committee.

Military Science

The Army Reserve Officers' Training Program is a cooperative effort agreed to by the Army and UAF as a means of providing junior officer leadership in the interest of national security. The goal of the program is to assist young men and women with leadership potential in obtaining commissions in the Army Reserve, National Guard, or Regular Army.

The program of instruction is designed to complement the student's goal of obtaining a bachelor's degree in a course of study of his/her own choosing. Through academic instruction and practical experience laboratories, the student becomes familiar with the leadership, management, and decision-making qualities necessary for the Army officer and civilian executive.

ROTC is divided into the basic course for freshmen and sophomores and the advanced course for juniors and seniors. Programs and courses can be adjusted to meet specific needs of individual students who desire to enroll but are past their freshman year. Military science courses are open to all students regardless of whether or not they intend to seek an Army commission.

Faculty

Department Head and Professor: Michael B. Ahern, Lt. Col.
Assistant Professor: Stephen R. Meyer, Maj.; Robert D. Fath, Capt.
Instructors: Larry L. Kelsey, Sgt. Maj.; Kenneth C. Wagner, Master Sgt.

Basic Course — All UAF students are eligible to enroll. There is no military obligation incurred by enrolling in any of the basic courses.

Advanced Course — Those students who successfully complete the basic course and desire to pursue the program for a commission, may apply for enrollment in the advanced course. Students with prior military service may also apply for immediate enrollment as an advanced course student. Applicants must be physically qualified and be selected by the Professor of Military Science. The criterion for selection is based on both academic proficiency and leadership potential. Those students selected who desire to compete for a commission are provided a $100-per-month subsistance allowance. They also incur a military obligation. Students who wish to enroll in advanced course classes, but do not desire to earn a commission, may do so with the approval of the Department Head. The obligation and subsistance allowance will be waived for those students.

Academic Credit — A maximum of twenty-three credits in military science courses may be used as elective credit toward fulfillment of baccalaureate degree requirements.

Minor in Military Science — Military science is an approved minor for the Bachelor of Arts degree. The requirements for the minor are the satisfactory completion of 19 credits in military science as approved by the department.

Financial Aid — Advanced course students receive a monthly subsistance allowance during the school year which presently amounts to approximately $2,000 for the two-year period. This allowance is tax free.

Uniforms and Equipment — Students enrolled in military science are furnished uniforms and texts by the department.

Awards — Awards are made annually at the UAF awards ceremony. Awards, such as the governor's and chancellor's medals, are presented for outstanding achievement in the ROTC program, academic achievement, and leadership.

ROTC Rifle Team — Competition is scheduled with civilian and military teams in the state. Postal matches with other schools are fired throughout the year. All necessary equipment is furnished by the Department of Military Science at no cost to the student.

Two-Year Program — A special Basic Camp program is available for transfer students and others who were unable to take ROTC prior to their last two years in school. This program allows immediate acceleration into the advanced course. Students should consult the PMS prior to 1 June annually for information concerning the camp.

Scholarships — Army ROTC scholarships pay all tuition, books, and lab fees in addition to the $100 monthly allowance. Scholarships are awarded for 2 or 3 years on a competitive basis. Interested students should contact the Military Science Department for further details.

Music

Degrees: B.A., B.M., M.A., M.A.T.

Minimum Requirements for Degrees: B.A. — 130 credits; B.Mus. — 130 credits, M.A. — 30 additional credits; M.A.T. — 36 additional credits.

The curriculum is designed to satisfy cultural and professional objectives.

The bachelor of arts degree in music is a curriculum planned for those desiring a broad, liberal education with a concentration in music.

The bachelor of music degree in music education offers thorough preparation in teacher training with sufficient time to develop excellence in performance areas.

The bachelor of music in performance degree offers intensive specialization for those desiring professional training in music performance.

The master of arts degree offers advanced training in five areas of specialization: performance, music education, music theory/composition, music history, and Alaskan ethnomusicology.

The master of arts in teaching is designed primarily as a functional program for the public school music teacher. Areas of specialization are instrumental, vocal, music supervision, and elementary specialist. The program is determined by the student and his/her committee.

The various music organizations maintained by the department offer participation experiences for students in all academic divisions of the university. Music majors will be required to participate in at least one ensemble (Band, Choir, Orchestra, Chorus) each semester they are enrolled. In addition, participation in chamber music opportunities is offered. Piano majors may receive ensemble credit by performing as accompanists.

Attendance at recitals and concerts provides students with a variety of musical experiences which expand their regular curriculum, therefore, attendance is mandatory for all majors. All applied music students are expected to perform in student recitals during each semester of study.

At the end of the sophomore year, all music majors must demonstrate a satisfactory level of proficiency of performance in their applied major in order to advance to upper-division courses in music. A student may elect to continue study at the 200 level in attempting to pass requirements for admission to upper-division study.

A piano proficiency jury examination must be successfully completed by the end of the student's second year in the program. This examination will consist of (1) performance of a recital composition equivalent in difficulty to a Bach two-part invention, or Clementi or Kuhlau sonatina; (2) sight reading of Bach Chorales; (3) improvisation of a chordal accompaniment to a simple melody; and (4) transposition and harmonization of the same song to another key.

Students who desire to enroll in music theory courses will complete a placement examination and be allowed to enter at their appropriate level.

Current and prospective music majors may obtain a copy of the Music Department's *Student and Faculty Handbook* for further information about current degree requirements.

The Music Department of UAF is a full member of the National Association of Schools of Music, the national accrediting organization.

Faculty

Department Head and Associate Professor: Theodore DeCorso
Professor: Thomas Johnston, Gordon B. Wright
Associate Professors: Theodore DeCorso, James Johnson, David Stech, Suzanne Summerville
Assistant Professors: Kathleen Butler, Bruno DiCecco, John Duff, John Hopkins

Requirements

Music — B.A. Degree

1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Mus. 331 — Form and Analysis	3
**Mus. 190 — Recital Attendance	0
Six credits to be selected from:	*Credits*
Mus. 421 — Music before 1620	3
Mus. 422 — Music in the 17th and 18th Century	3
Mus. 423 — Music in the 19th Century	3
Mus. 424 — Music in the 20th Century	3
Mus. 161-462 — Applied Music (major area)	8
Ensembles (may include up to 2 credits of Music 307 — Chamber Music)	6
Mus. 253 — Piano Proficiency	0
Minor Area	approx. 15
Free Electives	14
Total	130

Music Education — B.A. Degree

1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Mus. 315 — Music Methods and Techniques	6*
Applied Music (to include 6 credits of private lessons and 10 credits of ensemble participation including 2 semesters of vocal ensembles)	16
Complete a minor in Education, including either:	
Music 309 or Music 405 (Contact Education Dept. before starting Minor)	27-35 or more
**Mus. 190 — Recital Attendance	0
Mus. 253 — Piano Proficiency	0

* 2 credit course completed 3 times.

Music — B.M. Degree (Performance)

1. Complete the general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 or equivalent and 211 or 213	6
Speech Communications	3
Humanities (non-music)	15
Mathematics (including Computer Science) Natural Science, Social Science	15
Required Music Courses:	*Credits*
Mus. 161-462 — Applied Music (major)	24
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Ensembles (1 per semester)	8
Secondary Area:	
Thirty-three credits to be selected from the following:	*Credits*
Mus. 124 — Music in World Cultures	3
[1]Mus. 153 — Functional Piano	1
[2]Mus. 161-162, 261-262, 361-362, 461-462 — Applied Music (Secondary Performance Area)	2 or 4
Mus. 223 — Alaskan Native Musics	3
[1]Mus. 307 — Chamber Music	1
[1]Mus. 313 — Opera Workshop	1-3
[1]Mus. 317 — Arctic Chamber Orchestra	1
[3]Mus. 331 — Form and Analysis	3
Mus. 351 — Conducting	3
[4]Mus. 421-424 — Period History	6
[3]Mus. 431 — Counterpoint	3
[3]Mus. 432 — Orchestration	3
[3]Mus. 433 — Composition	3
[3]Mus. 493 — Special Topics	Arr.

[1] Repeatable for credit — Mus. 153, 307, 313, 317

[2] Any level repeatable for credit — Mus. 161-162, 261-262, 361-362, 461-462. Maximum total of 6 credits.

[3] Repeatable for credit — Mus. 493. Maximum total of 6 credits.

[4] Minimum of 6 credits to be selected from Mus. 331, 431, 432, 433.

**Mus. 190 — Recital Attendance	0
Mus. 253 — Piano Proficiency	0
Minimum credits required for degree	130

A half recital will be required in the junior year and a full recital in the senior year. The student, in his graduation recital, must demonstrate ability to perform satisfactorily in public a program of artistic merit. See Music Department's *Student and Faculty Handbook* for details.

Music — B.M. Degree
(Music Education — Secondary)

1. Complete the general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 or equivalent and 211 or 213	6
Speech Communications	3
Humanities (non-music)	15
Mathematics (including Computer Science), Natural Science, Social Science; must include Psy. 101	15
Required Music Courses:	*Credits*
Mus. 161-462 — Applied Music (major)	14
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Mus. 315 — Music Methods and Techniques	10
Mus. 331 — Form and Analysis	3
Mus. 351 — Conducting	3
Mus. 432 — Orchestration	3
Ensembles (1 per semester)	8
**Mus. 190 — Recital Attendance	0
Mus. 253 — Piano Proficiency	0

Courses required for Secondary Certification (Contact Department of Education before beginning Education courses):

	Credits
Ed. 305 — Introduction to Secondary Education	4
Ed. 312 — Human Development	3
Ed. 314 — Learning and Evaluation	3
Mus. 405 — Secondary School Music Methods	3
Ed. 407 — Reading Strategies for Secondary Teachers	3
Ed. 453 — Secondary Student Teaching	12
Elective Approved for Students in Secondary Education (students should consult with the Department of Education)	3

Music — B.M. Degree
(Music Education — Elementary)

1. Complete the general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 or equivalent and Engl. 211 or 213	6
Speech Communications	3
Humanities (non-music)	15
Mathematics (including Computer Science), Natural Science, Social Science; must include Psy. 101 and 6 credits of Mathematics	15
Required Music Courses:	
Mus. 161-462 — Applied Music (major)	14
Mus. 131-132 — Basic Theory	4
Mus. 133-134 — Basic Ear Training	4
Mus. 221-222 — History of Music	6
Mus. 231-232 — Advanced Theory	6
Mus. 309 — Elementary School Music Methods (same as Ed. 309)	3
Mus. 315 — Music Methods and Techniques	10
Mus. 331 — Form and Analysis	3
Mus. 351 — Conducting	3

Mus. 432 — Orchestration 3
Ensembles (1 per semester) 8
**Mus. 190 — Recital Attendance 0
Mus. 253 — Piano Proficiency 0

Required Education courses (Contact Education Department before beginning Education courses):
Ed. 304 — Literature for Children 3
Ed. 312 — Human Development 3
Ed. 314 — Learning and Evaluation 3
Ed. 315 — Elementary Methods: Classroom Mgr. 2
Ed. 316 — Elementary Methods: Language Arts and Social Science 3
Ed. 317 — Elementary Methods: Mathematics and Science 3
Ed. 409 — Teaching of Beginning Reading 3
Ed. 410 — Developmental Reading in Content Areas 3
Ed. 452 — Elementary Student Teaching 9
Minimum Credits Required for Degree 130

A minor in Music requires 18 credits in Music to be selected from the following:
Music Theory, History and Appreciation (courses to be selected with approval of department head) 12
Music 151, 153, 161-462 4
Music 101, 203, 205, 211 2

**All undergraduate students majoring in Music must enroll in Music 190 — Recital Attendance during each semester of their residence.

Music — M.A. Degree

Students may select from the following areas of specialization: Performance, music education, music theory/composition, music history, and Alaskan ethnomusicology.

Each graduate student's program is individually tailored and designed to meet the student's professional interests and aspirations, consistent with the following principles and procedures:

1) General requirements for admission to graduate study are consistent with those published in the latest UAF Catalog.

2) All applicants will take an evaluative preliminary examination to help determine areas of strength and deficiency. The examination will cover the following areas for all applicants:
a. Music theory.
b. Music history and literature.
c. Demonstration of keyboard proficiency.
d. Performance in major area.

In addition to the areas listed above, *music education* majors will be required to complete a section pertaining to organizations, literature, knowledge of instruments and voice, and rehearsal techniques appropriate for public school music instruction.

Composition majors must submit examples of previous work.

Performance majors must demonstrate acquaintance with solo literature of the various historical periods through audition or submission of performance tapes.

3) Applicants must also submit a proposal outlining their aspirations and interests that they wish to pursue for their degree program.

4) Upon completion of all of the above, the Music Department will assess its own potential to serve the needs of the student.

5) Applicants will be accepted from any accredited institution; however, before admission to a degree program, all students (including UAF graduates) must take the preliminary examination.

6) Following an applicant's admission to the program, the department head, after consultation with the applicant, will name an Advisory Committee of three faculty members, one of whom will act as chairman and academic advisor for the student. The committee will assess the results of the preliminary examination, and then guide the development and completion of the student's program.

The committee will monitor the student's progress in the program, and recommend modifications and improvements, should changes be necessary.

7) To establish a base of core curriculum requirements common to all graduate music programs, the following courses must be taken by all graduate students.

a. Music 601 — *Introduction to Graduate Study.* 2 Credits.
b. *Applied Music:* A minimum of four credits of private lessons study at either the senior or graduate level. Committee may suggest further study if remedial work is deemed necessary.
c. Minimum of six graduate credits (excluding Individual Study) to be selected from the following categories: music theory, music history, ethnomusicology, music literature, and Mus. 671 — *Psychology of Music.*

8) Each student, with the approval of the advisory committee, will be allowed to select an appropriate final project: Thesis, non-thesis research project, recital, or composition.

9) The minimum number of credits which must be earned for a master's degree is 30 semester hours, of which 21 will be in a primary area of specialization and the balance in a secondary area.

10) Near the completion of approximately one-half of the program, the student will meet with the committee in an advisory examination. This examination will be conducted orally and will be concerned primarily with the progress the student has demonstrated, particularly with regard to determining the major area of specialization. Such specialization is not to be conceived narrowly as a thesis topic, but rather as a broad area in which the student plans to spend an appreciable amount of his scholarly career. Advisory examinations may be repeated until such time as the student has satisfactorily defined his area of specialization.

11) Each candidate for a master's degree in music who completes the necessary course work must take a substantial oral examination in the area of his/her major project, thesis, or recital.

12) Students majoring in theory or history shall be required to demonstrate reading proficiency of a foreign language as determined by the Department of Linguistics and Foreign Languages. Students majoring in Alaskan ethnomusicology shall be required to demonstrate reading proficiency in either an Alaskan Native language or Japanese or Russian, or (instead of a language requirement) complete at least one anthropology course which is concerned with Alaskan anthropology.

13) Graduate students studying applied music and/or presenting recitals are governed by the same regulations concerning recital preparation, recital jury prehearings, and jury examinations as apply to undergraduate students. These regulations are described in the handbook.

14) 600-level courses are restricted to graduate students only; graduate students may also elect up to fifty percent of their courses from the 400-level. 400-level courses are open to both upper-division undergraduate students and graduate students as well.

15) Further information about typical two-year programs may be obtained by contacting the Music Department.

Northern Studies

Interdisciplinary Program

Degree: B.A.
Minimum Requirements for Degree: B.A. — 130 credits

The purpose of the northern studies program is to give interested students a broader study of the northern region — its environment, peoples, and problems. The major in northern studies is a composite and interdisciplinary one. Students must meet the prerequisite requirements set by each department for particular upper-division courses.

Requirements

Northern Studies — B.A. Degree
1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Anth. 242 — Native Cultures of Alaska	3

Geog. 327 — Cold Lands 3
Hist. 380 — Polar Exploration and its Literature 3
A.L.R. 101 — Conservation of Natural Resources 3
Participate in the following seminar during the junior or senior year:
Hist. 484 Northern Studies Seminar 3

In addition, the student should take at least one course in five of the following six areas and sufficient other courses in one of the areas to equal a total of 18 credits:

Anthropology:
Anth. 205 — Native Cultures of North America 3
Anth. 309 — Arctic Prehistory 3
Anth. 321 — Human Population Biology (Circumpolar Regions) 3

Linguistics:
Any linguistics or Alaska Native language or Eskimo language course or courses ..... 3 or more

Earth Sciences:
Geog. 205 — Elements of Physical Geog 3
Geog. 302 — Geography of Alaska 3
Geog. 306 — Geography of the Soviet Union 3
Geog. 401 — Weather and Climate 3
Geos. 462 — Glacial Geology 4

History:
Hist. 354 — Canadian History 3
Hist. 341 — History of Alaska 3
Hist. 344 — Modern Russia 3
Hist. 375 — History of the Northern Pacific 3
P.S. 263 — Alaska Native Politics 3

Ecology:
Biol. 104 — Natural History of Alaska 3
Biol. 271 — Principles of Ecology 4
W.F. 417 — Wildlife Mgmt.: Forest and Tundra 2

Sociology:
Soc. 201 — Social Problems 3
Soc. 408 — American Minority Groups 3

With the approval of the committee, students may make substitutions for some of the requirements in these areas by taking such relevant courses as: arctic engineering; economics of natural resources; arctic oceanography; and such other courses as are approved by the committee.

Philosophy

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The courses in philosophy are designed to confront the student with the fundamental problems of Western philosophical heritage and introduce him/her to independent reflection on them, thus broadening his/her perspectives for the various areas of specialization in science, the social sciences and humanities.

Faculty

Department Head and Assistant Professor: Barbara Alexander
Professors: Walter J. Benisch, Rudolph W. Krejci
Assistant Professor: John Koolstra

Requirements

Philosophy — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Complete 6 credits of mathematics at the 100 level or above.
Complete two years at the college level in a non-English language.
Complete 33 credits in philosophy, including:

	Credits
Phil. 201 — Introduction to Philosophy	3
Phil. 202 — Introduction to Eastern Philosophy	3
Phil. 204 — Introduction to Logic	3
Phil. 351-352 — History of Philosophy and Science	6
Phil. 471 — Contemp. Philosophical Problems	3
Phil. 493 — Special Topics	3

Choose two of the following:

Phil. 320 — Axiology	3
Phil. 341 — Epistemology	3
Phil. 342 — Metaphysics	3

Choose two of the following:

Phil. 481 — Philosophy of Science	3
Phil. 482 — Comparative Religion	3
Phil. 483 — Philosophy of Social Science	3
Phil. 484 — Philosophy of History	3

3. Successfully complete a comprehensive oral examination conducted by the staff of the Department of Philosophy covering all course work in philosophy. The student is to arrange for the examination at the beginning of the last semester of his major study.

A minor in philosophy requires 18 credits of approved philosophy courses including:

	Credits
Phil. 201 — Introduction to Philosophy	3
Phil. 351-352 — History of Philosophy and Science	6
Phil. 471 — Contemp. Philosophical Problems	3

Choose six credits from the following:

Phil. 202 — Intro. to Eastern Philosophy	3
Phil. 204 — Introduction to Logic	3
Phil. 320 — Axiology	3
Phil. 341 — Epistemology	3
Phil. 342 — Metaphysics	3
Phil. 481 — Philosophy of Science	3
Phil. 482 — Comparative Religion	3
Phil. 483 — Philosophy of Social Science	3
Phil. 484 — Philosophy of History	3
Phil. 493 — Special Topics	Arr.

Physical Education

Degrees: B.A., B.S.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits

The curriculum in physical education encompasses three programs of instruction: an academic discipline, a teacher certification specialty, and a program for individual development in physical activities.

1. The academic discipline of physical education, which can be a major or minor area of study for a bachelor's degree, is the study of human beings engaged in sport and physical activities which serve as expressions of their physical and competitive natures.
2. Courses which relate to teaching physical education or coaching athletic teams in school or recreation programs can be added to academic discipline courses to complete a teaching or coaching specialty for state certification.
3. Finally, a program of courses is provided for the general and professional student to acquire individual skills, attitudes, knowledge, and physical fitness for participation in selected sports and physical activities.

Faculty

Department Head and Associate Professor: Theresa H. Tomczak
Professor: John Gilmore
Associate Professor: Allen R. Svenningson
Assistant Professors: Nancy E. Frith, Karen J. Morris, George T. Roderick, William L. Smith
Instructors: Frances S. Buckless, John Estle, Barbara J. Motes, Richard A. Schafer, Merle B. Young, Jr.

Requirements

Physical Education — B.A. or B.S. Degree

1. Complete the general university requirements and B.A. or B.S. degree requirements listed on pages 23 and 24.
2. Complete the following background requirements:

	Credits
Chem. 103 or 104 — Contemporary Chemistry	4
Biol. 111-112 — Human Anatomy and Physiology I and II	8
Math. 107 — Elementary Functions	3

3. Complete the following program (major) requirements:

Required Courses 25 Credits	Credits
P.E. 201 — Concepts in Fitness	2
P.E. 210 — Fundamentals of Softball, Aquatics and Ice Sports	2
P.E. 220 — Fundamentals of Wrestling, Basketball & Track & Field	2
P.E. 230 — Fundamentals of Soccer, Rhythms & Recreational Activities	2
P.E. 240 — Fundamentals of Gymnastics, Snow Sports and Volleyball	2
P.E. 246 — Advanced First Aid	3
P.E. 318 — Motor Development and Learning	3*
P.E. 421 — Physiology of Exercise	3
P.E. 432 — Biomechanics of Physical Performance	3
P.E. 437 — Adapted Programs of Physical Activity	3*

Elective Courses (select a minimum of four (4) credits)	Credits
P.E. 300 — Advanced Techniques of Gymnastics	1
P.E. 302 — Advanced Techniques of Basketball	1
P.E. 303 — Advanced Techniques in Ice Sports	1
P.E. 304 — Advanced Techniques in Snow Sports	1
P.E. 305 — Techniques in Volleyball	1
P.E. 306 — Techniques in Teaching Creative Dance	1
P.E. 307 — Techniques in Camping and Outdoor Recreation	1
P.E. 308 — Techniques in Track and Field	1
P.E. 309 — Aquatics Instructor	1
P.E. 310 — Techniques in Teaching Rhythms and Dance	1

Elective Courses (select a minimum of 7 credits)	Credits
P.E. 321 — Practicum in Physical Education	2*
P.E. 327 — Movement Activities for Children	2*
P.E. 401 — Theory of Basketball	2
P.E. 406 — Methods of Teaching P.E.	3*
P.E. 411 — Sports & Physical Activity in American Society	3
P.E. 412 — Principles and Problems in Athletic Coaching	3
P.E. 425 — Administration of P.E. and Athletics	3*
P.E. 440 — Prevention and Care of Athletic Injuries	3
P.E. 442 — Evaluation in Physical Education	3*

*Required by the Physical Education Department for those majors who wish to be considered for Teaching Certification.

Teaching Certification:

In addition to the 25 required and 4 elective credits from the 300-310 Series, students working toward teacher certification with the B.S. or B.A. in Physical Education must complete:

	Credits
P.E. 321 — Practicum in Physical Education	2
P.E. 327 — Movement Activities for Children	2
P.E. 406 — Methods and Materials in Teaching Physical Education	3
P.E. 425 — Organization and Administration in Physical Education and Athletics	3
P.E. 437 — Adapted Programs of Physical Education	3
P.E. 442 — Measurement and Evaluation in Physical Education	3
Total	16

AND the required courses from the Education Department (see page .).

Physical Education — Minor

For concentration in physical education with a B.Ed. degree, elementary education or early childhood education, the following 12 credits are recommended:

	Credits
P.E. 246 — Advanced First Aid	3
P.E. 318 — Motor Development and Learning	3
P.E. 327 — Movement Activities for Children	2
P.E. 437 — Adapted Programs of Physical Activity	3
Elective from approved P.E. 200 or above	1

A minor in P.E. with a B.Ed. Degree, Secondary Education, the following 18 credits are recommended:

	Credits
P.E. 201 — Concepts and Activities	2
P.E. 246 — Advanced First Aid	3
P.E. 318 — Motor Development and Learning	3
P.E. 327 — Movement Activities for Children	2
P.E. 437 — Adapted Programs of Physical Activity	3
Electives from approved P.E. 200 or above	5

For a minor in P.E. with B.A. or B.S. Degree, complete 18 approved credits in Physical Education at the 200-level or above.

Athletic Coaching — Minor

A minor in athletic coaching (18 credits) is available for those students more interested in the coaching of athletic teams, in schools or communities, than in the more general discipline of physical education.

1. Complete the following required courses:	Credits
P.E. 411 — Sport and Physical Activity in American Society	3
P.E. 412 — Principles and Problems in Athletic Coaching	3
P.E. 421 — Physiology of Exercise	3
P.E. 432 — Biomechanics of Physical Performance	3
P.E. 440 — Prevention and Care of Athletic Injuries	3
	15
2. Complete the remaining credits in approved courses which will develop competency in the area selected for coaching	3
	18

(Note: This minor is not available to the physical education major.)

Physics

Degrees: B.A., B.S., M.S., M.A.T., Ph.D.

Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; M.S. — 30 additional credits; M.A.T. — 36 additional credits; Ph.D. — no fixed credits

The science of physics is concerned with the nature of matter and energy and encompasses all phenomena in the physical world from elementary particles to the structure and origin of the universe. Physics provides, together with mathematics and chemistry, the foundation of work in all fields of physical science and engineering, and contributes to other fields such as biology and medicine.

Undergraduate Program — The undergraduate curriculum aims at a good foundation in general physics with emphasis on the experimental aspects. It provides opportunities for careers in education and industry, and opens the door to advanced work in physics and related sciences.

Graduate Program — The graduate work is intimately connected with the research activities of the Geophysical Institute which offers ample thesis material in the fields of the atmospheric and space sciences, experimental atomic and molecular physics, and in solid earth physics. The research program of the Geophysical Institute currently emphasizes investigations of auroral, ionospheric and magnetospheric physics, and physics and chemistry of the upper and middle atmosphere, geomagnetism and

earth currents, radio wave propagation and scattering, solar-terrestrial relations, polar meteorology and glaciology, seismology and solid earth physics, and laboratory studies of atomic and molecular processes.

A graduate student may designate his/her major field as physics, space physics or geophysics. He/she will pursue his/her studies under the supervision of an advisory committee. The committee advises on the course of study to be followed and determines the background courses (mathematics, physics, astronomy, chemistry, geoscience) necessary to support the major field.

Faculty

Department Head and Professor: J. Roger Sheridan
Professor: John L. Morack
Associate Professor: John S. Murray

Requirements

Physics — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Complete the foundation courses: *Credits*
Phys. 211-212 — General Physics 8
Phys. 213 — Elementary Modern Physics 3
Complete a minor in mathematics, which includes Math. 200-201-202, and 6 credits at the 300-level or above.
Complete 20 additional credits of approved courses in physics.

Applied Physics — B.S. Degree
1. Complete the general university requirements and B.S. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Complete Math. 200-201-202, 302 and 9 additional credits in mathematics at the 200-level or above.
*Complete Phys. 213, 311, and 331 and 12 additional credits in physics at the 300-level or above.
Complete 20 approved credits** in a chosen subject area of applied physics.

*Implicit in this requirement are 8 credits of lower-division physics courses which are prerequisites for these courses.
**These credits must be approved before the beginning of the student's final semester by the head of the Physics Department.

Physics — B.S. Degree
1. Complete general university requirements and B.S. degree requirements, pages 23 and 29.
2. Complete the following program (major) requirements:

Math. 200-201-202, 302 and 9 additional credits at the 300-level or above.
Phys. 211-212, 213, 311-312-313, 331-332, 411-412, 381, 382, 445 and 462.

Suggested Curriculum

First Year
Fall Semester — *16 credits*
Engl. 111 — Methods of Written Comm 3
E.S. 201 — Computer Techniques 3
Math. 200 — Calculus 4
Chem. 105 — General Chemistry 4
Free electives 2

Spring Semester — *17 credits*
Sp.C. 111 — Fundamentals of Oral Comm 3
Phys. 211 — General Physics 4
Math. 201 — Calculus 4
Chem. 106 — General Chemistry 4
Free electives 2

Second Year
Fall Semester — *16 credits*
Math. 202 — Calculus 4
Phys. 212 — General Physics 4
Engl. 211 — Intermediate Expos. with Modes of Lit.
or Engl. 213 — Intermediate Exposition 3
Humanities/Social Science elective 3
Free electives 2

Spring Semester — *16 credits*
Math 302 — Differential Equations 3
Phys. 213 — Elementary Modern Physics 3
E.E. 461 — Electron. and Instr. for Sci. and Engr 3
Humanities/Social electives 6
Free electives 1

Third Year
Fall Semester — *17 credits*
Math. 421 — Applied Analysis I 4
Phys. 313 — Thermo. and Stat. Physics 4
Phys. 331 — Electricity and Magnetism 3
Phys. 381 — Physics Laboratory 2
Humanities/Social Science electives 3
Free elective 1

Spring Semester — *16 credits*
Math. 422 — Applied Analysis II 4
Phys. 445 — Solid State Physics and Physical Electronics 3
Phys. 332 — Electricity and Magnetism II 3
Phys. 382 — Laboratory 2
Humanities/Social Science electives 3
Free elective 1

Fourth Year
Fall Semester — *15 credits*
Phys. 411 — Modern Physics 4
Phys. 311 — Mechanics I 4
Math. elective 3
Free electives 4

Spring Semester — *16 credits*
Phys. 412 — Modern Physics 4
Phys. 312 — Mechanics II 4
Free electives 8

A minor in Physics requires 12-16 credits.

Physics — M.S. Degree
1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits of approved courses, including Phys. 699, Thesis.

Physics — M.A.T. Degree
Persons interested in this degree program should see the head of the department.

Physics — Ph.D. Degree
Complete the general university requirements and Ph.D. requirements, pages 23 and 26.

Political Science

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The study of political science is the study of man's efforts to create social organizations and processes compatible with our environment. Political science is related to all of the social science disciplines. It is the study of the dynamics of human behavior in the various cultural, national and international spheres.

Students of political science may prepare for teaching or for advanced study in law and the social sciences, or prepare themselves for careers in public service.

Faculty

Department Head and Professor: Gerald A. McBeath
Associate Professors: David Case, Gary Copus, Andrea Helms
Assistant Professor: Kendall Stockholm
Instructor: Carl Shepro

Requirements

Political Science — B.A. Degree
1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following social science distribution requirements. (May be used to meet general B.A. requirements):

	Credits
Econ. 201-202 — Principles of Economics I and II (may substitute another economics course for Econ. 201 or 202 on the recommendation of advisor)	6
Hist. 131-132 — History of the U.S.	6
Just. 110 — Introduction to Justice or Psy. 101 — Introduction to Psychology or Soc. 101 — Introduction to Sociology	3

3. Complete 30 credits in political science, beyond P.S. 101 including:

Three Credits in Policy & Administration from:	Credits
P.S. 102 — Introduction to American Government and Politics	3
P.S. 210 — Alaska Government and Politics	3
P.S. 211 — State and Local Government	3
P.S. 212 — Introduction to Public Administration	3
P.S. 263 — Alaska Native Politics	3

Six Credits in Comparative Politics, from:	Credits
P.S. 201 — Comparative Politics: Methods of Political Analysis	3
P.S. 202 — Comparative Politics: Contemporary Doctrines and Structures	3
P.S. 310 — The Politics of Post-Industrial States	3

Six Credits in International Politics from:	Credits
P.S. 321 — International Politics	3
P.S. 322 — International Relations	3
P.S. 437 — American Foreign Policy and National Security	3
P.S. 460 — The United Nations, Model United Nations and International Administration	1-3
P.S. 461 — Geopolitics and the International Environment	3

Three credits in Law and National Government Institutions from:	
P.S. 301 — American Presidency	3
P.S. 302 — Congress and Public Policy	3
P.S. 435 — The Supreme Court and the American Legal System	3
P.S. 436 — The Courts and Civil Liberties	3

Six credits in Political Theory from:	Credits
P.S. 315 — American Political Thought	3
P.S. 411 — Classical Political Theory	3
P.S. 412 — Modern Political Theory	3
P.S. 415 — Contemporary Political Theory	3

Six credits in Political Behavior, from:	Credits
P.S. 400 — Political Science Research Methods	3
P.S. 401 — Political Behavior: Organizations	3
P.S. 402 — Political Behavior: Individuals	3
P.S. 492 — Senior Seminar	3

A minor in Political Science requires 15 credits distributed as follows:

	Credits
P.S. 101 — Introduction to American Government and Politics (I)	3
Three credits in policy and administration from the following: P.S. 102, 210, 211, 212, or 263	3
Three credits in comparative politics from the following: P.S. 201, 202, or 310	3
Three credits in international politics from the following: P.S. 321, 322, 437, 460 or 461	3
Three credits in political theory from the following: P.S. 315, 411, 412, or 415	3

Russian Studies

Interdisciplinary Major Program

Degree: B.A.
Minimum Requirements for Degree: 130 credits

Requirements

Russian Studies — B.A. Degree
1. Complete general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Core courses (24 credits):	Credits
Approved Anthropology Elective	3
Geog. 306 — Geography of the Soviet Union	3
Hist. 261 — Russian History	3
Hist. 344 — Twentieth Century Russia	3
Russ. 301 — Advanced Russian*	3
Russ. 302 — Advanced Russian*	3
Russ. 322 — Studies in Russian Lit.	6

Complete at least 12 credits from the following courses or alternatives as approved by the program advisor:

Geog. 405 — Political Geography	3
Hist. 315 — Europe 1914-1945	3
Phil. 471 — Contemporary Philosophical Prob.	3
P.S. 202 — Comparative Politics: Contemporary Doctrines and Structures	3
P.S. 321 — International Politics	3
P.S. 322 — International Relations	3
Russ. 322 — Studies in Russian Lit.	3

*Students must complete two years of Russian language study (Russ. 101-102-201-202) or equivalent as a prerequisite for Russ. 301-302.

A minor in Russian studies requires 15 credits taken from the core courses and approved by the program advisor.

Speech Communication

Degree: B.A.
Minimum Requirements for Degree: 130 credits

The Department of Speech and Drama offers the student many opportunities to participate in formal communication processes through theater productions, debates, oral interpretation presentations, etc., and to study the processes through formal course offerings in speech communication and theater. Blending practical application with the study of fact and theory, each program is designed to provide majors with the preparation for employment or further education and to provide all students with elective opportunities in fields of study central to all human communication.

The department offers the following programs:

- A major or minor in speech communication with options in rhetoric and public address, communication studies, and communication education
- A major or minor in theater

Faculty

Department Head and Associate Professor: Walter G. Ensign, Jr.
Professor: Lee H. Salisbury
Assistant Professor: Robert Arundale, John Leipzig, Jayna Orchard, David D. Smith
Instructor: Marcia Stratton, Lynda Willer

Requirements

Speech Communication — B.A. Degree
1. Complete the general university requirements and the B.A. degree requirements as listed on pages 23 and 24, including one of the following three courses for the speech communication requirement: Sp.C. 111, Sp.C. 235, Sp.C. 241.
2. Complete a minimum of 30 credits in approved speech communication courses including the speech communication core program and all of the courses specified in one of the options.

Speech Communication Core Program:	Credits
Sp.C. 320 — General Semantics	3
Sp.C. 321 — Nonverbal Communication	3
Sp.C. 425 — Communication Theory	3

Option A:
Rhetoric and Public Address (It is recommended that students choosing Option A consider a minor in philosophy, history or political science.)

Sp.C. 235 — Discussion and Small Group Process	3
Sp.C. 241 — Public Speaking	3
Sp.C. 341 — Persuasion	3
Sp.C. 342 — Advanced Public Speaking	3
Sp.C. 351 — Argumentation and Debate	3
Sp.C. 361 — Oral Interpretation	3
Sp.C. 443 — Rhetorical Communication	3

Option B:
Communication Studies
I. Human Communication (It is recommended that students choosing human communication consider a minor in psychology, sociology, linguistics, languages, or anthropology.)

Sp.C. 111 — Fundamentals of Oral Communication	3
Sp.C. 235 — Discussion and Small Group Process	3
Sp.C. 241 — Public Speaking	3
Sp.C. 330 — Intercultural Communication	3
Sp.C. 335 — Communication in Organizations	3
Sp.C. 341 — Persuasion	3
Sp.C. 443 — Rhetorical Communication	3

II. Organizational Communication (It is recommended that students choosing organizational communication consider a minor in business, journalism, criminal justice, political science or sociology.)

Sp.C. 235 — Discussion and Small Group Process	3
Sp.C. 241 — Public Speaking	3
Sp.C. 330 — Intercultural Communication	3
Sp.C. 335 — Communication in Organizations	3
Sp.C. 341 — Persuasion	3
Sp.C. 351 — Argumentation and Debate	3
J-B 101 — Introduction to Mass Communication	3
J-B 331 — Retail Advertising	3

Option C:
Communication Education (For Alaska State Certification, a student must meet the state certification requirements listed in the catalog.)

Sp.C. 111 — Fundamentals of Oral Communication	3
Sp.C. 211 — Voice and Diction	3
Sp.C. 235 — Discussion and Small Group Process	3
Sp.C. 241 — Public Speaking	3
Sp.C. 351 — Argumentation and Debate	3
Sp.C. 361 — Oral Interpretation	3
Sp.C. 375 — Speech Methods for the Secondary Classroom Teacher	3
Sp.C. 443 — Rhetorical Communication	3

It is recommended that a student interested in secondary school teaching also take Sp.C. 341 — Persuasion and Sp.C. 330 — Intercultural Communication.

A minor in speech communication requires 18 credits in approved speech communication. A minor program requires the approval of a speech program faculty member in advance of declaring the minor, preferably no later than the first semester of the junior year.

Theater

Degree: B.A.
Minimum Requirements for Degree: 130 credits

Faculty

Speech communication and theater comprise the Department of Speech and Drama and have the same faculty. See speech communication.

Requirements

Theater — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:
A. Complete a minimum of 45 credits in theater and stipulated related courses as specified below, including the following foundation courses:

	Credits
Thr. 211 — Introduction to the Theater	3
Thr. 221 — Acting I	3
Thr. 241 — Basic Stagecraft	3
Thr. 325 — Theater Speech	3
Thr. 331 — Directing	3
Thr. 411 — Theater History I or Thr. 412 — Theater History II	3
	18

B. Complete the following:

1. A minimum of one course from:	3
Thr. 321 — Acting II	
Thr. 351 — Makeup for Theater	
Thr. 421 — Period Styles of Acting	
2. A minimum of one course from:	3
Thr. 341 — Intermediate Stagecraft	
Thr. 355 — History of Stage Costume	
3. A minimum of one course from:	3
Thr. 343 — Scene Design	
Thr. 347 — Lighting Design	
Thr. 354 — Costume Construction and Design	
4. A minimum of two courses from:	6
Engl. 422 — Shakespeare: History Plays and Tragedies	
Engl. 425 — Shakespeare: Comedies and Non-Dramatic Poetry	
Engl. 445 — 20th Century Drama: Chekhov to Ionesco	
Engl. 483 — Craft of Drama	
5. A minimum of one course from:	3
Art 261 — History of World Art	
Art 262 — History of World Art	
Mus. 123 — Experiencing Music	
Mus. 124 — Music in World Cultures	
6. A minimum of one course from:	2-3
Art 105 or 106 — Beginning Drawing	
J-B 215 — Audio Production	
J-B 216 — Television Production	
E.S. 101 — Graphics (2 cr.)	
P.E. 100 — Modern Dance, Fencing, Gymnastics (1 cr. each)	

Sp.C. 361 — Oral Interpretation
Sp.C. 211 — Voice and Diction
F.L. 110 — Pronunciation of French, German, Italian and Spanish

7. A minimum of one course from: 3
An additional course from 1,2,3, or 4 above
A second semester of Theater History (411 or 412, which ever was not taken to meet the requirement in A, above)
Thr. 435 — Directing
An individual study in theater

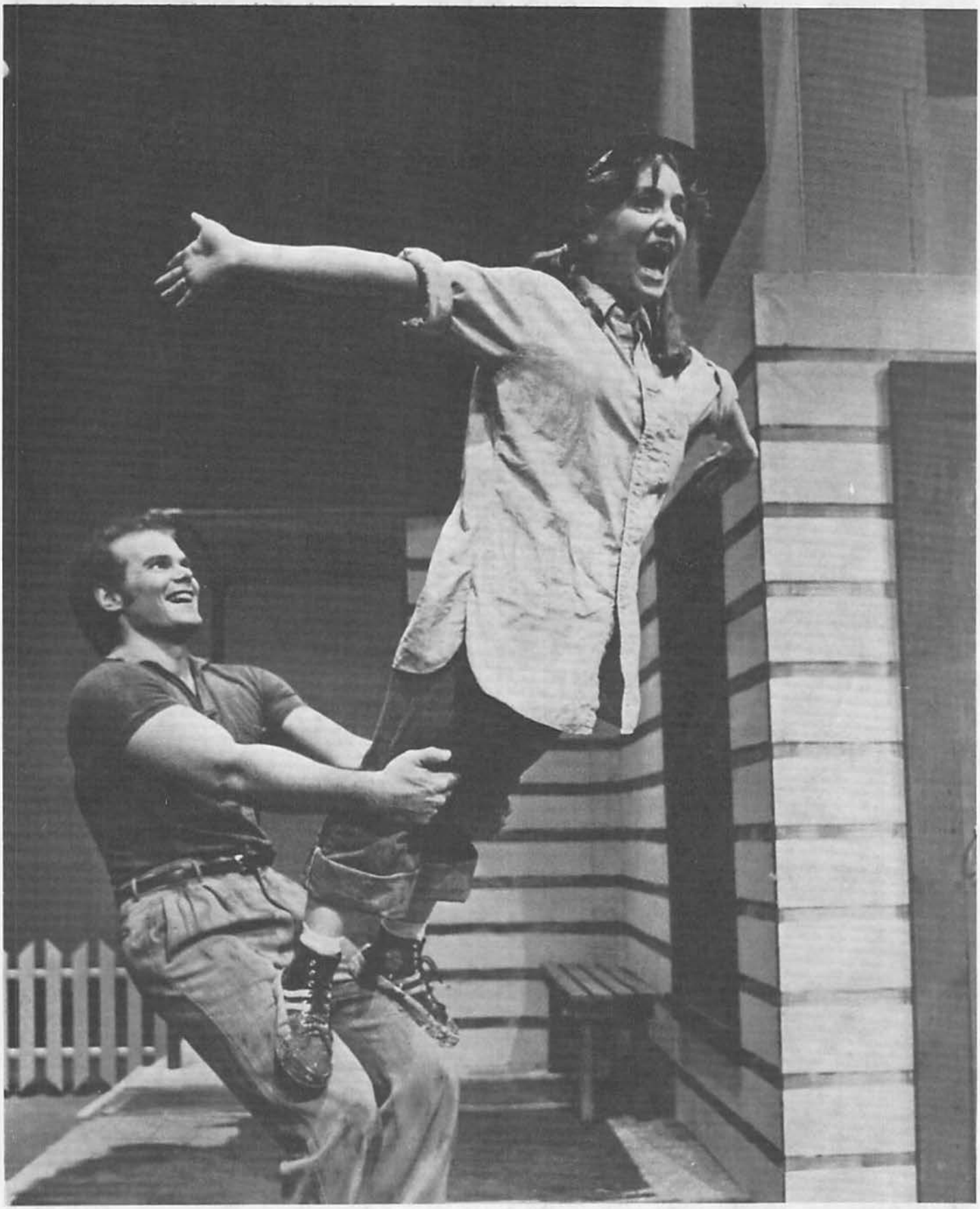
A minor in Theater requires 18 credits in theater courses including the following:

Thr. 211 — Introduction to the Theater
Thr. 221 — Acting I
Thr. 241 — Basic Stagecraft

No more than 3 credits in theater practicum may be applied to the minor. The minor program requires the approval of a member of the theater faculty in advance of formally declaring the minor, preferably no later than the first semester of the junior year.

Production Participation Requirement

Majors and minors in theater are expected to participate actively, extensively and continuously in the production activities of the program throughout their enrollment as majors or minors at the university. Typically, this means that a major is expected to work on some aspect of every major production and a minor on approximately half the major productions. Failure to meet the department's expectations with respect to such participation will be considered in approving students for graduation. A student whose failure to fulfill this expectation is, in the view of the theater faculty, jeopardizing his/her future graduation approval and will be notified of this situation, and for this purpose each student's progress in the program will be reviewed annually toward the end of each academic year. Theater majors may take theater practicum for elective credit, but it will not be counted in the credit total for the major.



College of Environmental Sciences

Vera Alexander, *Dean*

The College of Environmental Sciences embraces three major Divisions: Geosciences, Life Sciences and Marine Sciences. These include programs in a variety of disciplines relating to the earth, atmosphere, oceans, biosphere and even extending into space science. At the undergraduate level, there are majors in geology (with four options), biological sciences, wildlife management, fisheries biology and anthropology. Work at the master's level is also offered in these areas. Graduate programs only are offered in space physics, atmospheric sciences, and marine sciences. The College also includes a health science program; the WAMI Program cooperates with three other states to provide medical training for Alaskan students. Graduate programs take advantage of the outstanding research facilities relating to northern problems: the Geophysical Institute, the Institute of Marine Science, the Institute of Arctic Biology, the Alaska Cooperative Park Studies Unit, the Alaska Cooperative Wildlife Research Unit, and the Alaska Cooperative Fisheries Research Unit.

Undergraduate Degrees — Bachelor of science in anthropology, geology with options in general geology, economic geology, geophysics and petroleum geology, biological sciences, fisheries biology (research and management options), wildlife management. Bachelor of arts in anthropology, biological sciences and earth science.

Graduate Degrees — Master of science in geology, geophysics, oceanography, (biological, physical, geological, fisheries chemical), marine biology, botany, biology, zoology, wildlife management, fisheries biology, space physics, atmospheric sciences. Master of arts in anthropology. Master of arts in teaching in biology. Ph.D. in space physics, atmospheric sciences, geophysics, geology, oceanography (biological, geological, chemical, fisheries physical) and a variety of interdisciplinary degrees in biological sciences, wildlife management and fisheries.

College of Environmental Sciences Organization

Division of Geosciences:

Director and Professor of Physics: Juan G. Roederer
Geology and Geophysics Program
Space Physics and Atmospheric Science Program
Geophysical Institute

Division of Life Sciences:

Director and Professor of Animal Science: John Bligh
Anthropology Program
Biological Sciences Program
WAMI Medical Education Program
Alaska Cooperative Fisheries Unit
Alaska Cooperative Park Studies Unit
Alaska Cooperative Wildlife Research Unit
Institute of Arctic Biology

Division of Marine Sciences:

Director and Professor of Marine Science: Vera Alexander
Marine Science Program
Institute of Marine Science

Anthropology

Degrees: B.A., B.S., M.A.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; M.A. — 30 additional credits

The anthropology program offers a balanced and flexible program of academic courses and research opportunities in cultural anthropology, archeology, and physical anthropology, particularly with respect to the past and present cultures of the North. Anthropology contributes to an understanding of the complex problems of human behavior, cultural and social organization, and the relationship of man to the various environments. Archeological and human ecological research carried out in the field and library provides information about past and present modes of living and of origins and distribution of peoples and cultures in the Arctic and subarctic.

Faculty

Program Head and Associate Professor of Anthropology: W. Roger Powers
Professors: Jean Aigner, Frederick A. Milan
Associate Professors: W. Roger Powers, G. Richard Scott, Anne D. Shinkwin
Assistant Professor: Joseph J. Gross

Requirements

ANTHROPOLOGY — B.S. or B.A. Degree
1. Complete general university requirements and B.A. or B.S. degree requirements on pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Anth. 200 — Social/Cultural Anthropology	3
Anth. 211 — Fundamentals of Archeology	3
Anth. 222 — Human Evolution	3
Anth. 310 or 312 — New World or Old World Prehistory	3
Anth. 315 — Human Biology	3
Anth. 410 — History of Anthropology	3
Approved open program electives at 200 level or above	12
Total	30

A minor in anthropology requires 15 hours in anthropology, including Anthropology 101.

Anthropology — M.A. Degree

The graduate program emphasizes a basic and general preparation in the field of anthropology. Such preparation enables graduates of the program to (1) pursue more advanced training leading to the Ph.D. in anthropology, or (2) prepares them to teach anthropology within secondary education and/or undergraduate levels of higher education, or (3) prepares students for career positions with various levels of government in which some anthropological background and/or expertise is beneficial. While the basic program is oriented toward general competence, subfield specialization is possible through individual programs.

The program offers two options — a thesis track and a non-thesis track. The choice of option is guided by the student's interests and goals, the graduate advisory committee and the requirements of the university.

Degree Requirements for all graduate students:
1. A student must complete the general university requirements for the master's degree as outlined on page 25.
2. A student must pass a written examination in anthropology. Each student is expected to take the examination during the fourth semester of full graduate status regularly given according to the following schedule:
Fall semester — first week of November
Spring semester — first week of April
3. The need for a language requirement or a suitable substitute shall be determined by the student and his/her advisory committee.
4. Required courses for all graduate students enrolled in the program:

	Credits
Anth. 601 — Proseminar in Social/Cultural Anthropology	3
Anth. 611 — Proseminar in Archeology	3
Anth. 621 — Proseminar in Physical Anthropology	3

5a. Thesis Track: Core requirements outlined above to be included in a program of 30 hours study; 24 hours of which must be course work (at least 12 hours at the 600 level) plus 6 hours of thesis (Anth. 699).
5b. Non-Thesis Track: 36 hours of course work (including the core requirements), 15 hours of which must be at the 600 level as part of the 24 hours required in anthropology. A maximum of 6 hours must be devoted to research (Anth. 698).

Biological Sciences

Degrees: B.A., B.S., M.S., M.A.T., Ph.D. (Interdisciplinary)
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits; M.S. — 30 additional credits; M.A.T. — 36 additional credits

The curricula in the biological sciences program are designed to give the student a broad education as well as a sound foundation in the basic principles of biology. Students pursuing either a B.A. or B.S. degree may have majors in biological sciences. The B.A. degree includes fewer credits in the major field, but gives greater emphasis in the fields of social sciences and humanities and allows a greather breadth of subject matter in the curricula. The B.S. degree includes a foundation in the basic sciences as well as a stronger major within the biological sciences program. Candidates who expect to teach in public secondary schools must be sure that education requirements are met.

Faculty

Program Head and Professor of Zoology: R. Dale Guthrie
Professors: Hans W. Behrisch, John Bligh, James R. Crook, Robert Dieterich, Patrick W. Flanagan, Jack R. Luick, Stephen F. MacLean, Jr., David F. Murray, L. Gerard Swartz, George C. West, Robert G. White
Associate Professors: F. Stuart Chapin, Dale D. Feist, Carol F. Feist, Keith Miller, Gerald F. Shields, Ronald L. Smith
Assistant Professors: John F. Fox, Edward C. Murphy, Mark W. Oswood
Instructor: Douglas Schamel

Adjunct Faculty: Robert Elsner, Francis H. Fay, Howard Feder, Brina Kessel
Affliate Faculty: Keith Van Cleve

Requirements

Biological Sciences — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Biology 105-106, 210, 252, 271, and at least 16 additional credits in biology, including at least one course in botany, one in microbiology, and one in zoology.* A maximum of 5 credits of independent study (97) may be applied to this requirement.
Chemistry — one year
Mathematics — one year
A minor in biological sciences requires 20 credits in biology, including Biol. 105-106, 252, and 271 and two of the following courses:
Biol. 210, 239, 242, 305.

Biological Sciences — B.S. Degree
1. Complete the general university requirements and B.S. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:
Biol. 105-106, 210, 252, 271 and at least 25 additional credits in biology, including at least one course in botany, one in microbiology, and one in zoology.* A maximum of 6 credits of independent study (97) may be applied to this requirement.
Chem. 105-106
Organic Chemistry — one semester
Complete 8 credits, in addition to those listed in 1. and 2. above, chosen from: physics, geosciences, applied statistics, chemistry and/or math.
Foreign Language — one collegiate year; or 6 credits of social sciences and/or humanities beyond the general requirements for the B.S. degree.

*Students may petition to substitute up to 7 credits in the B.A. program or 10 credits in the B.S. program of chemistry courses, approved in advance, for the additional biology credits required for the degree.

Students from Other Departments
Candidates for the bachelor of science degree in general science wishing a major in biological sciences must satisfy both the requirements of their major curriculum and those listed above for a B.A. degree with a major in biological sciences.

Botany, Biology, or Zoology — M.S. Degree
1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits of approved courses.
3. Students working in subject areas involving significant non-English literature may be expected to read the appropriate foreign language.

M.A.T. Degree
Persons interested in this degree program should see the head of the program.

Ph.D. Degree
See page 26 for degree requirements.

Earth Science

Degree: B.A.
Minimum Requirements for Degree: 130 credits

This program provides broad training in various aspects of earth science. It is especially applicable to those wishing to teach earth science or who are entering a field such as resource management where broad training in earth science is important. Basic course work is required in three program areas: geography, geology, and mineral engineering. Additional required course work is arranged in consultation with the individual program heads.

Requirements

Earth Science — B.A. Degree
1. Complete the general university requirements and B.A. degree requirements, pages 23 and 24.
2. Complete the following fundamental courses:
   A. Complete one year of college-level mathematics
   B. Complete one semester of college chemistry (Chem. 103 recommended) or one semester of college physics (Phys. 103 recommended)
   C. Complete one semester of computer science approved by major subject emphasis program head.
   (NOTE: A. and B. may be used to meet general degree requirements, but C. is in addition to the 6 credit mathematics/logic degree requirements.)
3. For the major complex, complete 19 credits in the following courses (labs are optional but it is strongly recommended they be taken if offered): Geog. 205, 309 or 339, and 402; Geos. 101 or 261, and 112; Min. 101 and 104. In addition, complete an additional approved 10 credits at the 300 level or above with emphasis in either geography, geology/geophysics, or mineral engineering. Approval will be by the appropriate program head in the field of emphasis.
4. Complete an additional 12 credits of the following or approved alternative courses (can also be used to meet basic degree requirements and to apply toward minor requirements): ALR 101, 310, 350, 380, 400, 401, 430; Biol. 103 or 105-106, 271; Geog. 301, 492; Geos. 213, 214, 304, 401, 408, 422; Min. 202, 320; Pet.E. 103; G.E. 471.
5. Complete approved electives including minor requirements to bring total credits to 130.

Fisheries Science

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits

The fisheries undergraduate curriculum in the wildlife and fisheries program is intended to provide broad basic education and training. Holders of the bachelor's degree will be qualified to enter the management, law enforcement, and public information-education phases of fisheries work. Students contemplating careers in research, administration, advanced management, or teaching will find the bachelor's curriculum a solid foundation for graduate study.

The geographic location of UAF is advantageous for the study of interior Alaska aquatic habitats. A number of subarctic streams and lakes are within easy reach. Access to the marine environment is being obtained through the National Sea Grant Program in Prince William Sound.

Adequate study collections of fishes are available, and the invertebrate collection is being rapidly expanded. Undergraduates have an opportunity for association with personnel of federal and state conservation agencies and these agencies hire a number of students for summer field work. Course descriptions are listed in wildlife management program.

Faculty

Wildlife and Fisheries Program
Program Head and Associate Professor of Wildlife Management: Peter G. Mickelson

Professors: Frederick C. Dean, David R. Klein, Robert B. Weeden, Samueal J. Harbo, Jr.
Associate Professors: Philip S. Gipson, James B. Reynolds, Ronald Smith, Robert H. Armstrong
Assistant Professors: Willard E. Barber, Jacqueline D. LaPerriere, Mark W. Oswood

Alaska Cooperative Fisheries Research Unit

Unit Leader: James B. Reynolds
Unit Assistant: Jacqueline D. LaPerriere
Unit Assistant: Robert H. Armstrong

Requirements

Fisheries Science — B.S. Degree

1. Complete the general university requirements listed on page 24 including:

	Credits
English 111 and 213	6
Speech Communication (Sp. C. 241)	3
Social Science & Humanities (excluding Social Science and humanities courses in program requirements)	15
Total Credits	24

2. Complete the following degree and program (major) requirements:

A. Core Courses:

General	Credits
A.L.R. 101 — Conservation of Natural Resources	3
Engl. 414 — Research Writing	3
A.S. 301 — Elementary Prob. and Stat.	3
Chem. 105, 106 — General Chemistry	6
*Math. 272, 273 — Intro. to Calculus for Life. Sci.	6
Econ. 235 — Natural Resource Econ	3
Total Credits	29

Biology	Credits
Biol. 105, 106 — Fundamentals in Biol. I and II	8
Biol. 271 — Principles of Ecology	4
Biol. 210 — Animal Physiology	4
Biol. 252 — Principles of Genetics	4
Biol. 423 — Ichthyology	4
Total Credits	24

Fisheries	Credits
W.F. 423 — Limnology	3
or	
Biol. 328 — Biology of Marine Organisms	3
W.F. 429 — Intro. to Fisheries Science	3
W.F. 430 — Fisheries Management	3
Total Credits	9
*or Math 200, 201, & 202 — Calculus	Subtotal 86

B. Electives:

Take one course from each of the following groups of courses:

Group 1	Credits
Biol. 242 — Intro. to Microbiology	4
Biol. 307 — Parasitology	3
Biol. 343 — General Bacteriology	5
Total	3-5

Group 2	Credits
Biol. 222 — Biology of the Vertebrates	4
Biol. 205 — Vertebrate Anatomy	3
Biol. 317 — Comparative Anatomy of Vertebrates	5
Total	3-5

Group 3	Credits
Biol. 472 — Communities and Ecosystems	3
Biol. 471 — Population Ecology	3
Biol. 328 — Biology of Marine Organisms *(if used here, cannot satisfy fisheries core course requirements)*	3
Total	3

Group 4	Credits
Biol. 305 — Invertebrate Zoology	4
Biol. 406 — Entomology	4
W.F. 424 — Biology of Freshwater Invertebrates	3
Total	3-4

Group 5	Credits
W.F. 435 — Water Pollution Biology	3
W.F. 436 — Introduction to Aquaculture	3
A.L.R. 370 — Introduction Watershed Management	3
Total	3

C. Option — Complete the requirements for one of the following options:

Research Option:	Credits
Math 203 — Finite Math	4
Physics 103, 104 — College Physics	8
A.S. 302 — Analysis of Experimental Design and Regression	3
or	
A.S. 402 — Scientific Sampling	3
One additional course in Geological Sciences or Chemistry	3-4
Total	18

In addition, 5 to 11 hours of electives to satisfy the 130 hour requirement for graduation.

Management Option:

1. Take one of the following:	Credits
ALR 400 — Natural Resources Policies	3
ALR 401 — Natural Resources Legislation	3
Total	3

2. Take four courses from the following:	Credits
Geog. 302 — Geography of Alaska	3
Geog. 402 — Man and Nature	3
**J-B 101 — Intro. to Mass Communication	3
**J-B 311 — Magazine Article Writing	3
Phil. 320 — Axiology	3
P.S. 201 — Comp. Politics: Methods of Political Analysis	3
P.S. 263 — Alaska Native Politics	3
P.S. 211 — State and Local Government	3
P.S. 212 — Intro. to Public Administration	3
P.S. 302 — Congress and Public Policy	3
Soc. 309 — Urban Sociology	3
B.A. 301 — Processes of Management	3
B.A. 361 — Personnel Managements	3
*Econ. 438 — The Economics of Fisheries Management	3
Total	12

3. Take one of the following:

	Credits
W.F. 401 — Wildlife Management Techniques	3
W.F. 402 — Advanced Wildlife Biology & Management	3
W.F. 417 — Wildlife Management - Forest and Tundra	2
W.F. 419 — Wildlife Management - Wetlands	2
Total	2-3

In addition, 6 to 12 hours of electives to satisfy the 130 hours requirements for graduation.

*note prerequisite

**maximum of 3 credits may be used to satisfy the management option.

Bachelor of science candidates are strongly urged to obtain work experience in fisheries-related positions with public resource agencies or private firms. Faculty members can help students contact potential employers. Fisheries undergraduate students will be asked each fall to describe their work experience of the previous year.

Fisheries Science — M.S. Degree

1. Complete general university requirements for master's degree, page 25.

2. The following core courses or their equivalent are required:

	Credits
W.F. 630 — Quantitative Fisheries Science	3
W.F. 625 — Fish Ecology	
or OCN 640 — Fishery Oceanography	3
W.F. 423 — Limnology	
or OCN 650 — Biological Oceanography	3
Total	9

3. Soon after entering the degree program, students must select the thesis degree option or the non-thesis degree option. Once students declare the option a Graduate Advisory Committee will be appointed. All students are required to successfully complete the Graduate Comprehensive Examination.

3. Thesis Degree

In addition to the core courses, complete those as stipulated by the student's Graduate Advisory Committee and a thesis (W.F. 699) for a minimum total of 30 credits.

3b. Non-Thesis Degree

In addition to the core courses, complete 6 credit hours of research (W.F. 698) plus courses as stipulated by the student's Graduate Advisory Committee for a minimum total of 36 credits. The research results will be written and reported in the format appropriate for a publication or technical report. This report will be submitted to the Graduate Committee for evaluation.

Graduate Study in Fisheries Biology

The wildlife and fisheries program offers graduate work leading to the master of science degree in fisheries biology. In exceptional cases an interdisciplinary doctor of philosophy degree can also be offered. Persons desiring detailed information on the graduate program in fisheries may obtain this from the head, Wildlife and Fisheries Program. The procedure to be followed in applying for admission to graduate study is outlined in the Graduate Admissions section of this catalog.

The program offers a limited number of research assistantships under various federal and state government funding programs. Graduate studies are also sponsored by the Alaska Cooperative Fishery Research Unit; inquiries should be directed to the unit leader.

Geology and Geophysics

Degrees: B.S., M.S., M.A.T., Ph.D.

Minimum Requirements for Degrees: B.S. — 130 credits plus 6 credits in summer field courses; M.S. — 30 additional credits, including thesis; M.A.T. — 36 additional credits; Ph.D. (open)

Graduates in geology will have broad backgrounds in the earth sciences with firm foundations in mathematics, physics, and chemistry. There are many options available in the geological sciences, and the suggested curricula are intended to be flexible enough to allow the students to pursue their own interests as much as possible in the junior and senior years. The bachelor's degree should prepare one for positions with industry or government or for graduate studies. Graduate programs are tailored around minimal core course requirements (M.S. only) to the special research and study interest of the student. In addition to courses listed under the geology and geophysics program, students should check the course listings under the School of Mineral Industry and the Marine Science program.

In addition to formal course work, there are many other opportunities for professional education and experience on the campus. In this light, post bachelor degree candidates will normally be expected to undertake some teaching duties.

All serious students of the geological sciences at UAF should note that in addition to the facilities available directly through the instructional program, there are active research laboratories in the fields of seismology, volcanology, paleomagnetism, isotope geochronology, glaciology and ice physics which are housed in the Geophysical Institute (see also Geophysical Institute under Research, p. 42). These laboratories can frequently provide topics for M.S. and Ph.D. theses. Other laboratories are also available in other divisions on campus, as listed under Research. There are about 40 professional geoscientists in residence on campus, and graduate students normally participate in the ongoing research of these professionals. Similar possibilities exist for the motivated undergraduate.

Faculty

Division of Geoscience

Director: Juan G. Roederer (also Director of Geophysical Institute)

Geology/Geophysics Program

Program Head and Professor of Geology: Richard C. Allison

GEOLOGY FACULTY

Professors: Daniel B. Hawkins, Ghanshyam Sharma, Donald B. Triplehorn, Donald L. Turner

Associate Professor: Lewis H. Shapiro

Assistant Professors: Ranier J. Newberry, Samuel E. Swanson, Robert M. Thorson

Adjunct Faculty: John Decker, John T. Dillon, Wyatt W. Gilbert, Thomas E. Smith, Milton A. Wiltse

GEOPHYSICS FACULTY

Professors: Carl S. Benson, William P. Harrison, Brian J. Matthews, Thomas E. Oserkamp, David B. Stone, Eugene M. Wescott

Associate Professors: Nirenda N. Biswas, Larry D. Gedney, Juergen Kienle, Hans Pulpan, William M. Sackinger, William J. Stringer

Assistant Professors: Joan P. Gosink, Kogi Kawasaki

Adjunct Faculty: John Davies

Requirements

Geology — B.S. Degree

1. Complete the general university requirements as listed on page 23.

2. Complete the following degree and program (major) requirements:

	Credits
Engl. 111 — Methods of Written Communication	3
Engl. 211 — Intermed. Expos. with Modes of Literature	
or Engl. 213 — Intermed. Exposition	3
Speech Communications Elective	3
Social Science (minimum of 3 credits) and Humanities (minimum of 3 credits), exclusive of 9 credit communications requirement	15
Math. 200-201 — Calculus, A.S. 301 — Elem. Probability and Stat. *and* A.S. 302 — Analysis of Experimental Design and Regression *or* A.S. 402 — Scientific Sampling; *or* Math 200, 201, 202 — Calculus, Math 302 — Differential Equations (Math 200, 201, 202, 302 required for the Geophysics Option)	15
Phys. 211-212 — General Physics (Phys. 103-104 may be taken for General Geology Option)	8
Chem. 105-106 — General Chemistry	
or Chem. 211-212 — Chem Principles & Intro. Quant. Anal.	8
Biol. 103 — Biology and Man or other approved biology elective	4

3. For General Geology, Economic Geology and Petroleum Geology options, complete the following requirements:

Core Courses:	*Credits*
Geos. 101 — General Geology	3
Geos. 101L — General Geology Lab	1
Geos. 112 — Historical Geology	3
Geos. 112L — Historical Geology Lab	1
Geos. 213 — Mineralogy	4
Geos. 214 — Petrology	3
Geos. 314 — Structural Geology	3
Geos. 350 — Geologic Field Methods	2
Geos. 351 — Field Geology	6
Geos. 402 — Stratigraphic Principles	4
Geos. 417 — Intro to Geochemistry	3

In addition, complete one of the three options below:

General Geology Option:	*Credits*
Geos. 304 — Geomorphology	3
Geos. 321 — Sedimentation	3
Geos. 401 — Invertebrate Paleontology	4
Geos. 408 — Map and Air Photo Analysis	2
Geos. 416 — Optical Mineralogy and Petrography	4
Geos. 418 — Basic Geophysics	3
Electives (professional and general)	25
	—
Total	136

Economic Geology Option:	*Credits*
Geos. 304 — Geomorphology	3
Geos. 321 — Sedimentation	3
Geos. 401 — Invertebrate Paleontology	4
Geos. 407 — Geology of Mineral Resources	4
Geos. 408 — Map and Air Photo Analysis	2
Two of the following	5-7
Min. 202 — Mine Surveying (3 credits)	
Min. 300 — Fundamentals of Mining (3 credits)	
M. Pr. 304 — Intro. to Metallurgy (3 credits)	
M. Pr. 313 — Intro. to Mineral Preparation (3 credits)	
Min. 333 — Mining and Mineral Leasing Law (3 credits)	
Min. 407 — Mineral Industry and the Environment (2 credits)	
Min. 408 — Mineral Valuation and Economics (4 credits)	
G.E. 365 — Fundamentals of Geological Engr. (3 credits)	
One of the following:	
Min. 405 — Expl. Geophysics (4 credits) *or*	
Geos. 418 — Basic Geophysics (3 credits) *or*	
Geos. 451 — Practical Field Geophysics (2 credits)	2-4
Electives (professional and general)	14-18
	—
Total	136

Petroleum Geology Option:	*Credits*
Pet. E. 205 — Petroleum Drilling Engr.	3
Pet. E. 301 — Formation Evaluation	4
Geos. 321 — Sedimentation	3
Geos. 401 — Invertebrate Paleontology	4
G.E. 405 — Exploration Geophysics	4
Geos. 370 — Petroleum Geology	4
Geos. 408 — Map & Airphoto Analysis	2
Electives (Professional & general)	21
	—
Total	136

4. For the Solid Earth Geophysics Option, complete the following requirements:

	Credits
Geos. 101 — General Geology	3
Geos. 101L — General Geology Lab	1
Geos. 213 — Mineralogy	4
Geos. 214 — Petrology	3
Geos. 314 — Structural Geology	3
Geos. 351 — Field Geology*	4
Geos. 403 — Statistics and Data Analysis	3
Math. 421 — Applied Analysis I	4
Math. 422 — Applied Analysis II	4
Phys. 311 — Mechanics I	4
Phys. 331 — Electricity and Magnetism	4
Geos. 411 — Seismic Exploration	2
Geos. 410 — Potential Methods in Geophysics	2
Geos. 412 — Electrical Methods in Geophysics	2
Geos. 418 — Basic Geophysics	3
Geos. 451 — Field Geophysics	2
Pet.E. 302 — Formation Well Logging	2
Thirteen credits from the following	13
Geos. 112-112L — Historical Geology & Lab (4)	
Geos. 321 — Sedimentation (3)	
Geos. 402 — Stratigraphic Principles (4)	
Geos. 417 — Geochemistry (3)	
Phys. 312 — Mechanics II (4)	
Phys. 313 — Thermodynamics & Stat. Physics (4)	
Phys. 332 — Electricity and Magnetism (3)	
Electives (professional and general)	14
	—
Total	136

*Geos. 351 can be waived as a requirement if suitable field experience can be demonstrated.

A minor in geology requires 12-16 credits of approved geosciences courses.

Geology and Geophysics — M. S. Degrees*

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits, including a maximum of 12 credits in Geos. 693, Special Topics, and Geos. 699, Thesis. At least 9 credits in addition to thesis and research must be at the 600 level.

Geology Options:

A. General Geology Option: Complete at least one course from each of the three core areas — advanced structural geology, advanced petrology, and advanced stratigraphy.
B. Economic Geology Option: Complete 9 credits in applied geoscience with at least one course in mineral economics or engineering management.
C. Petroleum Geology Option: Complete one course each in advanced structural geology, advanced stratigraphy and sedimentation, advanced geology of mineral and energy resources, and a geophysics course approved by the graduate advisory committee.

Geophysics Options:

A. Solid-Earth Geophysics Option: In addition to geophysics courses, the graduate advisory committee will require a selection of advanced courses in both geology and physics, the actual courses depending on how far the student's degree work is biased towards one discipline or the other.
B. Snow, Ice and Permafrost Geophysics Option: The student's graduate advisory committee will require a selection of advanced courses in ice, snow and permafrost studies and either geology, applied science and engineering, physics, or meteorology/oceanography (climate), depending on how far the student's degree is biased toward one given discipline.

*To be admitted to the graduate program unconditionally, the student is expected to have a background at least to the level of that listed for the relevant B.S. option in geosciences; however, deficiencies may be made up prior to unconditional acceptance.

Geology and Geophysics — Ph.D.

1. Complete the general university requirements and Ph.D. degree requirements, pages 23 and 26.
2. Complete required program as arranged by conference with the graduate advisory committee.

Health Sciences — Preprofessional Curricula

Professional schools of medicine and dentistry as well as many of the professional schools in paramedical fields (e.g., medical technology, physical therapy) require one to four years

of collegiate work before a student will be admitted. These years of preliminary academic work may be taken at UAF, where the students follow a sequence of courses planned to meet the requirements of the particular professional field in which they are interested. Students interested in health professions should contact the Health Sciences Preprofessional Advisor, Division of Life Sciences, before registering.

Most premedical students plan on four preliminary years. The students are encouraged to develop their major area of interest, be it either in natural or social sciences or in the humanities. In preparation for medical school the student must gain a thorough understanding of the modern concepts in biology, chemistry, and physics. Students are encouraged to include chemistry and either physics or biology in their freshman course of study. Usually students at UAF follow a curriculum leading to a bachelor of science degree with a major in biological sciences or chemistry, earning a bachelor's degree at the end of four years. Adjustments may be made to meet varying requirements. Premedical students who are accepted in medical school prior to finishing their degree and who wish to receive a bachelor's degree from UAF may obtain from the director, Division of Life Sciences, a description of the requirements which must be completed.

Interdisciplinary Studies

The College of Environmental Sciences offers a variety of interdisciplinary degrees in biological sciences, wildlife management and fisheries. For further information about the interdisciplinary studies program, see page 64.

Marine Sciences Program

Degrees: M.S., Ph.D.
Minimum Requirements for Degree: M.S. 30 credits (beyond a bachelor's degree)

The program in marine science is coordinated through the Division of Marine Sciences by a committee composed of staff members from within the college involved in these areas of graduate education. The purpose of the program is to provide academic and research opportunities for students seeking M.S. and Ph.D. level degrees in oceanography and marine biology. At the M.S. level, the program emphasizes ocean related course work in the various disciplines of oceanography and marine biology. Additional courses are selected from the curriculum at large to assure a high level of competence in the student's area of major interest.

The Institute of Marine Science offers excellent opportunities for training in oceanography and marine biology through interaction with a large staff of scientists actively engaged on oceanographic research on the Fairbanks campus, at the Seward Marine Center and on various research vessels. Programs in chemistry, physics, geology, biological sciences, and mathematics offer substantial course material relevant to the program.

Graduate students are selected on the basis of their backgrounds and on the university's capabilities to meet their individual needs. Each applicant is considered by an admissions committee selected from the program coordination staff. Requests for graduate study are received and reviewed throughout the year.

Faculty

Marine Science Program

Program Head and Professor of Marine Science: John J. Goering
Professors: Vera Alexander, Robert J. Barsdate, David C. Burrell, Don K. Button, Robert Elsner, Howard H. Feder, C. Peter McRoy, William S. Reeburgh, Thomas C. Royer, David G. Shaw
Associate Professors: R. Theodore Cooney, Francis H. Fay, John J. Kelley, A. Sathy Naidu, H. Joseph Niebauer, Tsuneo Nishiyama
Assistant Professors: Susan M. Henrichs, Walter R. Johnson, George W. Kipphut, Donald M. Schell
Affiliate Faculty: James A. Raymond
Joint Appointment Faculty: Willard E. Barber, Hans W. Behrisch, Edward J. Brown, Paul B. Reichardt, Ronald L. Smith

Requirements

Oceanography — M.S. Degree
1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits including OCN 620, 630, 650 and 660 (or equivalents) and two semesters of OCN 691/692. Fisheries oceanographers will take OCN 640 and any three of the above courses.
3. Field experience aboard an oceanographic vessel is expected of oceanography majors.

Marine Biology — M.S. Degree
1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits including MBI 610, OCN 650 (or equivalent) plus six additional credits in oceanography, biology or marine ecology and two semesters of OCN 691/692.

Oceanography — Ph.D. Degree
There are no fixed course requirements, nor is an M.S. degree required to obtain the Ph.D. degree. This degree is awarded for proven ability and scholarly attainment and each candidate's program is planned with his or her graduate advisory committee. A candidate for the Ph.D. degree in the marine science program will be expected to have course work at least equivalent to that required for the M.S. degree.

Medical Technology

University of Alaska/University of Washington Cooperative Program

Students may enroll for four semesters at UAF completing requirements noted below, then apply for acceptance into the professional phase of the Medical Technology Program at the University of Washington for an additional seven quarters. Up to four *bona fide* Alaska resident students will be accepted into the professional phase each year, if they qualify for admittance to the program. The B.S. degree is granted from the University of Washington.

Program requirements: 60 semester credits with a GPA of 3.00 including the following courses:

	Credits
Biol. 105-106 — Fundamentals of Biology I and II	8
Biol. 111-112 — Human Anatomy and Physiology	
or Biol. 210 — Animal Physiology	
and Biol. 317 — Comp. Anatomy of Vertebrates	8 or 9

Biol. 343 — General Bacteriology.....5
Chem. 105-106 — General Chemistry.....8
Chem. 212 — Quantitative Analysis.....4
Chem. 321-322-324 — Organic Chemistry and Lab.....9
Math. 271-272 or A.S. 301 — Calculus; Statistics.....7 or 8
Engl. 111-211 or 213 — Written Communication.....6
Sp.C. 111 — Fundamentals of Oral Communications.....3
Social Science elective — 3 credits, Humanities elective — 3 credits, other electives — 8-9 credits

For information on application procedures to the University of Washington and the Medical Technology Program contact the Health Professions Advisor, WAMI Program, University of Alaska-Fairbanks, Fairbanks, AK 99701.

Medicine

Medical Sciences
Washington, Alaska, Montana, and Idaho
Medical Education Program (WAMI)

In September 1971, the University of Alaska started a unique collaborative program for decentralizing portions of the educational and training program of the University of Washington School of Medicine. Resident Alaskan students now have an opportunity to pursue medicine and are exposed to Alaskan medicine early in their careers.

Students formally enrolled in the WAMI Program must first have been admitted as Alaska WAMI applicants to the freshman class of the University of Washington School of Medicine in Seattle as candidates for the doctoral degree in medicine and are, therefore, admitted to both universities. After the students complete the year's medical courses in Fairbanks, they study in Seattle until their junior or senior year, when they become eligible for community-based clinical clerkships with practicing physicians in one of the four WAMI states. This decentralized instruction in both the basic science (freshman and sophomore) and clinical (primarily junior and senior) years of medical school is designed to encourage physicians to consider practice in smaller communities.

All but one of the medical science courses listed in this catalog are taught at an advanced level (graduate equivalent) and are intended primarily for WAMI medical students. However, some of the courses are open to qualified students in good standing, subject to conditions listed for each course and with permission of the course chairman.

Ten WAMI/University of Washington Medical School positions in each year's class are reserved for Alaskan residents.

For further information about the WAMI Medical Education Program contact the Health Professions Advisor, WAMI Medical Education Program, University of Alaska-Fairbanks, Fairbanks, Alaska 99701.

Faculty

WAMI Medical Education Program
Director: Wayne W. Myers
Health Professions Advisor: James R. Crook
Professors: James R. Crook, Wayne W. Myers, Philip O. Nice
Associate Professors: Raymond P. Bailey, Mim Dixon, Kenneth Kastella, Betty Anne Philip
Assistant Professor: Helen Anne Myers
Instructor: Cheryl Roussain-Nice
Adjunct Faculty: E. Leanne Converse, David Grauman, Aaron Wolf, John Wreggit
Affiliate Faculty: C. Earl Albrecht, Elizabeth Elsner, Daniel Failoni, James Gollogly, Robert F. Kraus, Richard Raugust

Space Physics and Atmospheric Sciences Program

Degrees: M.S., Ph.D.
Minimum Requirements for Degrees: M.S., 30 credits beyond B.S.; Ph.D., no fixed credit

The space physics and atmospheric sciences program is a graduate program that is intimately connected with the research activities of the Geophysical Institute, which offers ample thesis material in the fields of space physics and atmospheric science. The research program of the Geophysical Institute currently emphasizes investigations of auroral, ionospheric and magnetospheric physics, geomagnetism and earth currents, radio wave propagation and scattering, solar-terrestrial relationships, aeronomy, laboratory studies of atomic and molecular processes, solar radiation, cloud physics, atmospheric boundary layer, aerosols and solar weather interaction, with emphasis on higher latitudes.

Faculty

Program Head and Professor of Geophysics: Gulamabas G. Sivjee
Professors: Syun-Ichi Akasofu, Albert E. Belon, Charles S. Deehr, Robert D. Hunsucker, Kolf Jayaweera, Joseph R. Kan, Robert P. Merritt, John L. Morack, Takeshi Ohtake, Manfred H. Rees, Gerald J. Romick, Glenn E. Shaw, Roger J. Sheridan, Daniel W. Swift, Gunter E. Weller, Gerd D. Wendler, Tunis Wentink, Jr., Eugene M. Wescott, Charles R. Wilson.
Associate Professors: Vladimir Degen, Thomas J. Hallinan, Hans C.S. Nielsen.
Assistant Professors: Sue Ann Bowling, Neal B. Brown, David C. Fritts, Lou-Chuang Lee, John V. Olson, Brenton J. Watkins.

GEOPHYSICAL INSTITUTE
Director: Juan G. Roederer

Requirements

Space Physics — M.S. Degree
1. Complete the general university requirements and the master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits of approved courses including:

	Credits
Basic courses in space physics	12
Approved physics courses (minimum)	12

Atmospheric Sciences — M.S. Degree
1. Complete the general university requirements and the master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits of approved courses including:

	Credits
Basic courses in atmospheric sciences	12
Approved Physics courses (minimum)	12

(Specialization in ice and snow studies with emphasis on ice physics, ice in climate and ice in science applications is available through the Geology/Geophysics Program (see Ice and Permafrost Geophysics Option.)

Space Physics — Ph.D. Degree
1. Complete the general university requirements and Ph.D. requirements, pages 23 and 26.
2. Complete the following:

	Credits
Basic courses in space physics	12
Approved physics courses (minimum)	12

Atmospheric Sciences — Ph.D. Degree
1. Complete the general university requirements and Ph.D. requirements, pages 23 and 26.
2. Complete the following:

	Credits
Basic courses in atmospheric sciences	12
Approved physics courses (minimum)	12

(For specialization in ice and snow studies, see Geology/Geophysics Program, Ice and Permafrost Option.)

Basic courses in Space Physics:	Credits
SPAS 626 — Plasma Physics I	3
SPAS 627 — Plasma Physics II	3
SPAS 640 — Auroral Physics	3
SPAS 650 — Aeronomy	3
SPAS 672 — Space Physics	3
SPAS 673 — Space Physics	3

Basic courses in Atmospheric Sciences:

SPAS 636 — Physics of the Lower Atmosphere	3
SPAS 646 — Atmospheric Dynamics	3
SPAS 650 — Aeronomy	3
SPAS 656 — Atmospheric Circulation, Weather, and Climate	3

The physics courses which are integral parts of the SPAS program are listed below:

Physics Courses:

Phys. 611 — Mathematical Physics	3
Phys. 612 — Mathematical Physics	3
Phys. 621 — Classical Mechanics	3
Phys. 622 — Statistical Mechanics	3
Phys. 631 — Electromagnetic Theory	3
Phys. 632 — Electromagnetic Theory	3
Phys. 651 — Quantum Mechanics	3
Phys. 652 — Quantum Mechanics	3

Wildlife Management

Degrees: B.S., M.S., Ph.D. (interdisciplinary)
Minimum Requirements for Degrees: B.S., 130 credits; M.S., 30 additional credits

The undergraduate curricula in the program in wildlife are intended to provide basic education and training. Two options are available: a wildlife research biologist option and a wildlife management biologist option. The research biologist option is designed for those students whose objective is to undertake the field and laboratory research needed to provide additional information on the workings of wild animal populations, the condition of their habitat, and the habitat-animal relationships. The management biologist option is designed for those students whose primary interests involve the interpretation, application, or dissemination of research findings, rather than their acquisition. That option is appropriate for those students contemplating careers in wildlife agency administration, in developing and implementing wildlife management plans and in public information and education. The curricula in both options provide a solid foundation for graduate study.

The geographic location of the university is particularly advantageous for the study of wildlife management. Spruce forest, aspen-birch forest, alpine tundra, bogs, and several types of aquatic habitats are within easy reach. Studies can be made in many other habitats ranging from the dense forests of Southeastern Alaska to the Arctic coast.

Adequate study collections of plants and animals are available, and a 2,000-acre study area is near the campus. Undergraduates have ample opportunity for close association with the personnel of the Alaska Cooperative Wildlife Research Unit, the Alaska Cooperative Fishery Research Unit, the Alaska Cooperative Park Studies Unit, and the several local offices of the federal and state conservation agencies. These agencies usually hire a number of students for summer field work. Thus, an unusually good opportunity is available for students to gain experience and to make job connections.

Faculty

Wildlife and Fisheries Program
Program Head and Associate Professor of Wildlife Management: Peter G. Mickelson
Professors: Frederick C. Dean, Samuel J. Harbo, Jr., David R. Klein, Robert B. Weeden
Associate Professors: Robert H. Armstrong, Philip S. Gipson, James B. Reynolds, Ronald Smith
Assistant Professors: Willard E. Barber, Jacqueline D. LaPerriere, Mark W. Oswood

Alaska Cooperative Fisheries Unit
Unit Leader: James B. Reynolds
Unit Assistant: Jacqueline D. LaPerriere
Unit Assistant: Robert H. Armstrong

Requirements

Wildlife Management — B.S. Degree
(Research Biologist Option)
1. Complete the general university requirements as listed on page 23 and 24.
2. Complete the following degree and program (major) requirements:

Courses	Credits
A.L.R. 101 — Conservation of Natural Resources	3
A.L.R. 380 — Soils	3
A.S. 301 — Elementary Probability and Statistics	3
A.S. 402 — Scientific Sampling	3
Biol. 105-106 — Fundamentals of Biology	8
Biol. 205 — Vertebrate Anatomy or Biol. 317 — Comp. Anatomy	3-4
*Biol. 210 — Animal Physiology	4
*Biol. 239 — Plant Form and Function	4
Biol. 271 — Principles of Ecology	4
Biol. 331 — Systematic Botany	4
Biol. 423 — Ichthyology (4)	
Biol. 425 — Mammalogy (3) Select 2 of 3	6-7
Biol. 426 — Ornithology (3)	
Biol. 471 — Population Ecology	3
Biol. 472 — Communities and Ecosystems	3
Chem. 105-106 — General Chemistry	8
Econ. 235 — Introduction to Natural Resource Economics	3
Engl. 111 — Methods of Written Communication	3
Engl. 213 — Intermediate Exposition	3
Engl. 414 — Research Writing	3
Math. 272-273 — Introduction to Calculus for the Life Sciences	6
Phys. 103-104 — College Physics	8
Sp. Comm. — Elective	3
W.F. 301 — Principles of Population Dynamics and Management	3
W.F. 333 — Literature of Ecology and Resource Management	2
W.F. 401 — Wildlife Management Techniques	3
W.F. 402 — Wildlife Biology and Management	3
W.F. 423 — Limnology	3
Total	102-104

In addition:
1. Complete the remainder of the B.S. social sciences/humanities requirement, 9 credits.
2. Complete sufficient electives to bring total to 130 credits.
3. Bachelor of science candidates are strongly urged to obtain work experience in wildlife-related positions with public resource agencies or private firms. Faculty members can help students contact potential employers.

*Note prerequisite.

Wildlife Management — B.S. Degree
(Management Biologist Option)

1. Complete the general university requirements as listed on page 23 and 24.
2. Complete the following degree and program (major) requirements:

Courses	Credits
A.L.R. 101 — Conservation of Natural Resources	3
A.L.R. 380 — Soils	3
A.L.R. 400 — Natural Resource Policies	3
A.L.R. 430 — Land-Use Planning	3
A.S. 301 — Elementary Probability and Statistics	3
Biol. 105-106 — Fundamentals of Biology	8
Biol. 205 — Vertebrate Anatomy	3
*Biol. 210 — Animal Physiology	4
*Biol. 239 — Plant Form and Function	4
Biol. 271 — Principles of Ecology	4
Biol. 331 — Systematic Botany	4
Biol. 425 — Mammalogy or Biol. 426 — Ornithology	3
Biol. 471 — Population Ecology	3
Biol. 472 — Communities and Ecosystems	3
Chem. 105-106 — General Chemistry	8
Econ. 235 — Introduction to Natural Resource Economics	3
Econ. 335 — Intermediate Natural Resource Economics	3
Engl. 111 — Methods of Written Communication	3
Engl. 213 — Intermediate Exposition	3
Engl. 414 — Research Writing	3
Math. 272-273 — Introduction to Calculus for the Life Sciences	6
Phys. 103-104 — College Physics	8
Sp. Comm. — Elective	3
W.F. 301 — Principles of Population Dynamics and Management	3
W.F. 333 — Literature of Ecology and Resource Management	2
W.F. 401 — Wildlife Management Techniques	3
W.F. 402 — Wildlife Biology and Management	3
W.F. 423 — Limnology	3
Total	105

In addition:
1. At least 9 credits must be completed from this group:

Geog. 302 — Geography of Alaska	3
Geog. 402 — Man and Nature	3
**J-B 102 — Broadcasting and Society	3
**J-B 301 — Basic Newsgathering and Processing	3
**J-B 203 — Basic Photography	3
J-B 311 — Magazine Article Writing	3

*Note prerequisite.
**Maximum of 3 credits may be included in the required 9.

Phil. 320 — Axiology	3
P.S. 101 — Introduction to American Government	3
P.S. 201 — Comp. Politics: Methods of Political Analysis	3
P.S. 263 — Alaska Native Politics	3
P.S. 301 — Public Admin. in Political Process	3
Psy. 101 — Introduction to Psychology	3
Soc. 101 — Introduction to Sociology	3
Soc. 102 — Introduction to Sociology	3
Soc. 309 — Urban Sociology	3

2. At least 1 of the following courses must be included:

A.L.R. 350 — Introduction to Forest System	3
A.L.R. 460 — Principles Outdoor Recreation Management	3
A.L.R. 450 — Forest Management	3
A.L.R. 370 — Introduction to Watershed Science	3

3. At least 2 of the following courses must be included:

W.F. 417 — Wildlife Management — Forest and Tundra	2
W.F. 419 — Wildlife Management — Wetlands	2
W.F. 429 — Introduction to Fisheries Science	3
W.F. 430 — Fisheries Management	3
W.F. 436 — Introduction to Aquaculture	3

4. Complete sufficient electives to bring total credits to 130.
Bachelor of science candidates are strongly urged to obtain work experience in wildlife-related positions with public resource agencies or private firms. Faculty members can help students contact potential employers.

The wildlife and fisheries program and the Alaska Cooperative Wildlife Research Unit cooperate in offering graduate work leading to the master of science degree. An interdisciplinary doctor of philosophy degree can also be offered. Persons desiring detailed information on the graduate program in wildlife management may obtain this from the head, wildlife and fisheries program. The procedure to be followed in applying for admission to graduate study is outlined in the section on Graduate Admissions in this catalog.

The Alaska Cooperative Wildlife Research Unit offers a limited number of research assistantships; information on these and the unit's program can be obtained from the leader, Alaska Cooperative Wildlife Research Unit, University of Alaska-Fairbanks, Fairbanks, Alaska. Applications for these assistantships should be sent to the unit leader; such applications are supplementary to the application for admission for graduate study.

Wildlife Management — M.S. Degree
1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 30 credits of approved courses, including W.F. 699 — Thesis, in the field of wildlife management.
3. Students working in subject areas involving significant non-English literature will be expected to read the appropriate foreign language.

Wildlife Management — Interdisciplinary Ph.D. Degree
See pages 23 and 26 for degree requirements.

College of Human and Rural Development

Ray Barnhardt, *Acting Dean*

The College of Human and Rural Development brings together the various programs that prepare persons to work in fields related to human development in the multicultural and rural contexts of Alaska. These include the fields of education, behavioral sciences, counseling, social work, and rural development. In addition to the programs offered on campus in Fairbanks, several programs are available on site in rural communities. The **cross-cultural education development program** (X-CED) offers an undergraduate teacher education program to students in rural areas through a network of eight regional field centers. A graduate program in cross-cultural studies and a rural teacher orientation program are also available off campus, coupled with summer coursework in Fairbanks. All programs in the college seek to prepare persons to work effectively in cross-cultural settings and display a sensitivity to and understanding of the diversity of the human condition.

The College consists of three departments through which the instructional programs are administered: **Behavioral Sciences and Human Services, Education, and Rural Development.** Research and development activities involving issues associated with human and rural development are supported and administered through the **Center for Cross-Cultural Studies.** Faculty and degree offerings are listed with each department.

Behavioral Sciences and Human Services

The Department of Behavioral Sciences and Human Services combines both the disciplinary foundations of psychology and sociology and their associated applied aspects such as social work and counseling. The goals of the departmental curricula are oriented towards providing the student not only a liberal arts education but to equip him with skills useful in functioning in rural and cross-cultural settings.

Psy 430 - clinical Psy 3

The department offers both undergraduate and graduate programs. Departmental programs include B.A. and B.S. in psychology, B.A. and B.S. in sociology, and B.A. in sociology with an emphasis in social work. At the graduate level, the department offers three M.Ed. programs in guidance and counseling: 1) elementary, 2) secondary, 3) community. The department also offers an M.Ed. in college student personnel administration.

Faculty

Department Head and Professor: M.S. Nagabhushana Rao
Professor: Sarkis Atamian, John Turner
Associate Professors: Gerald Berman, Theodore L. Drahn, Charles Geist, James Orvik, Richard G. Possenti, Harris Shelton
Assistant Professors: James Cole, Kenneth Green, Elmer Haymon, Richard Stenard

Psychology

Degrees: B.A., B.S.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits

Psychology seeks to guide the student in an understanding of human behavior. The field of psychology is necessary for students who are preparing for graduate study in psychology and also is helpful in preparing for other career fields.

Requirements

***Psychology — B.A. or B.S. Degree**
1. Complete general university requirements and B.A. or B.S. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:
33 credits in Psychology beyond Psy. 101.

Complete the 12 credit core requirement plus one of the options:

Core Requirement:	Credits
Psy. 101 — Introduction to Psychology	3
Psy. 250 — Introductory Statistics for the Behavioral Sciences	3
Psy. 260 — Experimental Psychology	3
Psy. 350 — Comparative Psychology	3

Generally Oriented Option:
18 credits from the following:

Psy. 102 — Advanced General Psychology	3
Psy. 240 — Developmental Psychology or Psy. 380 — Human Behavior in the Arctic	3
Psy. 320 — History and Systems of Psychology or Psy. 410 — Theories of Personality	3
Psy. 330 — Social Psychology	3
Psy. 340 — Abnormal Psychology	3
Psy. 420 — Motivation or Psy. 440 — Learning	3
Psy. 430 — Clinical Psychology	3

6 credits from the following:

Psy. 360 — Psychological Tests and Measurements	3
Psy. 370 — Drugs and Drug Dependence	3
Psy. 380 — Human Behavior in the Arctic	3
Psy. 450 — Human Memory and Language	3
Psy. 460 — Physiological Psychology	4
Psy. 470 — Sensation and Perception	3
Psy. 480 — Clinical Neurology	3

Complete the following (may be used to meet general degree requirements):

Anth. 101, 121 or 222	3
Biology Elective (any 3 credit course)	3
Soc. 101 — Introduction to Sociology	3

Clinically Oriented Option
Complete the following:

Psy. 240 — Developmental Psychology	3
Psy. 340 — Abnormal Psychology	3
Psy. 360 — Psychological Tests and Measurements	3
Psy. 410 — Theories of Personality	3
Psy. 420 — Motivation or Psy. 440 — Learning	3

6 credits from the following:

Psy. 320 — History and Systems of Psychology	3
Psy. 330 — Social Psychology	3
Psy. 370 — Drugs and Drug Dependence	3
Psy. 380 — Human Behavior in the Arctic	3
Psy. 420 — Motivation	3
Psy. 440 — Learning	3
Psy. 450 — Human Memory and Language	3
Psy. 460 — Physiological Psychology	4
Psy. 470 — Sensation and Perception	3
Psy. 480 — Clinical Neurology	3

Complete the following (may be used to meet general degree requirements):

Anth. 101, 121 or 222	3
Biol. 105-106 — Fundamentals of Biology I and II	8
Soc. 101 — Introduction to Sociology	3

Experimentally Oriented Option
Complete the following:

Psy. 320 — History and Systems of Psychology or Psy. 410 — Theories of Personality	3
Psy. 340 — Abnormal Psychology	3
Psy. 420 — Motivation	3
Psy. 440 — Learning or Psy. 450 — Human Memory and Language	3
Psy. 460 — Physiological Psychology	4
Psy. 470 — Sensation and Perception	3

6 credits from the following:

Psy. 240 — Developmental Psychology	3
Psy. 330 — Social Psychology	3
Psy. 370 — Drugs and Drug Dependence	3
Psy. 380 — Human Behavior in the Arctic	3
Psy. 440 — Learning	3
Psy. 450 — Human Memory and Language	3
Psy. 480 — Clinical Neurology	3

Complete the following (may be used to meet general degree requirements):

Anth. 101, 121 or 222	3
Biol. 105-106 — Fundamentals of Biology I and II	8
Soc. 101 — Introduction to Sociology	3

A minor is not required for the B.S. degree with a major in psychology.

***A minor in psychology requires 15 credits as follows:**

	Credits
Psy. 101 — Introduction to Psychology	3

9 credits from the following:

Psy. 250 — Introductory Statistics for the Behavioral Sciences	3
Psy. 260 — Experimental Psychology or Psy. 350 — Comparative Psychology	3
Psy. 320 — History and Systems of Psychology or Psy. 410 — Theories of Personality	3
Psy. 340 — Abnormal Psychology	3
Psy. 420 — Motivation or Psy. 470 — Sensation and Perception	3
Psy. 440 — Learning or Psy. 450 — Human Memory and Language	3
Psy. 460 — Physiological Psychology or Psy. 480 — Clinical Neurology	3

3 credits of Psychology electives from the following:

Psy. 102 — Advanced General Psychology	3
Psy. 240 — Developmental Psychology	3
Psy. 320 — History and Systems of Psychology	3

Psy. 330 — Social Psychology 3
Psy. 340 — Abnormal Psychology 3
Psy. 350 — Comparative Psychology 3
Psy. 360 — Psychological Tests and Measurements 3
Psy. 370 — Drugs and Drug Dependence 3
Psy. 380 — Human Behavior in the Arctic 3
Psy. 410 — Theories of Personality 3
Psy. 420 — Motivation 3
Psy. 430 — Clinical Psychology 3
Psy. 440 — Learning 3
Psy. 450 — Human Memory and Language 3
Psy. 460 — Physiological Psychology 4
Psy. 470 — Sensation and Perception 3
Psy. 480 — Clinical Neurology 3

*A psychology/sociology course cross-referenced in both fields can be used only once when the major and minor are in psychology/sociology.

Sociology

Degrees: B.A., B.S.
Minimum Requirements for Degrees: B.A. — 130 credits; B.S. — 130 credits

Sociology is the study of groups and their influence on personal behavior and culture. It is concerned with social processes which give rise to and shape man's language, experience, perception, meaning, and behavior.

Requirements

***Sociology — B.A. or B.S. Degree**
1. Complete the general university requirements and B.A. or B.S. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

Credits

Complete 27 credits in sociology beyond Soc. 101-102, including:
Soc. 251 — Intro. Statistics for Behavioral Sci. (also Psy. 250) 3
Soc. 302 — Social Psychology (also Psy. 330) 3
Soc. 304 — Culture and Personality 3
Soc. 309 — Urban Sociology 3
Soc. 402 — Theories of Sociology 3
Soc. 473 — Social Science Research Methods 3

Sociology electives:
(Soc. 363 and 407 recommended) 9

Complete 12 credits composed of one course each from psychology, philosophy, anthropology, and Justice 110.

A minor is not required for the B.S. degree with a major in sociology.

***A minor in sociology requires 15 credits in sociology beyond Soc. 101-102.**

The Social Work Curriculum

In addition to courses specifically related to the social services, the undergraduate program provides a sound grounding in the humanities and the biological and social sciences. The general requirements for a bachelor of arts degree must be met. These include courses in communication, mathematics, the humanities, and natural sciences.

The concentration in social work concerns itself with the knowledge and methods used in the social institutions for the maintenance and enhancement of human social functioning. The social services include counseling, social work, social welfare, corrections, probation and parole.

***Sociology with a Concentration in Social Work — B.A. Degree**
1. Complete the general university requirements and B.A. degree requirements on pages 23 and 24.
2. Complete the following program (major) requirements:

Credits

Psy. 101 — Introduction to Psychology 3
Soc. 101 — Introduction to Sociology 3
Soc. 103 — Introduction to Social Work 3
Soc. 305 — Social Welfare 3
Soc. 306 — Social Welfare: Policy and Issues 3
Soc. 201 — Social Problems 3
Soc. 251 — Statistics for the Behavioral Sciences 3
Soc. 342 — Human Behavior in the Social Environment 3
Soc. 343 — Sociology of Deviance
or Psy. 340 — Abnormal Psychology 3
Soc. 363 — Social Stratification 3
Soc. 361-362 — Intermediate Social Work Methods and Practice I and II 12
Soc. 461 — Advanced Social Work Methods and Practice I 6
Soc. 462 — Adv. Social Work Methods and Practice: Administration
or Soc. 463 — Adv. Social Work Methods and Practice: Community Organization 6
Soc. 408 — American Minority Groups 3
Soc. 473 — Social Science Research Methods 3

*A psychology/sociology course cross-referenced in both fields can be used only once when the major and minor are in psychology/sociology.

Guidance and Counseling

Guidance and Counseling Elementary — M.Ed. Degree

This program prepares educators to be elementary counseling consultants. The program includes: the acquisition of knowledge in counseling/consultation, appraisal and research. In addition, a supervised practicum experience is required.

Admission Requirements:
1. The equivalent of a University of Alaska Bachelor of Education degree or an Alaska elementary teaching certificate with a minimum of 24 semester hours of education courses with an average g.p.a. of 3.00 (B).
2. Three years of satisfactory teaching experience in an accredited elementary school.
3. Admission also may be contingent upon (1) satisfactory scores on various standardized tests and (2) a satisfactory personal interview conducted by Behavioral Sciences and Human Services faculty members.

Minimum Degree Requirements:
1. Complete a minimum of 39 credits in approved courses. This is a non-thesis program.
2. Pass a qualifying examination in the foundation courses after completing 15 credit hours of an approved program.
3. Pass a written comprehensive examination or design and complete a project/thesis approved by the advisory committee with an oral comprehensive examination.
4. Complete the general graduate degree requirements as listed on page 25.

Courses assigned by the student's graduate committee to remove deficiencies will not be allowed as part of the graduate program.

Required Courses: *Credits*
Ed. 601 — Graduate Seminar
or Ed. 622 — Cultural and Philosophical Foundations of Education 3
Ed. 615 — Foundations of Guidance and Counseling 3
Ed. 620 — Curriculum Development 3
Ed. 624 — Group Counseling 3
Ed. 628 — Life Span Development 3
Ed. 631 — Advanced Educational Psychology
or Ed. 670 — Culture and Thought Processes 3
Ed. 634 — Counseling Practicum I 3
Ed. 642 — Career Education in Public Schools 3
Ed. 645 — Behavioral Consultation 3
Soc. 306 — Social Welfare: Policies and Issues 3
Approved Electives 6
(Recommended: ANS 475; Ed. 480, 627, 629, 650; Psy. 410; Soc. 304, 405, 408; Sp.C. 330.)

Guidance and Counseling Secondary — M.Ed. Degree

This program prepares educators to be secondary school counselors. The program includes: the acquisition of knowledge in counseling, appraisal and research. In addition, a supervised practicum experience is required.

Admission Requirements
1. The equivalent of a University of Alaska Bachelor of Education degree or an Alaska secondary teaching certificate with a minimum of 24 semester hours of education courses with an average g.p.a. of 3.00 (B).
2. Three years of satisfactory teaching experience in an accredited public secondary school.
3. Admission also may be contingent upon (1) satisfactory scores on various standardized tests and (2) a satisfactory personal interview conducted by Behavioral Sciences and Human Services faculty members.

Minimum Degree Requirements:
1. Complete a minimum of 39 credits in approved courses. This is a non-thesis program.
2. Pass a qualifying examination in the foundation courses after completing 15 credit hours of an approved program.
3. Pass a written comprehensive examination or design and complete a project/thesis approved by the advisory committee with an oral comprehensive examination.
4. Complete the general graduate degree requirements as listed on page 25.

Courses assigned by the student's graduate committee to remove deficiencies will not be allowed as part of the graduate program.

Required Courses: *Credits*
Ed. 601 — Graduate Seminar
or Ed. 622 — Cultural and Philosophical Foundations of Education 3
Ed. 615 — Foundations of Guidance and Counseling 3
Ed. 623 — Principles of Individual Counseling 3
Ed. 624 — Group Counseling 3
Ed. 628 — Life Span Development 3
Ed. 630 — Evaluation: Methods and Procedures for Counselors and Educators 3
Ed. 631 — Advanced Educational Psychology
or Ed. 670 — Culture and Thought Processes 3
Ed. 634 — Counseling Practicum I 3
Ed. 636 — Counseling Practicum II 3
Ed. 642 — Career Education in Public Schools 3
Soc. 306 — Social Welfare: Policies and Issues 3
Approved Electives 6
(Recommended: ANS 475; Ed. 480, 620, 627, 629, 650; Soc. 304, 405, 408; Sp.C. 330.)

Guidance and Counseling Community — M.Ed. Degree

This program prepares individuals for social service and agency counseling. The program includes: the acquisition of knowledge in counseling, appraisal and research. In addition, a supervised practicum experience in a social service agency is required. *This degree does not qualify the participant for certification in the public school setting.*

Admission Requirements
1. Evidence of completion of the baccalaureate degree from an accredited institution in counseling, psychology, social work, human resources, or related helping professions, with a minimum grade point average of 3.00 (B).
2. Evidence of personal and professional suitability for agency counseling work will be sought. In part this will be inferred from the participant's academic and employment history and an interview with the graduate committee. Also, letters of reference will be required from two counselors or therapists currently practicing who will endorse the applicant's admission to the community counseling program.
3. Admission also may be contingent upon (1) satisfactory scores on various standardized tests and (2) a satisfactory personal interview conducted by Behavioral Sciences and Human Services faculty members.

Minimum Degree Requirements:
1. Complete a minimum of 39 credits in approved courses.
2. Pass a qualifying examination in the foundation courses after completing 15 credit hours of an approved program.
3. Pass a written comprehensive examination or design and complete a project/thesis approved by the committee with an oral comprehensive examination.
4. Complete the general graduate degree requirements as listed on page 25.

Required Courses: *Credits*
Ed. 601 — Graduate Seminar
or Ed. 622 — Cultural and Philosophical Foundations of Education 3
Ed. 615 — Foundations of Guidance and Counseling 3
Ed. 619 — Practicum in Counseling: Higher Ed./Agency 3
Ed. 623 — Principles of Individual Counseling 3
Ed. 624 — Group Counseling 3
Ed. 628 — Life Span Development 3
Ed. 634 — Counseling Practicum I 3
Ed. 670 — Culture and Thought Processes 3
Psy. 410 — Theories of Personality 3
Soc. 306 — Social Welfare: Policies and Issues 3
Soc. 408 — American Minority Groups
or ANS 475 — Alaska Native Social Change 3
Approved Electives 6
(Recommended: Ed. 627, 650; Soc. 304, 310, 342, 370; Sp.C. 330)

College Student Personnel Administration — M.Ed. Degree

This program is designed to train educators to be able to function in student service positions in higher education. This training would include specifically: history, philosophy, and contemporary issues in higher education; management concepts; principles of educational psychology, measurement, and research; and supervised laboratory experiences in college student personnel agencies.

Admission Requirements:
1. One year of satisfactory experience in post-secondary or secondary education or equivalent as approved by the Admissions Committee.
2. Admission may also be contingent upon (1) satisfactory scores on various standardized tests and (2) a satisfactory personal interview conducted by Behavioral Sciences and Human Services faculty members.

Minimum Degree Requirements:
1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 36 credits in approved courses in a non-thesis program, including Ed. 601, 627 and other required core courses, or 30 credits of approved courses in a thesis program, including Ed. 601, 627 and other required core courses.
3. Pass a comprehensive examination.
4. Recency of undergraduate credit will be of concern to the candidate's committee when developing the graduate program.

Education

Degrees: B.Ed., B.T., M.Ed., M.A.T., Ed.S.

Minimum Requirements for Degrees: B.Ed., B.T. — 130 credits; M.Ed. — minimum of 36 additional credits; M.A.T. — minimum of 36 additional credits; Ed.S. — minimum of 30 credits beyond master's.

Faculty

Professors: Raymond J. Barnhardt, Joan B. Clutts, Judith S. Kleinfeld, Dana C. Moore, Charles K. Ray
Associate Professors: E. Dean Coon, William K. Pennebaker, C. Douglas Rider, Ronald T. Scollon, Lillian P. Stinson
Assistant Professors: Eugene A. Adam*, Stephen E. Grubis, Barbara A. Harrison, Jerry Lipka*, Clifford Michel*, Linda G. Munson*, William H. Parrett, Richard E. Riedl, Norman C. Rothman*
Instructors: Lynne Ammu*, Wendy J. Esmailka*, Lynn R. Johnson*

*Field-based faculty.

Certification — Students may qualify for teaching certificates in various states only by planning their programs to meet specific requirements. Certificates are issued by the appropriate state department of education. In Alaska, certificates are granted by the Alaska Department of Education in Juneau. Students who obtain the B.Ed. degree will meet the current academic requirements for Alaskan certification. Any student minoring in education must meet the Alaska certification requirements. Students seeking a minor in education should consult with the head of the Department of Education during their freshman year to obtain specific requirements.

Cross-Cultural Education Development Program — This program provides training and support services related to the unique educational problems of Alaska's multicultural population. Field centers have been established throughout the state to make the services readily available. Each field center is staffed by a full-time faculty member who is responsible for coordinating the program activities within the region. The field center locations are as follows: Barrow, Bethel, Dillingham, Ft. Yukon, Galena, Kotzebue and Nome.

The services developed through the X-CED program are offered in three primary categories:

1. Full-time undergraduate course work for students seeking a B.Ed. degree, limited to a maximum of 15-20 students per region, to be selected by regional panels.
2. In-service training for teachers and other community members seeking self-improvement, certificate renewal or advanced training which may lead to a master's degree (M.Ed.) in cross-cultural education as time and resources permit. (M.Ed. students are also selected by regional panels.)
3. Supplemental services, including a resource library, workshops, technical assistance, and other support services as time and resources permit.

All inquiries regarding the above programs should be addressed to the field coordinator's office within the region in which the person resides, or to the X-CED Program Coordinator, Department of Education, on campus.

Admission to Teacher Education — Any student wishing to prepare for teaching through the University of Alaska-Fairbanks, must formally apply for admission to the teacher education program. Undergraduate students should consult with the head of the Department of Education, College of Human and Rural Development, at the beginning of their sophomore year to initiate procedures for formal application for admission to the teacher education program. Transfer students or post-baccalaureate students should make application the first semester of their enrollment on campus. Enrollment in education courses or admission to graduate studies in no way implies admission to the teacher education program.

Requirements

Early Childhood Education — B.Ed. Degree

1. Complete general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

Credits

A. Communication 9

1. Required Courses:
Engl. 111 — Methods of Written Comm. 3
Engl. 211 — Intermediate Expos. with Modes of Literature 3
Sp.C. Elective 3

B. Humanities (art; English, excluding lower division composition courses; languages; linguistics; music; philosophy; speech, 300 level or above) 14

1. Required Course:
Mus. 309 — Elementary School Music Methods 3

C. Social Sciences (anthropology; economics; geography, excluding 205, 339, 401; history; political science; psychology; sociology) 27

1. Required Courses:
Soc. 242 — The Family 3
Hist. 101-102 — Western Civilization
or Hist. 131-132 — History of the U.S. 6
P.S. Elective 3
Psy. 101 — Introduction to Psychology 3

2. Electives 12

D. Mathematics and Natural Science (biological sciences; chemistry; geog. 205, 339, 401; geosciences; physics) 9

1. Required Course:
*Math. 205 — Math. for Elementary School Teachers I 3

*Math. 206, Mathematics for Elementary School Teachers II, must also be taken by students applying for elementary certification.

E. Early Childhood Development 12
(ECD courses offered only at Tanana Valley Community College.)

Required Courses:
ECD 105 — Survey of Programs for Young Children 3
ECD 120 — Child Nutrition, Illness and Health 3
ECD 155 — Activities for Young Children 3
ECD 250 — Practicum in Early Childhood Development 3

F. Education (students must receive a minimum grade of "C" in each required education course and maintain an overall g.p.a. of 2.00) 33

1. Required Courses:
Ed. 303 — Language Development 3
Ed. 304 — Literature for Children 3
Ed. 312 — Human Development 3
Ed. 314 — Learning and Evaluation 3
Ed. 333 — History of Childhood 3
Ed. 409 — The Teaching of Beginning Reading 3

2. Minimum of 9 credits from the following courses:
Ed. 311 — Audio-Visual Methods and Materials 2
Ed. 315 — Elementary Methods: Classroom Management 2
Ed. 316 — Elementary Methods: Language Arts and Social Studies 3
Ed. 317 — Elementary Methods: Mathematics and Science 3
Ed. 318 — Methods: Art in the Elementary School 2

3. Electives 6

G. Complete a concentration (at least 12 credits at the 200 level or above) in any of the following fields:*

Art	Physical Education
English	Speech
Music	Theater

*Student must maintain a G.P.A. of 2.00 in area of concentration.

H. Forty-eight credits of upper-division courses, 24 of which must be completed at UAF.

I. Sufficient free electives to total 130 credits.

Candidates for the B.Ed. degree with a major in early childhood education must also complete the following required courses for elementary teacher credential endorsement*:

Credits

Ed. 314 — Learning and Evaluation 3
Ed. 315 — Elementary Methods: Classroom Management 2
Ed. 316 — Elementary Methods: Language Arts and Social Studies 3
Ed. 317 — Elementary Methods: Mathematics and Science 3
Ed. 410 — Developmental Reading in Content Areas 3
Ed. 452 — Elementary Student Teaching 9

*Appropriate credits earned in the fulfillment of the requirements for the B.Ed. with a major in early childhood education may be applied toward the above requirements.

Elementary Education — B.Ed. Degree

1. Complete general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

Credits

A. Communication 9
1. Required Courses:
Engl. 111 — Methods of Written Communication 3
Engl. 211 — Intermediate Exposition with Modes of Literature 3
Sp.C. Elective 3

B. Humanities (art; English, excluding lower division composition courses; languages; linguistics; music; philosophy; speech, 300 level or above 14
1. Required Course:
Mus. 309 — Elementary School Music Methods 3

C. Social Sciences (anthropology; economics; geography, excluding 205, 339, 401; history; political science; psychology; sociology) 24
1. Required Courses: *Credits*
Hist. 101-102 — Western Civilization
or Hist. 131-132 — History of the U.S. 6
P.S. 101 — Introduction to American Government & Politics 3
P.S. 210 — Alaska Government & Politics
or P.S. 263 — Alaska Native Politics 3
Psy. 101 — Introduction to Psychology 3

2. Electives 9

D. Mathematics 6
(Students are advised to take Math. 205 and 206.)

E. Natural Sciences (biological sciences; chemistry; geography 205, 339, 401; geosciences; physics) 6

F. Physical Education 2-3
Required: (One of the following courses)
P.E. 318 — Motor Development and Learning 3
P.E. 327 — Movement Activities for Children 2
P.E. 406 — Methods of Teaching Physical Education 3

G. Education (students must receive a minimum grade of "C" in each required education course and maintain an overall g.p.a. of 2.00 in education) 40
1. Required Courses:
Ed. 201 — Orientation to Education 3
Ed. 304 — Literature for Children 3
Ed. 312 — Human Development 3
Ed. 314 — Learning and Evaluation 3
Ed. 315 — Elementary Methods: Classroom Management 2
Ed. 316 — Elementary Methods: Language Arts and Social Studies 3
Ed. 317 — Elementary Methods: Mathematics and Science 3
Ed. 318 — Methods: Art in the Elementary School 2
Ed. 409 — The Teaching of Beginning Reading 3
Ed. 410 — Developmental Reading in Content Areas 3
*Ed. 452 — Elementary Student Teaching 9

*Candidates who have taught successfully two years in the public elementary schools may petition to be excused from Ed. 452. Candidates wishing to petition for student teaching waiver should see the head of the Department of Education immediately.
With approval, students may elect a rural student teaching experience. See Coordinator of Student Teaching.

2. Three credits from the following courses: *Credits*
Ed. 345 — Sociology of Education 3
Ed. 446 — Structure of American Education 3
Ed. 480 — Education of Culturally Different Youth 3

H. A total of 36 credits (including 12 upper-division credits) in any two of the following fields, with a minimum of 12 credits in either field:*

Alaska Native Languages	Linguistics
Anthropology	Mathematics
Art	Music
Biological Sciences	Philosophy
Chemistry	Physical Education
Economics	Physics
English	Political Science
Eskimo	Psychology
French	Russian
Geography	Spanish
Geosciences	Speech
German	Sociology
History	Theater

*Students must maintain a 2.00 g.p.a. in areas of concentration.

Credits earned in fulfillment of (A) through (F) above may be applied toward courses listed in (H) above or (I) below.

I. In lieu of Option "H" students may elect a concentration (36 hours, 12 of which must be upper-division credits) in Alaskan Studies such as:
ANL 215-216 — Alaska Native Langauges
ANL 387 — Bilingual Methods and Materials (with permission of instructor)
ANL 388 — Bilingual Methods and Materials (with permission of instructor)
Anth. 242 — Native Cultures of Alaska
Biol. 104 — Natural History of Alaska
Engl. 349 — Aleut, Eskimo, and Indian Literature of Alaska in English Translation
Engl. 350 — Frontier Literature of Alaska
Esk. — Eskimo Languages (to be approved by advisor)
Geog. 302 — Geography of Alaska
Geog. 327 — Cold Lands
Hist. 341 — History of Alaska
Hist. 375 — History of North Pacific
Hist. 484 — Seminar in Northern Studies
Mus. 223 — Native Alaskan Music
P.S. 263 — Alaska Native Politics
For other Alaskan related courses, students should see an advisor.

J. Forty-eight credits of upper-division courses, 24 of which must be completed at UAF.

K. Sufficient free electives to total 130 credits.

Elementary Teacher Credential Endorsement
(Minimum requirements for elementary certification and minor in Education.)*

1. Required Courses: *Credits*
Ed. 304 — Literature for Children 3
Ed. 312 — Human Development 3
Ed. 314 — Learning and Evaluation 3
Ed. 315 — Elementary Methods: Classroom Management 2
Ed. 316 — Elementary Methods: Language Arts and Social Studies 3
Ed. 317 — Elementary Methods: Mathematics and Science 3
Ed. 409 — The Teaching of Beginning Reading 3
Ed. 410 — Developmental Reading in Content Areas 3
Ed. 452 — Elementary Student Teaching 9

2. Recommended Courses ..... *Credits*
P.E. 327 — Movement Activities for Children 2
Ed. 309 — Elementary School Music Methods 3
Ed. 311 — Audio-Visual Methods and Materials 2
Ed. 318 — Methods: Art in the Elementary School 2
Ed. 480 — Cultural Influences in Education 3

Students must complete a baccalaureate degree. Students must also meet requirements for admission to Ed. 452. Elementary Student Teaching, which include: 6 credits of mathematics.

*See advisor or advisory committee.

Secondary Education — B.Ed. Degree
1. Complete general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:
Credits

A. Communication 9
1. Required Courses:
Engl. 111 — Methods of Written Communication 3
Engl. 211 — Intermediate Exposition with Modes of Literature 3
Sp.C. Elective 3

B. Humanities (art; English, excluding lower division composition courses; languages; linguistics; music; philosophy; speech, 300 level or above) 14

C. Social Sciences (anthropology; economics; geography, excluding 205, 339, 401; history; political science; psychology; sociology) 24

1. Required Courses:
Hist. 101-102 — Western Civilization
or Hist. 131-132 — History of the U.S. 6
P.S. 101 — Introduction to American Government and Politics 3
P.S. 211 — State and Local Government 3
P.S. 263 — Alaska Native Politics 3
Psy. 101 — Introduction to Psychology 3

2. Electives 6

D. Mathematics and Natural Sciences (biological sciences; chemistry; Geography 205, 339, 401; geosciences; physics) 8

E. Education (students must receive a minimum grade of "C" in each required education course and maintain an overall g.p.a. of 2.00) 37

1. Required Courses: *Credits*
Ed. 305 — Introduction to Secondary Education 4
Ed. 312 — Human Development 3
Ed. 314 — Learning and Evaluation 3
Ed. 402 — Methods of Teaching 3
Ed. 407 — Reading Strategies for Secondary Teachers 3
*Ed. 453 — Secondary Student Teaching 12

2. Nine credits from the following courses:
Ed. 345 — Sociology of Education 3
Ed. 424 — Small High School Programs 3
Ed. 446 — Structure of American Education 3

Ed. 480 — Cultural Influences in Education 3
Ed. Elective approved for students in Secondary Education 3

(Students should consult with the Head, Department of Education, for the list of approved electives.)

*Candidates who have taught successfully two years in the public secondary schools may petition to be excused from Ed. 453.
Candidates wishing to petition for student teaching waiver should see the Head, Department of Education, immediately.

F. Teaching majors and minors (students must maintain at least a 2.00 g.p.a. in their teaching majors):

Option 1: Complete a teaching major of at least 26 approved credits and a teaching minor of at least 16 approved credits for a total of 51 credits of which at least 18 must be upper division. See advisor.

Major or Minor (Option 1):

Art	History
Biological Sciences	Mathematics
Business Education	Music
Chemistry	Physical Education
Economics	Physics
English	Speech
**Foreign Language	

Minor Only (Option 1):

*Geography	*Political Science
Journalism	*Sociology

Option 2: Complete an integrated teaching major-minor of 51 approved credits. See adviser.

Integrated Major-Minor (Option 2):

General Science	Earth Sciences
Social Science	

Option 3: Rural high school major-minor — (for persons planning to teach in rural Alaska).

Integrated Major-Minor (Option 3):

Humanities	Social Science
Math-Science	

*Approved for history major only.
**Confer with head, Department of Education.

G. Forty-eight credits of upper-division courses, 24 of which must be completed at UAF.

H. Sufficient free electives to total 130 credits.

Credit earned in fulfillment of (B), (C), and (D) above may be applied toward the teaching major and teaching minor.

Secondary Teacher Credential Endorsement

(Minimum requirements for secondary certification and minor in education.)

All major in other departments who wish to obtain an Alaskan secondary teaching certificate should confer with the head, Department of Education in their freshman year to obtain course requirements and application procedures for admission to the Teacher Education Program. It is essential that the student have the necessary prerequisites and be admitted to the Teacher Education Program prior to acceptance for placement in student teaching in the public schools. Undergraduates should contact the coordinator of secondary education at the beginning of their sophomore year to plan for a second teaching field. Students may be endorsed for secondary certification only in majors which have been approved by the Alaska Department of Education. (See options 1, 2 and 3, section F, above, and consult with the coordinator of secondary education.)

1. Required Courses: *Credits*
Ed. 305 — Introduction to Secondary Education 4
Ed. 312 — Human Development 3
Ed. 314 — Learning and Evaluation 3
*Ed. 402 — Methods of Teaching 3
Ed. 407 — Reading Strategies for Secondary Teachers 3
Ed. 453 — Secondary Student Teaching 12

*Elective: 3 credits from the following courses: *Credits*
Ed. 345 — Sociology of Education 3
Ed. 402 — Methods of Teaching 3
(when not taken as a required course)
**Ed. 424 — Small High School Programs 3
Ed. 446 — Structure of American Education 3
Ed. 480 — Cultural Influences in Education 3

*Mus. 405 or P.E. 406, when taught as a regular course may be substituted for Ed. 402. (Students making this substitution are strongly encouraged to use Ed. 402 for the required 3 credits of elective in Education.)

**Required for students electing rural student teaching.

2. Students must complete a baccalaureate degree.

Requirements for Admission to Student Teaching

1. Elementary School — kindergarten through eighth grade:

a. Acceptance to the teacher education program.
b. A formal application on file with the director of student teaching by October 1 for student teaching in the following spring semester and by February 15 for student teaching in the following fall semester.
c. A completed physical examination.
d. Completion of 100 credits leading to a bachelor's degree with a minimum g.p.a. of 2.00.
e. Completion of six credits in mathematics; Ed. 312, 314, 315, 316, 317, and 409 or 410.*
f. A minimum grade of "C" in required math courses and in each education course.
g. Approval of Committee on Admission to Teacher Education to enter student teaching.
h. A maximum of 15 credits is permitted while enrolled in student teaching. These 15 credits include the 9 credits granted for student teaching.
i. Those students who meet all of the above requirements at another university must take at least 9 credits of education courses at UAF.

*With permission of Department of Education, either Ed. 409 or Ed. 410 may be taken concurrently with Ed. 452.

2. Secondary Schools — seventh through twelfth grades:

a. Acceptance to the teacher education program.
b. A formal application on file with the director of student teaching by October 1 for student teaching in the following spring semester and by February 15 for student teaching in the following fall semester.
c. A completed physical examination.
d. Completion of 100 credits leading to a bachelor's degree with a minimum g.p.a. of 2.00.
e. Completion of a minimum of 24 approved credits in an approved teaching major with a g.p.a. of 2.00 or more.
f. Completion of Ed. 305, 312, 314, 402, and 407.
g. A maximum of 15 credits is permitted while enrolled in student teaching. These 15 credits include the 12 credits granted for student teaching.
h. A minimum grade of "C" in each education course.
i. Approval of Committee on Admission to the Teacher Education Program to enter student teaching.
j. Those students who meet all of the above requirements at another university must take at least 9 credits of education courses at UAF.

Education — B.T. Degree*

A certifiable secondary education program in the technical areas of: food services technology, aviation technology and electronics technology.

1. Complete general university requirements and B.T. degree requirements, pages 23 and 25.
2. Complete the following major complex requirement beyond the associate degree major (30 credits):

Credits
A. Upper-division credits in technical specialty 0-6
B. Complementary area: Education (31 credits):
1. Core requirements:
Ed. 305 — Introduction to Secondary Education 4
Ed. 312 — Human Development 3
Ed. 314 — Learning and Evaluation 3
Ed. 402 — Methods of Teaching 3
Ed. 407 — Reading Strategies for Secondary Teachers 3
Ed. 446 — Structure of American Education 3

2. Specialty requirement:
Ed. 453 — Secondary Student Teaching (for teaching in secondary schools) or approved courses selected to meet specific needs for other levels and types of teaching 12

*Students at the time of electing education as a major complex must consult with the head, Department of Education, for admission to the teacher education program and for approval of teaching major.

M.Ed. Degree

A person must make application for admission to graduate study and may be required to submit acceptable scores on a graduate entrance examination before being considered for admission to the M.Ed. program. The program offers several options from which a person selects an area of specialization. Inquiries concerning the options available and the specific requirements of each option should be directed to the head, Department of Education. In addition, the head, Department of Education should be contacted concerning the procedure to be followed in applying for admission to graduate study and taking the graduate entrance examination.

Admission Requirements for M.Ed. Degrees in Elementary Education and Secondary Education:

1. The equivalent of a University of Alaska-Fairbanks bachelor of education degree or Alaska teaching certificate with a minimum of 24 credits of education courses with an average g.p.a. of 3.00.
2. One year of satisfactory teaching experience or administrative experience in public schools.
3. Admission also may be contingent upon (1) satisfactory scores on various standardized tests and (2) a satisfactory personal interview conducted by Department of Education faculty members.

Minimum Degree Requirements:

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 36 credits in approved courses in a non-thesis program, including Ed. 601, 627 and other required core courses, or 30 credits of approved courses in a thesis program including Ed. 601, Ed. 627, and other required core courses.
3. Pass a comprehensive examination.
4. Recency of undergraduate credit will be of concern to the candidate's committee when developing the graduate program.

Admission Requirements for M.Ed. Degrees in Public School Administration:

1. The equivalent of a University of Alaska-Fairbanks, bachelor of education degree or Alaska teaching certificate with a minimum of 24 credits of education courses with an average g.p.a. of 3.00.
2. Three years of satisfactory teaching experience or administrative experience in public schools.
3. Admission also may be contingent upon (1) satisfactory scores on various standardized tests, and (2) a satisfactory personal interview conducted by Education faculty members.

Minimum Degree Requirements:

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 36 credits in approved courses in a non-thesis program, including Ed. 601, 627 and other required courses, or 30 credits of approved courses in a thesis program including Ed. 601, 627 and other required core courses.
3. Pass a comprehensive examination.
4. Recency of undergraduate credit will be of concern to the candidate's committee when developing the graduate program.

Certification Endorsement: Public School Administration

Students holding a master's degree with a minimum of three years teaching experience may be eligible for certification in public school administration by completing a core of specialization courses. See head, Department of Education.

Admission Requirements for M.Ed. in Cross-Cultural Education:

Students interested in a master of education degree in cross-cultural education are requested to see the director of the Center for Cross-Cultural Studies.

Vocational Education — M.Ed. Degree

This degree is designed to serve baccalaureate graduates with a major concentration in a subject normally taught in a high school or community college vocational education program for a specialized career in teaching. Subjects normally taught in high schools or community colleges are:

- Accounting and Bookkeeping
- Agriculture
- Clerical Occupations
- Communications
- Construction
- Electricity/Electronics
- Fisheries
- Food Services
- Forestry and Forest Products
- Health Occupations
- Home Economics
- Industrial Mechanics
- Marketing
- Metals
- Service Occupations
- Steno/Secretarial
- Transportation

Admission Requirements:

1. The equivalent of a University of Alaska-Fairbanks bachelor of education degree with a concentration in a subject normally taught in a high school or community college vocational education program or an Alaska teaching certificate with a minimum of 24 credits of education courses with an average g.p.a. of 3.00.
2. One year of satisfactory teaching experience or administrative experience in an accredited public secondary school or in a community college.
3. Admission may also be contingent upon (1) satisfactory scores on various standardized tests and (2) a satisfactory personal interview conducted by Department of Education faculty members.

Minimum Degree Requirements:

1. Complete the general university requirements and master's degree requirements, pages 23 and 25.
2. Complete a minimum of 36 credits in approved courses in a non-thesis program, including Ed. 601, 627 and other required core courses, or 30 credits of approved courses in a thesis program including Ed. 601, 627 and other required core courses.
3. Pass a comprehensive examination.
4. Recency of undergraduate credit will be of concern to the candidate's committee when developing the graduate program.

Master of Arts in Teaching

The master of arts in teaching is designed to serve the following categories of students:

Category I

Baccalaureate graduates with a good general education and with majors or equivalent majors in a basic academic discipline who wish to prepare for a career in elementary school classroom teaching.
NOTE: Students under Category I will be admitted as education majors. The student's advisory committee, consisting of a minimum of three members, will be appointed by the head of the Department of Education.

Category II

Baccalaureate graduates with a good general education and with majors or equivalent majors in subjects commonly taught in high school and who wish to prepare for a career in secondary school classroom teaching.
NOTE: Students under Category II will be admitted as education majors. The student's advisory committee, consisting of at least two members from education and one member from the student's major subject area, will be appointed by the head of the Department of Education.

Category III

Baccalaureate graduates who have or who can qualify for the Alaska secondary school certificate, who intend to make secondary school classroom teaching their career and who wish to take additional work in their teaching major and/or minor as well as in Education.
NOTE: Students under Category III will enroll in a department or program which offers an approved M.A.T. program. Students who have been accepted for the M.A.T. degree must also apply through the Department of Education for admission to the teacher education program.

Admission Requirements:

1. Eligibility for one of the three above-mentioned categories.
2. In general, a grade point average of at least 3.00 in the baccalaureate major, and in the case of Category III, at least 3.00 both in the teaching major and in education courses.
3. Submission of the following to the Director of Admissions and Records:

a. a completed University Application of Admission to Graduate Study.
b. a statement of goals to which the M.A.T. will contribute.
c. official transcripts of all previous college or university work.
d. at least three letters of reference.

4. Additional evaluative material may be required by some departments: e.g.,

a. Scores from the aptitude test of the Graduate Record Examination and/or scores from the advanced tests in the field of the baccalaureate major.
b. An interview (an interview is required for admission to a teacher certification program).

5. Recommendation for admission by the head of the Department of Education and the dean (or head) of the subject matter discipline (except Category I).

Degree Requirements:

1. A minimum of 36 semester credits is required for the M.A.T. degree, 15 or more of which must be at the 600-level for Categories II and III (secondary). A minimum of nine 600-level credits must be earned for Category I. While 36 semester credits is the minimum number of credits required, experience has shown that many M.A.T. students find it necessary to earn 45 or more credits in order to satisfy academic deficiencies and/or professional certification requirements.
2. For general education background, the total education of each M.A.T. student should include approximately 15 semester credits of study in each of the following areas: (a) mathematics and natural science, (b) social science, and (c) humanities.
3. The total education of the student preparing for a career in secondary school teaching must include an approved teaching major as adjudged by the Department of Education standards and/or accreditation standards of the Northwest Association of Secondary and Higher Schools.
4. The total education of the student preparing for a career in either elementary or secondary teaching must include the course requirements necessary for Alaska teacher certification. (See education minor in current catalog.)
5. Required education courses common to all M.A.T. degrees are:

	Credits
Ed. 601 — Graduate Seminar	3
Ed. 622 — Philosophy of Education	3

Other specific courses required by the members of the student's graduate committee may vary depending on the particular degree.
6. Some departments may have additional degree requirements.
7. Each candidate must pass a written comprehensive examination. The examining committee shall consist of the student's advisory committee. There is no thesis requirement for the M.A.T. degree.

Approved Programs:

The M.A.T. degree at the University of Alaska-Fairbanks has been approved for the following subject matter areas: biology, chemistry, education, English, geosciences, history, mathematics, music and physics. Departments other than these must request specific approval for offering the M.A.T. Normally, such approval will be restricted to departments representing commonly taught secondary school subjects. Students wishing to study toward the M.A.T. degree in areas not previously approved may apply for admission under the university's interdisciplinary (individual attention) program.

Ed.S. Degree in School Administration

The Ed.S. degree is designed for teachers and other educators (1) who wish to undertake graduate study beyond the master's degree; (2) who wish to qualify for an intermediate degree between the master's and the doctorate; (3) who wish to develop further competence in one field of specialization.

Admission Requirements:

1. Applicants must be experienced educators who have successfully completed at least three years of public school administration.
2. All candidates should meet the University of Alaska-Fairbanks bachelor of education degree requirements (or equivalent) for either elementary or secondary education majors with a minimum of 24 credits of education courses.
3. A master's degree is required, and should be in a field which provides an appropriate foundation for the additional graduate study.
4. Submission to the Director of Admissions:

a. A completed university application form.
b. Official transcripts of all previous college or university work.
c. Three letters of reference, at least one from a previous employer, testifying as to teaching or administrative ability.

5. Admission will be contingent upon:

a. Minimum g.p.a. of 3.00 in graduate work.
b. Acceptable scores on the Graduate Record Examination: Aptitude test and the advanced test in Education.
c. A satisfactory review conducted by admissions committee of the Department of Education (may include a personal interview by the committee).

Degree Requirements

1. The minimum requirements will be the completion of 30 semester hours beyond the master's degree. At least 24 hours must be completed at UAF.
2. Fulfillment of the requirements of the Ed.S. degree must be completed within seven years after first registering in the program.
3. Satisfactory performance on written and oral examination conducted by the Department of Education faculty is required.
4. At least 21 of the 30 semester hours must be at the graduate level.

Interdisciplinary Studies — Students are encouraged to develop interdisciplinary degree programs through the Department of Education. For further information about the interdisciplinary studies program, see page 62.

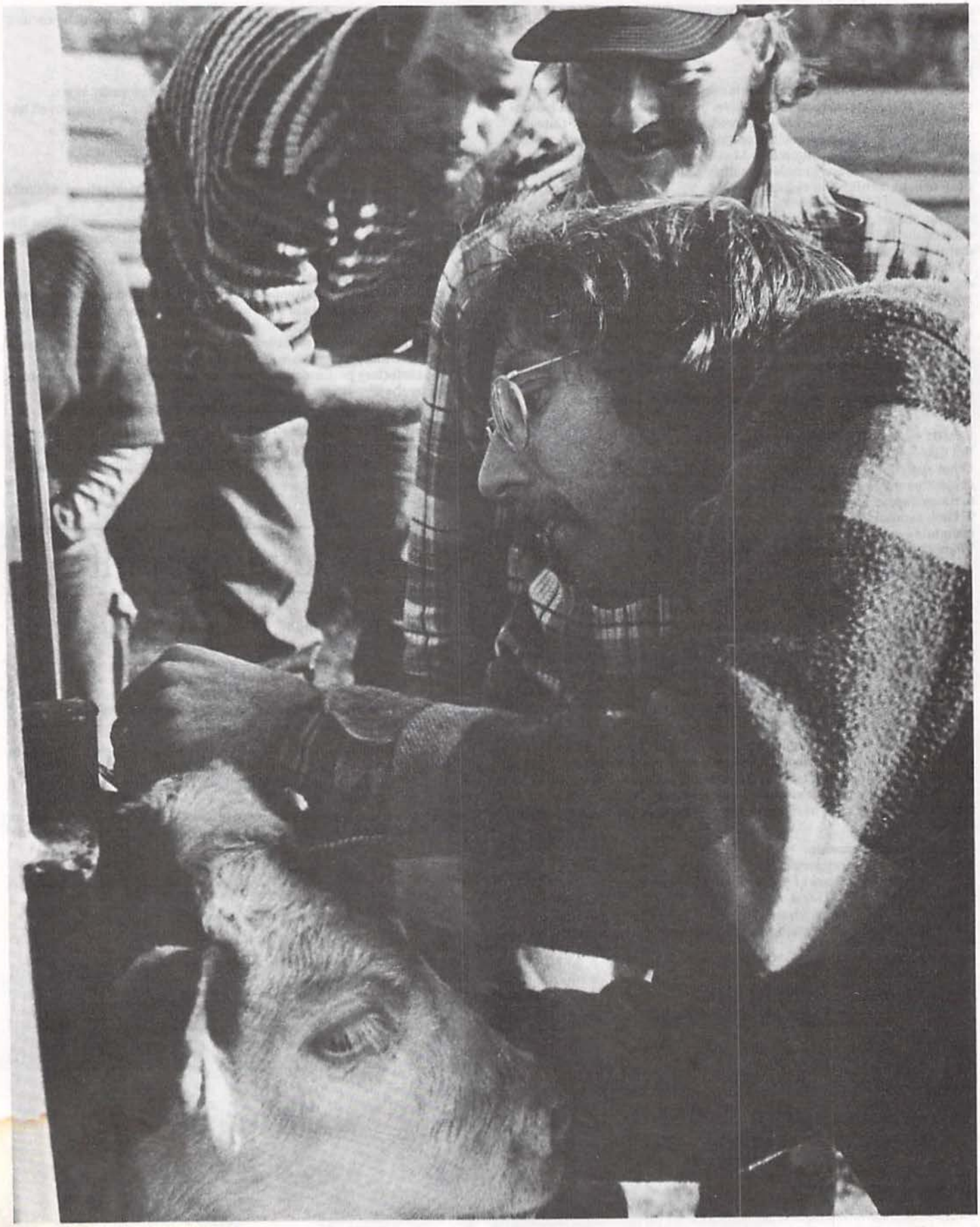
Rural Development

Degrees: B.Ed., Human Resource Development

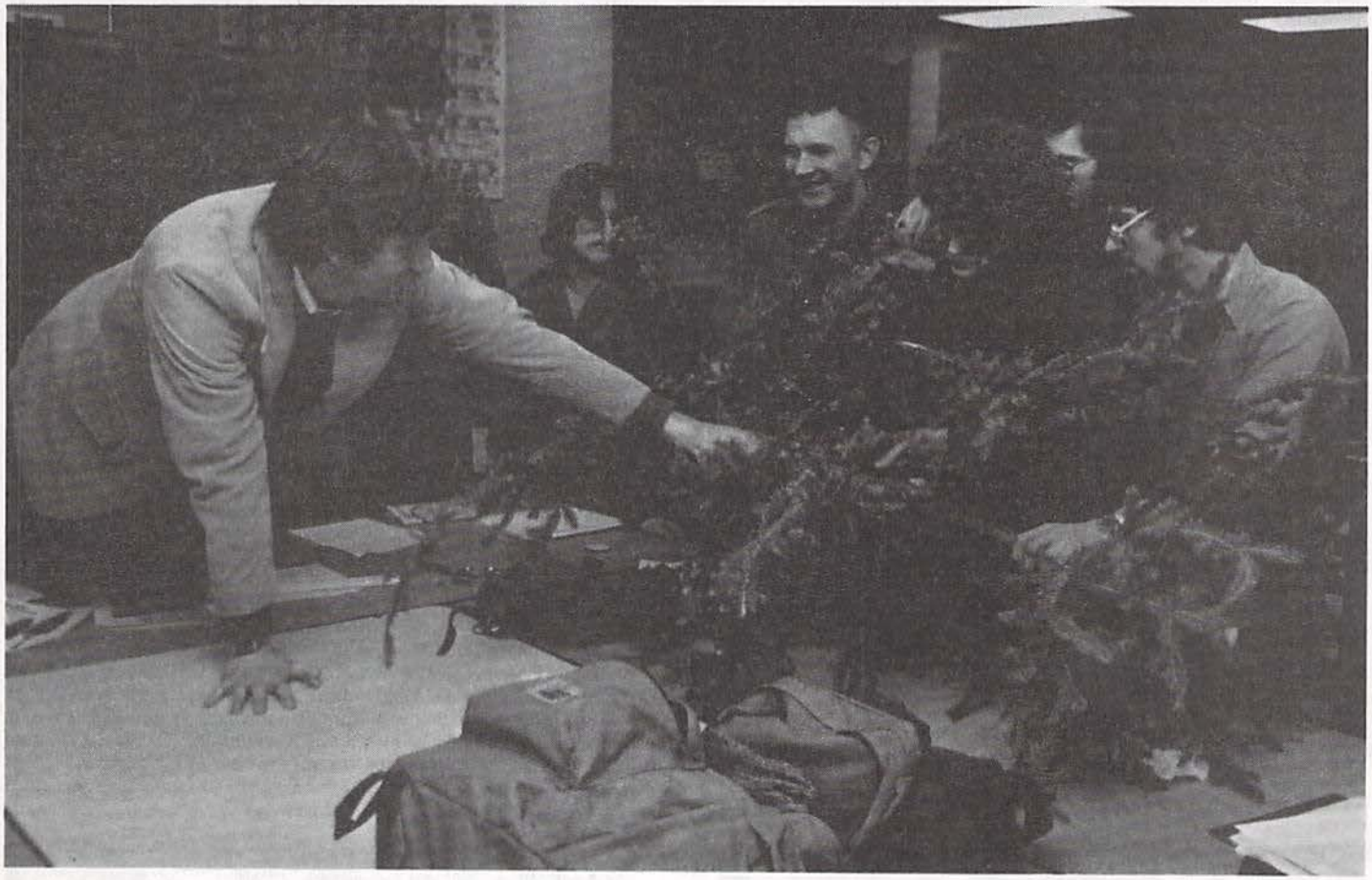
Faculty

Department Head and Associate Professor: Patrick J. Dubbs
Assistant Professor: Lary A. Schafer

The Department of Rural Development is a new department that is intended to address rural/community issues and concerns through a variety of field-delivered academic programs and services. A bachelor of education in human resource development, with a variety of minor options, is the only degree option now offered and it is only available in selected locations. A copy of this curriculum is available from the department.



School of Agriculture and Land Resources Management



James V. Drew, *Dean*

The School of Agriculture and Land Resources Management is composed of the Agricultural Experiment Station and the Instructional and Public Service Division. The former includes stations at Fairbanks, Palmer and Homer, and the Forest Soils Laboratory at Fairbanks. Research in many aspects of agriculture, forestry, outdoor recreation, water resource management, soils, park and wilderness management, and resource planning and administration is carried on by faculty of the school.

The Instruction and Public Service programs include degree programs in natural resources management, cooperative programs in rural education and in forest and reindeer industry extension, and demonstration studies in intensive forestry. The courses and programs were developed in close cooperation with many university units and non-university agencies and groups.

Other major university units contributing to the programs are the Institute of Social and Economic Research, the Environmental Quality Engineering Program, the Institute of Water Resources, Cooperative Extension Service, and Rural Education. State and federal agencies which significantly contribute to the programs by providing guest lecturers, work with graduate students and internship/field work experience for students are the Alaska Department of Natural Resources, Agricultural Research Service, U. S. Forest Service, the Bureau of Land Management, Soil Conservation Service, Alaska Department of Fish and Game, Fairbanks North Star Borough, Alaska Association of Soil Conservation Subdistricts, and U. S. Fish and Wildlife Service.

Undergraduate Degrees — Bachelor of science in natural resources management, natural resources management/forestry, and natural resources management/agriculture.

Graduate Degree — Master of science in natural resources management; interdisciplinary degrees are possible for some students desiring more specialized degrees especially in the agricultural sciences.

Faculty

Administration

Dean of the School of Agriculture and Land Resources Management and Director of the Agricultural Experiment Station: James V. Drew

Director of Instruction and Public Service and Professor of Land Resources and Botany: Bonita J. Neiland

Assistant Director, Agricultural Experiment Station Palmer: Sigmund H. Restad

Superintendent, Homer Research Center, and Instructor of Animal Science: An Peischel

Agricultural Experiment Station — Fairbanks

Dean of School, Director, AES, and Professor of Agronomy: James V. Drew
Professor of Plant Physiology: Donald H. Dinkel
Assistant Professor of Plant Pathology: Jenifer Huang McBeath
Instruction in Forest Management and Project Coordinator in Forestry and Resource Management: Anthony F. Gasbarro
Associate Professor of Animal Science: Fredric M. Husby
Associate Professor of Resource Management: Alan Jubenville, Carol E. Lewis
Associate Professor of Agronomy: Frank J. Wooding
Assistant Professor of Agronomy: Stephen D. Sparrow
Instructor of Agronomy: Charles W. Knight
Associate Professor of Economics: Wayne C. Thomas, William G. Workman
Professor of Forestry: Keith Van Cleve
Assistant Professor of Range Management: William B. Collins

Agricultural Experiment Station — Palmer

Associate Engineer: Lee D. Allen
Professor of Animal Science: Arthur L. Brundage
Professor of Agronomy: William W. Mitchell
Associate Professor of Agronomy: Jay D. McKendrick
Assistant Professor of Horticulture: Donald E. Carling
Assistant Director: Sigmund H. Restad
(Agricultural Research Service personnel with experiment station)
Administrative Officer: Barbara L. Leckwold
Research Horticulturist: Charles H. Dearborn, Emeritus
ARS Research Leader-Location Leader and Research Agronomist: Roscoe L. Taylor
Research Agronomist: Leslie J. Klebesadel
Research Soil Scientist: Winston M. Laughlin
Research Weed Scientist: Jeff Conn (located in Fairbanks)

Instruction and Public Service

Director of Instruction and Public Service, and Professor of Botany and Land Resources: Bonita J. Neiland
Instructor Energy Alternatives: William R. Pfisterer
Assistant Professor of Land Resources: John D. Fox
Professor of Resource Management: Robert B. Weeden
Research Associate: Allen J. Richmond
Assistant Professor of Agriculture Education: Carla A. Kirts

Interdisciplinary Studies

Students are encouraged to develop interdisciplinary degree programs through the School of Agriculture and Land Resources Management. For further information about the interdisciplinary studies program, see page 64.

Natural Resources Management

Degrees: B.S., M.S.
Minimum Requirements for Degree: B.S. — 130 credits; M.S. — 30-35 credits

The basic natural resources management curriculum is designed to provide students with a broad education in the various natural resources and their related applied fields. Programs can be tailored to specific interests of students and can combine the natural resources basic program with such fields as education, communications or political science or with greater depth in natural science and resources. The curricula for the B.S. in natural resources management/forestry and the B. S. in natural resources management/agriculture degrees are designed to provide the same basic science background and much the same basic resource background as the general degree, but, in addition, include greater depth in either forestry or agriculture. (The NRM/forestry degree *is not* equivalent to an accredited B. S. in forestry degree.)

Practical experience, "hands on" field and laboratory activities and applied aspects are stressed throughout the program. Internships and work-study arrangements are often available—with or without credit, with or without pay—for qualified students.

Requirements

Natural Resources Management — B.S. Degree

Courses required for the major may also be used to satisfy the general university requirements as appropriate.

1. Complete general university requirements and B.S. degree requirements, pages 23 and 24.
2. Complete the following program (major) requirements:

	Credits
Biol. 105-106 — Fundamentals of Biology, I and II	8
Biol. 271 — Principles of Ecology	4
Chem. 105-106 — General Chemistry	8
Econ. 235 — Intro. to Nat. Resource Econ.	3
Econ. 335 — Intermediate Natural Resource Econ	3
Geos. 101 — General Geology	3
Geos. 101L — General Geology Lab	1
A.L.R. 101 — Conservation of Natural Resources	3
A.L.R. 310 — Agriculture Concepts and Techniques	3
A.L.R. 340 — Natural Resources Measurements	3
A.L.R. 350 — Introduction to the Forest System	3
A.L.R. 370 — Introduction to Watershed Science	3
A.L.R. 380 — Soils	3
A.L.R. 400 — Natural Resource Policies or A.L.R. 401 — Natural Resource Legislation	3
A.L.R. 430 — Land Use Planning	3
A.L.R. 460 — Outdoor Recreation	3
W.F. 301 — Principles of Animal Population Dynamics and Management	3

3. Plus at least 12 credits from the following courses in man's environment and/or resources. Approved special topics courses may at times be applied toward this requirement.

	Credits
Geos. 304 — Geomorphology	3
Minl. 101 — Minerals and Man	3
Soc. 307 — Population Problems	3
Geog. 327 — Cold Lands	3
E.Q.S. 603 — Solid Waste and Air Pollution	3
A.L.R. 411 — Plant Propagation	3
A.L.R. 450 — Forest Management	3
W.F. 402 — Wildlife Biology and Man	2
Geog. 402 — Man and Nature	3
Biol. 471 — Population Ecology	3
Biol. 472 — Communities and Ecosystems	3
W.F. 430 — Fisheries and their Management	3
W.F. 417 — Forest and Tundra	2
W.F. 419 — Wetlands	2
W.F. 435 — Water Pollution Biology	2
A.L.R. 311 — Introduction to Agronomy and Horticulture	3
A.L.R. 320 — Introduction to Animal Science	3
A.L.R. 360 — Outdoor Recreation Planning	3
A.L.R. 461 — Interpretive Services	3
Econ. 437 — Regional Economic Development	3

Minl. 407 — Mineral Industry and Environment 3

4. Plus a minimum of 12 credits in one of the following fields or subject areas beyond those taken to fulfill numbers 2 and 3 above. These courses are to be selected for their clear pertinence to a cohesive program in resource study and must be approved by the director.

Anthropology (cultural)
Economics
Geography
Sociology
Psychology
Business Administration
Justice
Political Science
Education
Broadcasting, Journalism
Biological Sciences
Wildlife and Fisheries
Agriculture and Land Resources
Geosciences
Mineral Engineering
Civil Engineering, Engineering Sciences and/or Environmental Quality Engineering

5. The total program must include a minimum of 12 credits in the following social sciences: anthropology, economics, sociology, political science and/or psychology.

Natural Resources Management — B.S. Degree
Forestry Option

1. General and Foundation Courses.

a. Complete the general university requirements and B.S. degree requirements, pages 23 and 24.
b. Complete the biology, chemistry, geology and economics requirements for the B.S. in natural resources management.

2. Complete all core major requirements for the B.S. in natural resources management. (category 2.)

3. Complete the following courses:

	Credits
CE 112 — Elementary Surveying	3
Biol. 331 — Systematic Botany	4
A.L.R. 450 — Forest Management	3
A.L.R. 451 — Regeneration of Alaska Woody Plants	3
A.L.R. 452 — Forest Protection	3
A.L.R. 453 — Harvesting and Utilization of Forest Products	3
Total	19

4. Complete nine credits from the following list of restricted electives:

Credits	
Geos. 422 — Geoscience Applications of Remote Sensing	3
Geos. 408 — Map and Airphoto Analysis	2
W.F. 430 — Fisheries Management	3
W.F. 417 — Wildlife Management — Forest and Tundra	2
W.F. 401 — Wildlife Management Techniques	3
B.A. 350 — Introduction to Real Estate and Land Economics	3
A.L.R. 312 — Range Management	3
A.L.R. 300 — Internships in Natural Resources Management *(Must Be Forestry Related)*	1-6

5. Fulfill requirements of category 5 in the B.S. in natural resources management.

Natural Resources Management—B.S. Degree
Agriculture Option

1. General and Foundation Courses.

a. Complete the general university requirements and B.S. degree requirements, pages 23 and 24.
b. Complete the biology, chemistry, geology and economics requirements for the B.S. in natural resources management.

2. Complete the following core major requirements for the agriculture option:

	Credits
A.L.R. 101 — Conservation of Natural Resources	3
A.L.R. 311 — Introduction to Agronomy & Horticulture	3
A.L.R. 312 — Range Management	3
A.L.R. 313 — Introduction to Plant Pathology	4
A.L.R. 320 — Introduction to Animal Science	3
A.L.R. 321 — Applied Animal Nutrition	3
A.L.R. 340 — Natural Resources Measurements	3
A.L.R. 350 — Introduction to Forest Systems	3
A.L.R. 370 — Introduction to Watershed Science	3
A.L.R. 380 — Soils	3
A.L.R. 403 — Farm Planning and Management	3
A.L.R. 411 — Plant Propagation	3
A.L.R. 412 — Field Crop Production	3
A.L.R. 420 — Animal Nutrition and Metabolism	3
A.L.R. 450 — Forest Management	3
A.L.R. 480 — Soil Management	2

3. Complete at least 12 credits from the following list of courses:

	Credits
Biol. 210 — General Physiology	4
Biol. 239 — Plant Form and Function	4
Biol. 242 — Introductory Microbiology	3
Biol. 252 — Principles of Genetics	4
W.F. 301 — Animal Population Dynamics & Principles of Animal Population Dynamics & Management	4
Any A.L.R. courses not used in above categories.	

4. The total program must include a minimum of 12 credits in the following social sciences: anthropology, economics, sociology, political science.

Natural Resources Management — M.S. Degree

1. Complete the general university requirements and graduate degree requirements, pages 23 and 25.

2. All candidates will meet the general requirements for the degree; individual programs may emphasize one of the following areas: forest management, soil management, parks and recreation, agriculture, watershed management, and land use planning.

a. Candidates must have or acquire a general familiarity with the major resource fields listed above, and in addition, wildlife management, environmental quality management, and mineral industries. Program depth in any one field will depend on the needs of the candidate and the capabilities of the university. For some fields, students will take additional courses at other universities that specialize in those fields.
b. Candidates must have course work, prior to or within the program, in computer science, statistical methods, and basic economics.

3. Program requirements:

a. *Thesis degree:* Designed for those intending to pursue management careers requiring thorough familarity with research procedures and techniques in one or more of the resource fields, to proceed to doctoral programs, and/or to conduct research in management problems.

Required courses:	*Credits*
A.L.R. 630 — Regional Planning	3
A.L.R. 631 — Regional Planning Practicum	3
A.L.R. 692 — Graduate Seminar	4
A.L.R. 699 — Thesis	6-12
600-Level approved elective	3

Additional courses: a minimum of 5-11 credits, depending on thesis credits, individual student previous training and program needs, and approval by graduate committee.

Minimum required credits past the baccalaureate degree in 30.

b. *Non-thesis degree:* Designed for those planning for a management career involving largely non-research aspects such as general planning and administration, communication and public information, and impact assessment. The requirements are similar to the above with the following exceptions:

1) a 3-credit hour research paper will replace the 6-12 hour thesis;
2) additional courses; minimum credit will be increased to 19;
3) minimum number of credits required past the baccalaureate degree is 35.

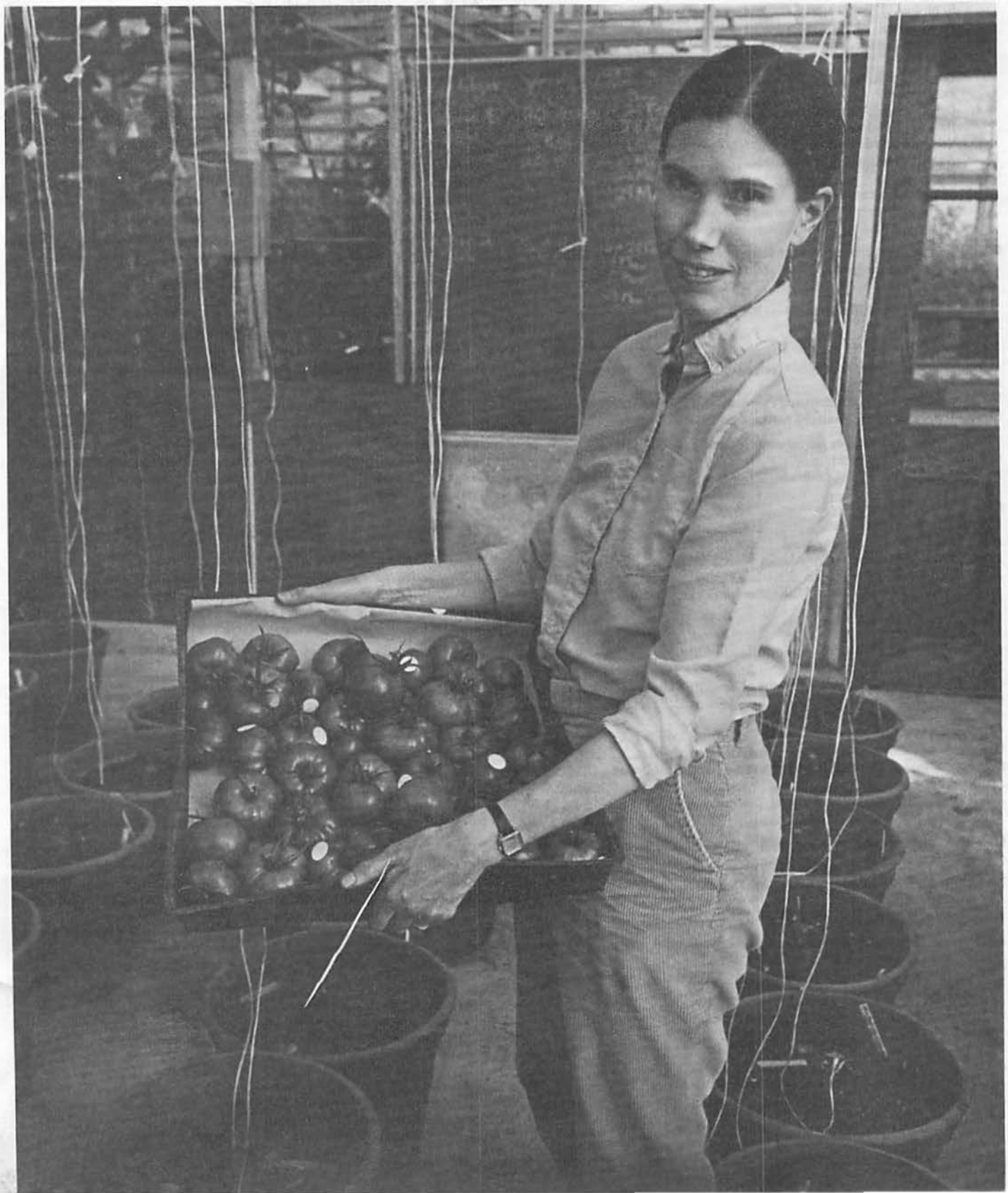
Admissions Requirements:

1. Baccalaureate degree in appropriate undergraduate major.

2. Students desiring degree programs emphasizing socio-economic aspects of natural resources management must have strong undergraduate backgrounds in the social sciences, while those wishing in-depth work in any of the specific resource fields for which the University of Alaska-Fairbanks does not have a strong undergraduate program at present, must have undergraduate degrees in such fields.

3. Scores of the general aptitude sections of the Graduate Record Examination.

Research Areas:
Thesis research will be directed toward problems specifically related to management of natural resources in high latitudes, and may involve, at various levels, basic information; biological-physical aspects of management on the land; and relationship of various management practices to the situation in Alaska at present and in the foreseeable future with respect to land ownership patterns, land use and planning economic trends, competing resources needs and wants, and knowledge of implications of various resource uses needed for informed decision making.



School of Engineering

Vincent S. Haneman, P.E., *Dean*

Professional engineering embraces the wide range of cultural and technical subjects related to the planning, design and construction of works necessary for civilization. An engineer is an innovator, a builder, and a problem solver. The engineer turns scientific knowledge into goods and services useful to man and is responsible to society in the decisions he or she makes. The engineer is interested in creating, and is willing to work as a member of a professional team in a position of leadership.

In addition to providing the training necessary for entrance into the professional practice of engineering, an undergraduate degree in engineering provides an excellent background for those desiring to enter law, medical, or business school. The engineering programs at the university emphasize northern problems and principles; therefore, engineering and technology graduates of UAF are in great demand in the Alaskan job market. Many of the leading professional engineers of Alaska are graduates of the UAF engineering program.

Since engineering is based on the physical sciences of mathematics, chemistry, and physics, engineering students are introduced to the basic principles in these areas during their first two years of study. The third year of study is largely devoted to courses in the engineering sciences — extensions of the basic sciences forming the foundation for engineering analysis and design. In the senior year, students specialize within their disciplines and draw upon previous learning to focus their studies on creative design and analysis through simulated projects. Essential concepts and applications in engineering require analysis, synthesis and design. The reduction to proof is carried forth by the Schools Engineering Experiment Station and the Institute of Water Resources.

Undergraduate Degrees — The School of Engineering offers courses of study leading to the four-year bachelor of science degree in civil, electrical, or mechanical engineering.

Graduate Degrees — The school also offers graduate-level programs in engineering management, environmental quality engineering, and arctic engineering, as well as in civil, electrical, and mechanical engineering, to students with baccalaureate degrees in engineering. Seminars and workshops are offered to practicing engineers and others.

Arctic Engineering

Degree: M.S.
Minimum Requirements for Degree: 30 credits (beyond Bachelors Degree in Engineering)

The arctic engineering program is designed to provide training for graduate engineers who must deal with the unique challenge of design, construction, and operations in cold regions of the world. The special problems created by the climatic, geological, and logistical conditions of the Arctic and sub-arctic require knowledge and techniques not usually covered in the normal engineering courses. Of primary importance is a thorough understanding of heat transfer processes. In addition, properties of frozen ground and frozen water are basic to most engineering activities in the arctic. The areas of hydraulics, hydrology, and utility operations are also uniquely affected by arctic considerations. The arctic engineering program requires a set of core courses that will prepare an engineer to understand and adapt to cold regions problems and also allows the student to round out the program with elective advanced courses in his/her particular field of interest. Arctic engineering research activities carried out by faculty associated with this program can provide opportunities for theses or project papers dealing with the most current arctic knowledge.

The current development of petroleum and other natural resources has accentuated the demand for engineers trained in northern operations, both from the private industries that are involved in the development and from government agencies that must plan for or regulate this activity.

Requirements

Arctic Engineering — M.S. Degree
1. Complete the general university requirements and master's degree requirements as listed on pages 23 and 25.
2. Complete the following degree program:

A. Core Courses: (Minimum of 15 credits)	*Credits*
C.E. 681 — Frozen Ground Engineering	3
C.E. 682 — Ice Engineering	
or Geos. 615 — Sea Ice	3
C.E. 683 — Arctic Hydrology and Hydraulic Engineering	3
C.E. 684 — Arctic Utility Distribution	3
M.E. 685 — Arctic Heat and Mass Transfer	3
M.E. 687 — Arctic Materials Engineering	3
B. C.E. 699 — Thesis or Project	3

Electives: 12 credits in areas related to or supportive of the student's degree program and approved by the student's graduate committee.

3. Pass the state Engineer-in-Training Examination.

Civil Engineering

Degrees: B.S., M.C.E., M.S.
Minimum Requirements for Degrees: B.S. — 131 credits; M.C.E. or M.S. — 30 additional credits

Civil engineering deals with environmental control; bridges, buildings, dams, and harbor facilities; water resource development and waste disposal; water power, irrigation works, and drainage; air, water, highway, and railway transportation; construction and management; topographic surveying and geodesy; city management and developmental planning.

Candidates for the bachelor of science degree will be required to take a comprehensive examination in their general field. (Completion of the Alaska Engineer-in-Training Examination will satisfy this requirement.)

Graduate students should enter one of two programs: The master of civil engineering is for those whose goal is broad professional practice; those whose interests or background favor a specialized program, with emphasis on research and/or advanced specialized study, will ordinarily select the master of science in civil engineering degree.

In addition to the general civil engineering courses offered, the following specialty is available:

Water Resources and Hydrology: The master's degree programs can emphasize a flexible program in water resources and hydrology tailored to individual students. The courses within the department in these areas stress the problems of northern regions and emphasize principles of analysis, planning, and engineering design as related to water supply, flood control, environmental safety, and land management.

In addition to the civil engineering courses, a master's degree program can include courses in environmental quality engineering, engineering management, and other areas.

Faculty

Department Head and Professor: John L. Burdick, P.E.
Professors: Robert F. Carlson, P.E.; William W. Mendenhall, P.E.
Associate Professors: Nicolaas Coetzee, William E. Fuller, P.E.; Warren W. Hanson, P.E., Nils Johansen, P.E.; Terry McFadden, P.E.
Assistant Professors: Kenneth H. Hobson, P.E.; Douglas L. Kane, P.E.

Requirements

Civil Engineering — B.S. Degree
1. Complete general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

First Year	
Fall Semester	*16 credits*
Engl. 111 — Methods of Written Communication	3
Math 200 — Calculus	4
E.S. 101 — Graphics	2
E.S. 111 — Engineering Science	3
Chemistry — Approved	4
Spring Semester	*17 credits*
Speech Communication Elective	3
Math 201 — Calculus	4
C.E. 112 — Elementary Surveying	3
Chemistry — Approved	4
E.S. 201 — Computer Techniques	3
Second Year	
Fall Semester	*17 credits*
Math 202 — Calculus	4
Phys. 211 — General Physics	4
Engl. 211 — Intermediate Exposition, with Modes of Literature	
or Engl. 213 — Intermediate Exposition	3
Social Science/Humanities Elective	6
Spring Semester	*17 credits*
Math 302 — Differential Equations	3
Phys. 212 — General Physics	4
E.S. 208 — Mechanics	4
C.E. 334 — Properties of Materials	3
Social Science/Humanities Elective	3
Third Year	
Fall Semester	*17 credits*
C.E. 415 — Advanced Surveying	3

E.S. 307 — Elements of Electrical Engineering 4
E.S. 331 — Mechanics of Materials 3
E.S. 341 — Fluid Mechanics 4
Social Science/Humanities Elective 3

Spring Semester *16 credits*
E.S. 346 — Basic Thermodynamics 3
C.E. 344 — Water Resources Engineering 3
C.E. 441 — Sanitary Engineering 4
Geos. 261 — Geology for Engineers 3
Technical Elective 3

Fourth Year
Fall Semester *17 credits*
E.S. 301 — Engineering Analysis 3
C.E. 402 — Transportation Engineering 3
C.E. 435 — Soil Mechanics 3
C.E. 431 — Structural Analysis 4
Social Sciences/Humanities Elective 4

Spring Semester *16 credits*
E.S.M. 450 — Economic Analysis and Operations 3
C.E. 422 — Foundation Engineering 3
C.E. 432 — Structural Design 4
C.E. 438 — Design of Engineered Systems 3
Technical Electives 3

Of the 16 social science/humanities credits, at least 6 must be above the 100 level or advanced courses in a 100-level sequence.

For credit toward a degree in Civil Engineering, the social science and humanities electives must be approved by the student's faculty advisor.

The ability to utilize computers for normal class work is expected in all engineering classes above the 100 level.

Civil Engineering — M.C.E. Degree

Students entering the master of civil engineering program should have completed a bachelor's degree in civil engineering. Students with bachelors degrees in other fields of engineering should check with their committee chairman for deficiency requirements.

A student will elect a civil engineering program approved by his graduate committee and must complete the general university requirements and master's degree requirements, pages 23 and 25.

Thirty credits of approved courses beyond the B.S. degree are required. M.C.E. candidates will have passed a State Engineer-In-Training Examination prior to the awarding of the degree.

Civil Engineering — M.S. Degree

A student selecting this program will meet the general university requirements and master's degree requirements, pages 23 and 25, plus the following: 30 credits approved by his graduate committee, of which six to twelve credits will be thesis. M.S. candidates will have passed a State Engineering-In-Training Examination prior to the awarding of the degree.

Electrical Engineering

Degrees: B.S., M.S., M.E.E.
Minimum Requirements for Degrees: B.S. — 131 credits; M.S. — 30 additional credits; M.E.E. — 32 additional credits

Electrical engineering encompasses the areas of computer applications and design, electrical power transmission and distribution, telecommunications, and electronics. The electrical engineer designs and oversees the construction, installation, and maintenance of electrical systems providing light, heat and power. Engineers design the communication systems of telephone, radio, and television as well as the transistors and integrated circuits used in these systems. People trained in computer engineering automate businesses, factories, pipelines, and refineries; and design control systems and computers which guide trains, planes, and space vehicles. Even the test devices and tools of investigation — in medicine, in physics, in geology, and in other sciences — are today largely electronic.

The scope of electrical engineering has expanded tremendously in recent years. Many developments have been important in this expansion, including automatic control theory, environmental monitoring, communications theory, new geophysical instrumentation, extra-high voltage power transmission, medical electronics, plasmas, magnetohydrodynamics, integrated circuits, satellites, and mini and microcomputers. The process controls in the extraction, transmission, and refining of petroleum products are largely the responsibility of the electrical and computer engineer. Development of techniques for utilizing new energy sources presents a challenge, requiring much imagination and resourcefulness. Advanced training in engineering science and mathematics is required for creative work in these areas.

The curriculum is designed to insure that basic fundamentals are learned, as well as specialized skills. The practical needs of engineers who plan to enter practice immediately upon graduation, as well as the theoretical background needed for individuals planning to pursue graduate studies, have been taken into account in our program. Candidates for the bachelor of science degree are required to take an examination in their general field (the State of Alaska Engineer-In-Training Examination will satisfy this requirement).

Graduate students whose goal is broad professional practice will ordinarily choose the M.E.E. program; those who wish to emphasize research and advanced specialized study usually elect the M.S. degree program, which includes a thesis.

Faculty

Department Head and Professor: Thomas D. Roberts, P.E.
Professors: John D. Aspnes, P.E.; Robert P. Merritt, P.E.
Associate Professors: Kenneth J. Kokjer, P.E.
Assistant Professors: Kin-Chu Woo
Adjunct Faculty: Robert D. Hunsucker, William M. Sackinger, P.E, David B. Spell, P.E.

Requirements

Electrical Engineering — B.S. Degree

1. Complete the general university requirements as listed on page 23.

2. Complete the following degree and program (major) requirements. Students must plan their elective courses in consultation with their electrical engineering faculty advisor, and all elective courses must be approved by their electrical engineering faculty advisor. At least 6 of the 16 social science and humanities elective credit must be: (a) above the 100 level; or (b) advanced courses in a 100 level sequence.

First Year
Fall Semester *15-16 credits*
Engl. 111 — Methods of Written Comm. 3
Math. 200 — Calculus 4
E.S. 101 — Graphics 2
E.S. 111 — Engineering Science 3
Biology, Chemistry *or* Solid Earth Science (Geology) 3-4

Spring Semester *16-17 credits*
Speech Comm. Elective 3
Math. 201 — Calculus 4
E.E. 102 — Intro. to Electrical Engineering 3
Biology, Chemistry *or* Solid Earth Science (Geology) 3-4
Soc. Sci. *or* Humanities Elective 3

Second Year
Fall Semester *15 credits*
Math 202 — Calculus 4
Phys. 211 — General Physics 4
E.S. 201 — Computer Techniques 3
E.E. 203 — Fund. of Elec. Engineering 4

Spring Semester — *15 credits*
Math 302 — Differential Equations 3
Phys. 212 — General Physics 4
E.S. 208 — Mechanics 4
E.E. 204 — Fund. of Elec. Engineering 4

Third Year
Fall Semester — *18 credits*
E.E. 333 — Physical Electronics 4
E.E. 353 — Circuit Theory I 3
Math. 421 — Applied Analysis I 4
Soc. Science or Humanities elective 3
Option I: Communications
Phys. 331 — Electricity and Magnetism 3
E.E. 331 — High Frequency Lab 1
Option II: Power and Control
E.E. 303 — Elec. Machiinery 4

Spring Semester — *18 credits*
E.E. 334 — Electronic Circuit Design 4
E.E. 354 — Circuit Theory II 3
Eng. 211 or 213 .....
Math. 422 — Applied Analysis II 4
Option I: Communications
E.E. 332 — Waves and Antennas Lab 1
Phys. 332 — Electricity and Magnetism II 3
Option II: Power and Control
E.E. 404 — Elec. Power Systems 4

Fourth Year
Fall Semester — *18 credits*
E.S. 331 — Mechanics of Materials 3
E.E. 471 — Fund. of Auto. Control 4
E.E. 442 — Digital Systems 4
Soc. Science or Humanities electives 3
Option I: Communications
E.E. 303 — Elec. Power Engineering I 4
Option II: Power and Control
Phys. 331 — Electricity and Magnetism 3
E.E. 331 — High Frequency Lab I 1

Spring Semester — *18 credits*
E.S. 346 — Basic Thermodynamics 3
E.S.M. 450 — Economic Analysis and Operation 3
Soc. Science or Humanities electives 7
E.E. 492 — Seminar 1
Option I: Communications
E.E. 462 — Communications Systems 4
Option II: Power and Control
E.E. Elective (Additional Power Course) 3

Electrical Engineering — Master's Degree
Persons interested in pursuing a master of science degree in electrical engineering or a master of electrical engineering program at UAF should consult with the head of the Electrical Engineering department.

Engineering and Science Management

Degrees: M.S.
Minimum Requirements for Degrees: 30 credits (beyond a bachelor's degree in engineering or a scientific field)

The engineering and science management curriculum is designed for graduate engineers and scientists who will hold executive or managerial positions in engineering, construction, industrial, or governmental organizations. It includes human relations, financial, economic, quantitative, technical, and legal subjects useful in solving problems of management.

The curriculum includes graduate-level core courses in the subjects named above, plus additional course work either directed toward special problems such as arctic engineering or in one of the more general fields of engineering or science through projects or research in the application of management principles. In addition to an undergraduate degree, a candidate should have had on-the-job experience in engineering or science.

Candidates for the engineering management degree must hold a previous degree in an engineering discipline; candidates for the science management degree must hold a degree in a scientific field.

Faculty

Department Head and Professor: F. Lawrence Bennett, P.E.
Professors: John M. Hilpert, Charles L. Proctor, P.E.
Assistant Professor: Theodore G. Eschenbach, P.E.
Adjunct Faculty: Robert Noreen, J.D., William Satterberg, J.D.

Requirements

Engineering Management — M.S. Degree
Science Management — M.S. Degree
1. Complete the general university requirements and master's degree requirements as listed on pages 23 and 25.
2. Complete the following degree and program (major) requirements:

Fall Semester — *15 credits*
ESM 605 — Engineering Economy 3
ESM 611 — Accounting for E.S.M. 3
ESM 608 — Legal Principles for Engr. Mgt. 3
An approved course in statistics 3
*Elective 3

Spring Semester — *15 credits*
ESM 612 — Finance for E.S.M. 3
ESM 613 — Personnel for E.S.M. 3
ESM 621 — Operations Research 3
ESM 684 — Engr. Mgt. Project 3
*Elective 3

*Electives must have the approval of the department. Electives may include advanced courses in computer science but not courses in basic FORTRAN.

In addition to completing the 30 credits indicated above, a candidate must demonstrate competence in computer programming by passing a programming course or a qualifying examination.

Substitutions for one or more of the courses listed above are permitted if similar courses are included in the student's previous academic background. No more than nine credits of appropriate graduate-level course work completed at other institutions with a grade of A or B may be transferred and applied toward the total 30 credits of required and elective courses. Both substitutions and transfer of credit must be approved by the department.

Environmental Quality Engineering Program

Degrees: M.S.
Minimum Requirements for Degree: 30 credits (beyond a bachelor's degree)

The environmental quality engineering curriculum is designed for graduate engineers who will pursue a career in the areas of water supply, treatment, and distribution; waste treatment, stream pollution, air pollution, and solid-waste disposal.

Consideration is given for broad study of the environment, prevention and abatement of quality deterioration, and solutions to environmental problems. Graduates will be prepared to hold positions in federal, state, and municipal organizations as well as in consulting engineering offices. For students having non-engineering degrees, an interdisciplinary program is available leading to the master of science in environmental quality science.

Faculty

Program Head and Professor: John L. Burdick, P.E.
Associate Professors: Ronald A. Johnson, Timothy Tilsworth, P.E.

Requirements

Environmental Quality Engineering — M.S. Degree
Environmental Quality Science — M.S. Degree
1. Complete the general university requirements and master's degree requirements as listed on pages 23 and 25.
2. Complete the following degree and program (major) requirements:

	Credits
EQE 601 — EQE Measurements	3
EQE 602 — Engr. Mgmt. of Water Quality	3
EQE 603 — Solid Waste and Air Pollution	3
EQE 604 — Environ. Quality Evaluation	3
EQE 605 — C/P Processes	3
EQE 606 — Biological Treatment Processes	3
*EQE 693 — Special Topics	0-3
*EQE 697 — Individual Study	0-6
*EQE 697 — Individual Study (Special Project)	3
*EQE 699 — Thesis	0-6
*Electives	6-9

*Electives, thesis, and/or special projects must have approval of graduate committee.

A minimum of 30 credits of approved and required courses must be completed. Thesis study (6 credits) is optional.

Thesis Option:

Thesis	6
Required courses	18
Electives	6
Total	30

Non-Thesis Option:

Special Project	3
Required courses	18
Electives	9
Total	30

All students will be expected to have a basic knowledge of computer programming.

Interdisciplinary Studies

Students are encouraged to develop interdisciplinary degree programs through the School of Engineering. For further information about the interdisciplinary studies program, see page 64.

Mechanical Engineering

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits

Mechanical engineers conceive, plan, design, and direct the manufacturing, distribution, and operation of a wide variety of devices, machines, and systems for energy conversion, environmental control, materials processing, transportation, materials handling, and other purposes. Mechanical engineers are engaged in creative design, applied research, development, and management. A degree in mechanical engineering also frequently forms the base for entering law, medical, or business school, as well as for graduate work in engineering.

Since engineering is based on mathematics, chemistry, and physics, students are introduced to the basic principles in these areas during their first two years of study. The third year encompasses courses in the engineering science — extensions to the basic sciences forming the foundation to engineering synthesis and design. Senior year courses focus on mechanical engineering design. The design project course draws on much of the student's previous learning through a simulated industrial design project. Throughout the four-year program, courses in communication, humanities, and social sciences are required because mechanical engineers must be able to communicate effectively in written, oral, and graphical form.

Students in mechanical engineering may elect to complete an emphasis in petroleum engineering consisting of 12 credit hours. Six of these credit hours can be used to fulfill the elective credit requirement in the mechanical engineering curriculum.

Because of the unique location of the University of Alaska-Fairbanks, special emphasis is placed on cold regions engineering problems. This fact is highlighted in the mechanical engineering program by the technical elective, Arctic Engineering.

Candidates for the Bachelor of Science degree in Mechanical Engineering are required to take a comprehensive examination in their general field (completion of the State of Alaska Engineer-in-Training Examination will satisfy this requirement) during the senior year.

Faculty

Department Head and Professor: John P. Zarling, P.E.
Professors: Vincent S. Haneman, Jr., P.E.; James B. Tiedemann, P.E.
Associate Professors: Ronald Johnson, James Malosh, P.E.

Requirements

Mechanical Engineering — B.S. Degree
1. Complete the general university requirements as listed on page .
2. Complete the following degree and program (major) requirements. Students must plan their elective courses in consultation with their mechanical engineering faculty advisor, and all elective courses must be approved by their mechanical engineering faculty advisor. At least 6 of the 16 social science and humanities elective credit must be: (a) above the 100 level; or (b) advanced courses in a 100 level sequence.

First Year

Fall Semester	*16 credits*
Engl. 111 — Methods of Written Comm.	3
Math. 200 — Calculus	4
E.S. 101 — Graphics	2

E.S. 111 — Engineering Science 3
Chemistry Elective 4

Spring Semester — *17 credits*
Speech Commun. Elective 3
Math. 201 — Calculus 4
E.S. 201 — Computer Techniques 3
Humanities/Social Science Elective 3
Chemistry Elective 4

Second Year

Fall Semester — *17 credits*
Phys. 211 — General Physics 4
Math. 202 — Calculus 4
M.E. 321 — Industrial Processes 3
Eng. 211 or 213 — Intermediate Exposition 3
Humanities/Social Science Elective 3

Spring Semester — *17 credits*
Phys. 212 — General Physics 4
Math. 302 — Differential Equations 3
E.S. 208 — Mechanics 4
E.S. 346 — Basic Thermodynamics 3
Humanities/Social Science Elective 3

Third Year

Fall Semester — *16 credits*
E.S. 301 — Engineering Analysis 3
E.S. 307 — Elements of Electrical Engineering 3
E.S. 331 — Mechanics of Materials 3
E.S. 341 — Fluid Mechanics 4
Humanities/Social Science Elective 3

Spring Semester — *16 credits*
M.E. 302 — Mechanical Design I 4
M.E. 313 — Mechanical Engineering Thermodynamics 3
M.E. 441 — Heat and Mass Transfer 3
E.S. 308 — Instrumentation and Measurement or
E.E. 481 — Electronics and Instrumentation 3
Metallurgy Elective (CE 334/M.Pr. 304) 3

Fourth Year

Fall Semester — *15 credits*
M.E. 403 — Mechanical Design II 4
M.E. Elective** 3
M.E. 415 — Thermal Systems Laboratory 2
Technical Elective* 3
Humanities/Social Science Elective 1
Free Elective 2

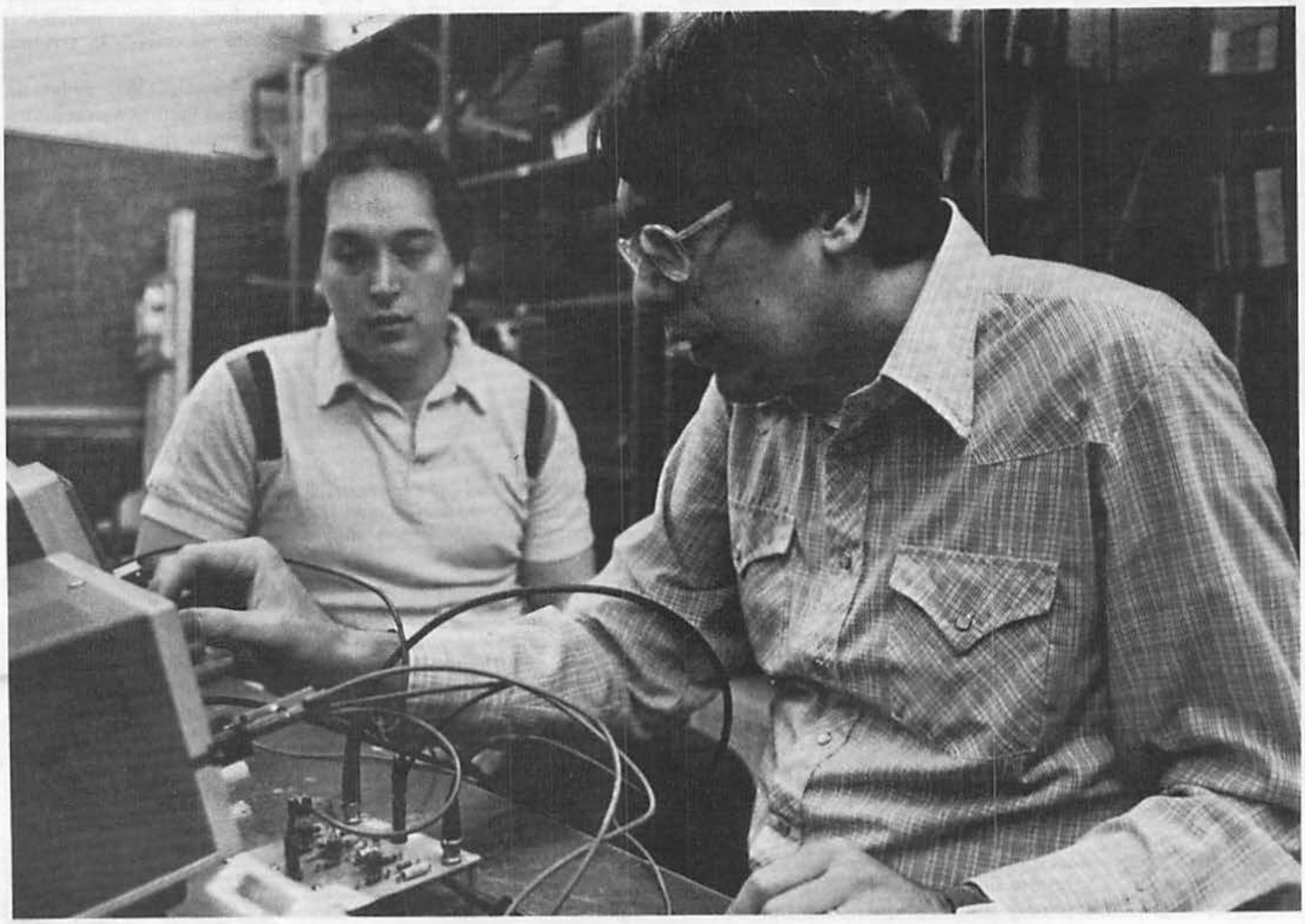
Spring Semester — *15 credits*
M.E. 487 — Design Project 3
ESM 450 — Economic Analysis and Operations 3
M.E. 408 — Dynamics of Systems 3
M.E. Elective** 3
Humanities/Social Science Elective 3

*Engineering course at 400 level or above.
**Mechanical Engineering course at 400 level or above.

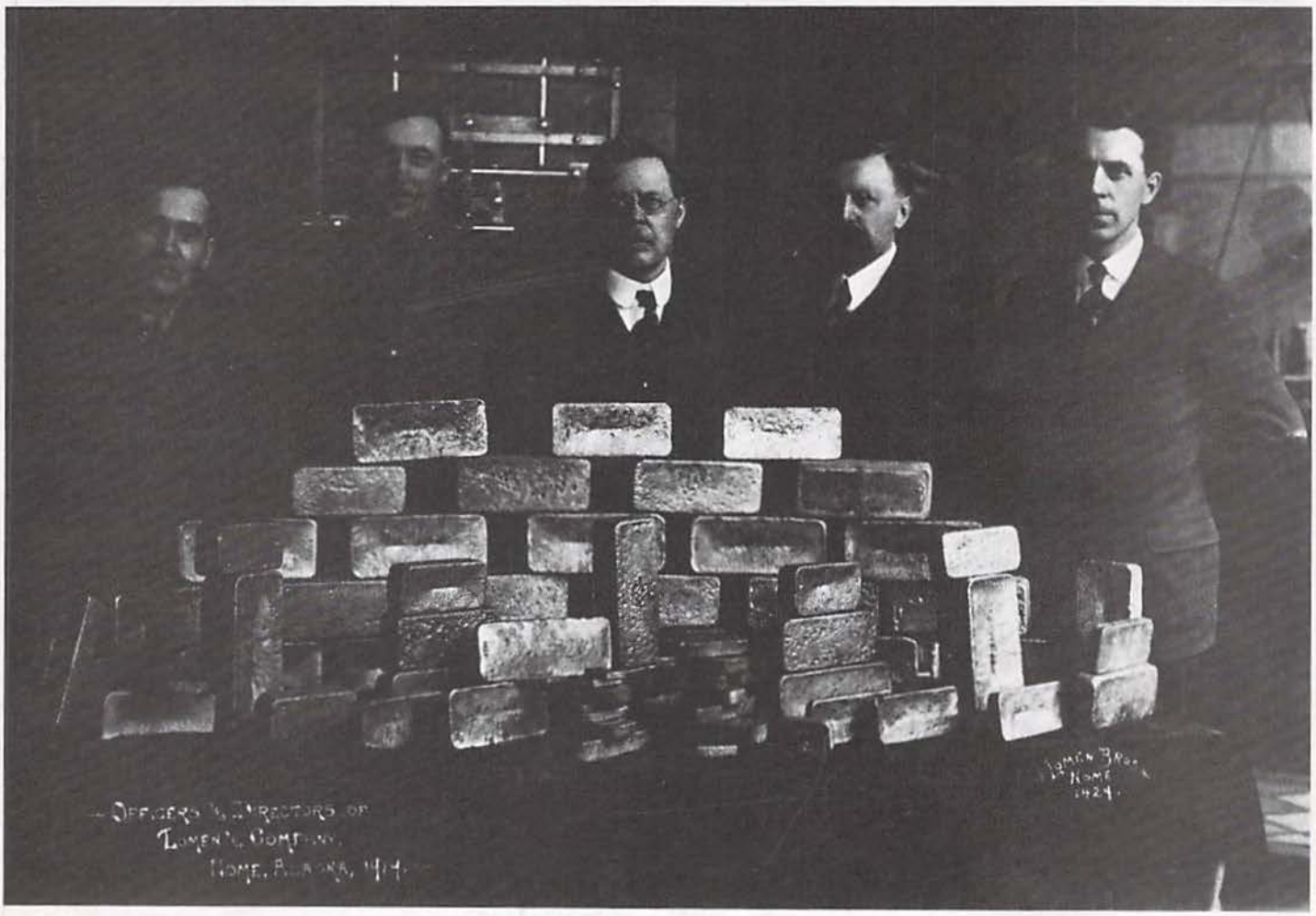
Selection of the elective courses must be made in consultation with M.E. advisor.

Mechanical Engineering — M.S. Degree

Persons interested in pursuing a master of science degree in mechanical engineering at UAF should consult with the head of the Mechanical Engineering Department.



School of Management



Milton A. Fink, *Acting Dean*

The School of Management offers programs of study which provide the foundation for professional careers in private or public, small or complex organizations. The undergraduate programs also provide the basis for graduate study leading to accelerated business or government careers, or for further training as a teacher or researcher in accounting, management, or economics. The graduate program is designed to provide management education for students with a wide variety of undergraduate degrees. The objectives of the school impose the obligation to prepare literate, articulate and liberally educated business specialists, knowledgeable in fundamental economic laws, accounting and information systems, and keenly sensitive to interpersonal relationships and the dignity of the individual. The school seeks to provide the technical knowledge of the accounting, economics, and management professions while also emphasizing an awareness of our society and its ethical, moral, and cultural values. All of these programs are designed to emphasize the problems and circumstances unique to Alaska, including treatment of start-up or venture management, international trade, regional economic development, regulation, financial institutions and markets, transportation, natural resource economics, hotel administration, and a comprehensive professional program in accounting.

The School of Management administers the UAF Continuing Studies Program.

Undergraduate Degrees — The school grants the following undergraduate degrees: bachelor of business administration with majors in accounting, economics, finance, management, marketing, and travel industry management; bachelor of arts degrees in economics.

Graduate Degrees — The school offers the master of business administration degree and the master of science in resource economics.

Accounting

Degree: B.B.A.
Minimum Requirements for Degree: B.B.A. — 130 credits

The Accounting Department offers an extensive program for those interested in the fields of general accounting, auditing, managerial accounting, and taxation. The objectives of the program are to provide a strong business background through an understanding of accounting and to train students for employment in accounting work.

Faculty

Department Head and Professor: Milton A. Fink
Professor: Burton M. Oien
Associate Professors: Thomas E. Bartlett, E. Thomas Robinson
Assistant Professor: Clifford T. Cox

Requirements

Accounting — B.B.A. Degree

Acceptance of upper division transfer credits toward major and foundation course requirements for the B.B.A. degree:

Courses taken at a two-year institution, or as a lower-division course in a four-year academic institution, will not be considered as replacements for upper-division course requirements for the B.B.A. degree unless the student can demonstrate a level of knowledge equivalent to material obtained in UAF courses. That level of knowledge will be determined by the department offering the course, and must be supported in writing by the department head.

1. Complete general university requirements and B.B.A. degree requirements, pages 23 and 25.
2. Complete the following program (major) requirements:

Common Body of Knowledge Requirements	*Credits*
Acct. 101, 102 — Elementary Accounting	6
B.A. 101 — Intro. to Data Processing & BASIC Language	3
Econ. 226 — Intro. to Statistics for Economics and Business	3
B.A. 325 — Financial Management	3
B.A. 331 — Business and Law	3
B.A. 343 — Principles of Marketing	3
Econ. 324 or 350 — Intermediate Macroeconomics/ Money & Banking	3
B.A. 360 — Operations Management	3
B.A. 390 — Organizational Behavior	3
B.A. 462 — Administrative Policy	3

Accounting — General Requirements	*Credits*
Econ. 321 — Intermediate Microeconomics	3
Econ. 227 — Intermediate Statistics for Economics & Business	3
B.A. 332 — Advanced Topics in Business and Law	3

Accounting — Major Requirements	*Credits*
Acct. 310 — Income Tax	3
Acct. 316 — Acct. Information Systems	3
Acct. 342 — Managerial Cost Accounting	3
Acct. 361, 362 — Intermediate Accounting	6
Acct. 401 — Advanced Accounting	3
Acct. 403 — Advanced Taxes	3
Acct. 404 — Advanced Managerial Cost Accounting	3
Acct. 405 — Contemporary Issues in Accounting	3
Acct. 452 — Auditing	3
Free Electives	14
(of which a maximum of 9 credits may be taken in accounting, business administration, or economics.)	

Requirements for a Minor in Accounting	*Credits*
Acct. 101 — Elementary Accounting	3
Acct. 102 — Elementary Accounting	3
Acct. 310 — Income Tax	3
Acct. 361 — Intermediate Accounting	3
Acct. 342 — Managerial Cost Accounting	3
Another 300- or 400-level accounting course	3
Total	18

Business Administration

Degrees: B.B.A., M.B.A.
Minimum Requirements for Degrees: B.B.A. — 130 credits; M.B.A. — 30 additional credits.

The Business Administration Department offers professional training in the field of management, finance, marketing and travel industry management to those individuals interested in entering industry or government upon graduation. The objective of the program is to prepare men and women to meet the complex problems of the political, economic, and social environment and to enable them to give efficient service to industry and government on the basis of their academic training. B.A. 151 is an overview and is recommended as an introductory course for persons with a potential interest in a business major or minor who are either undecided or perhaps unclear about the nature of the various functions performed in the administration of organizations.

Acceptance of upper division transfer credits toward major and foundation course requirements for the B.B.A. degree:

Courses taken at a two-year institution, or as a lower-division course in a four-year academic institution, will not be considered as replacements for upper-division course requirements for the B.B.A. degree unless the student can demonstrate a level of knowledge equivalent to material obtained in UAF courses. That level of knowledge will be determined by the department offering the course, and must be supported in writing by the department head.

Faculty

Professors: Peter G. Biesiot, Gerald E. Gleason, William G. Phillips
Associate Professors: Ralph W. Nestor, Jack Taylor, Paul C. Taylor, Howard L. Zach
Assistant Professors: W. Hageman, Mary Lindahl
Lecturers: Jeffry Cook, James DeWitt

Requirements

Business Administration — B.B.A. Degree

1. Complete general university requirements and B.B.A. degree requirements including 6 credits humanities electives (in addition to 9 credit written and oral communication requirement) as listed on pages .
2. Complete the following *Common Body of Knowledge* requirements:

	Credits
Acct. 101 and 102 — Elementary Accounting	6
BA 101 — Intro. to Data Processing and BASIC Language	3
Econ. 226 — Intro. to Statistics for Economics & Business	3
BA 325 — Financial Management	3
BA 331 — Business and Law	3
BA 343 — Principles of Marketing	3
Econ. 324 or 350 — Inter. Macroeconomics/Money & Banking	3
BA 360 — Operations Management	3
BA 390 — Organizational Behavior	3
BA 462 — Administrative Policy	3

3. Complete the following *Business Administration* general requirements:

	Credits
BA 301 — Processes of Management	3
BA 310 — Management Information Systems	3
BA 332 — Advanced Topics in Business and Law	3
Acct. 352 — Management Accounting	3
Econ. 321 or 322 — Intermediate Microeconomics/Managerial Economics	3
BA 460 — International Business	3

4. Complete one of the following majors:

Finance

The field of finance is concerned with the raising of funds and their subsequent effective use by the organizations which require them. The student is thus concerned with understanding the condition and workings of the financial system, financial policies of industrial firms and non-profit organizations, the vitality of the securities markets, and the valuation of individual securities and portfolios.

Finance Requirements:	Credits
Econ. 227 — Intermediate Stat. for Ec. and Bus.	3
BA 423 — Investment Management	3
BA 425 — Adv. Corp. Financial Problems	3
BA 430 — Current Topics in Finance	3
BA 461 — International Finance	3
Electives approved by major advisor	9

International Business

The interdisciplinary program in international business is designed to prepare students for careers with multinational firms, internationally oriented financial institutions, and state, national and international agencies dealing with foreign business.

International Business Requirements:	Credits
Econ. 227 — Intermed. Statistics for Econ. and Business	3
B.A. 461 — International Finance	3
B.A. 443 — International Marketing	3
Econ. 463 — International Economics	3
Two academic years of one foreign language (German, Japanese, Russian, Spanish, French)	12-18
P.S. 321 or 322 — International Politics	3
P.S. 437 — U.S. Foreign Policy	3
P.S. 481 — The UN, Model UN, and Intern'l Admin. (optional)	0-1
Complete one of the following courses (appropriate to language concentration):	
Geog. 305 — Geography of Europe (Except USSR) *or*	
Geog. 306 — Geography of the Soviet Union *or*	
Geog. 311 — Geography of Asia *or*	
Geog. 405 — Political Geography	3
Complete one additional history course appropriate to language concentration	3

Management

Management is that administrative force responsible for brining together the diverse components of an organization in order to achieve effective performance. Administration includes the identification of objectives, the determination of policy, and implementation through strategic decision-making. Results are primarily achieved through the effective use of human resources and in a manner sensitive to the political, social, technological, and economic forces which constitute the environment.

Management Requirements:	Credits
Econ. 227 — Intermediate Stat. for Ec. and Bus.	3
BA 306 — Small Bus. Mat.	3
BA 361 — Personnel Management	3
Econ. 420 — Labor/Mgmt. Relations	3
BA 480 — Organization Theory	3
Electives approved by major advisor	9

Marketing

Marketing encompasses all those business activities necessary for the transfer of ownership including the logistics of physical distribution. The marketing student thus needs to study the technical activities of product and market research, advertising and promotion, transportation, the structure of markets and the cultural dimensions of consumer behavior.

Marketing Requirements:	Credits
Econ. 227 — Intermediate Stat. for Ec. & Bus.	3
BA 326 — Principles of Advertising	3
BA 349 — Sales Material	3
BA 436 — Consumer Behavior	3
BA 443 — International Marketing	3
BA 445 — Marketing Research	3
BA 483 — Marketing Management	3
Electives approved by major advisor	3

Travel Industry Management:

The many diverse elements of the travel/tourism industry constitute a service industry encompassing the housing, feeding, entertainment, and transportation of a growing number of visitors each year. The Travel Industry Management Program combines under one management education system the several historically separate disciplines of hotel-motel management, destination research and development, transportation, tourism management, and hospitality marketing.

Travel Industry Management Requirements:	Credits
BA 160 — Tourism Principles & Prac.	3
BA 253 — Internship in Business	3
BA 372 — Hotel Administration	3
BA 375 — Marketing of Hospitality Service	3
BA 377 — Food and Beverage Mgt.	3
BA 378 — Passenger Transportation Mgt.	3
BA 465 — Tourism Destination Plan and Dev.	3
BA 471 — Tourism Seminar	3
Free Electives (upper division)	11
(maximum of 5 credits may be taken in School of Management, or transferred courses in Acct, BA or Econ.)	

Business Administration — M.B.A. Degree

1. Admission to the M.B.A. is open to any person possessing an undergraduate degree whose grade point average and score on the Graduate Management Admission Test indicates a potential for satisfactory completion of the program.
2. Entering students will be required to possess competence at the undergraduate level in the fields of accounting, economics, quantitative methods, management and marketing. Prior to initial enrollment, the student's record will be reviewed to determine whether deficiencies exist which must be remedied before M.B.A. core work is undertaken.
3. Complete the general university requirements and master's degree requirements as listed on pages 23 and 25.
4. Complete a minimum of 30 semester hours (including 24 hours in the required core) of courses in business administration, accounting, and economics as approved by the candidate's graduate committee.
5. Earn a passing score for a comprehensive written examination generally taken during the last semester of course work to test achievement and knowledge in the general area of business and specialized courses.
6. If thesis is elected, an oral examination covering its methodology and content will be conducted by the student's graduate committee.

M.B.A. Requirements:

Recognizing that competence in the practice of management necessitates training in both breadth and depth, the MBA program at the University of Alaska-Fairbanks consists of 18 courses, or the equivalent of a two-year program. The course work is divided into two tiers, or segments, as follows:

Foundation Courses

Admission to the program is open to holders of undergraduate degrees in a wide variety of disciplines. The foundation courses are offered to provide the basic environmental concepts, the required analytical tools, and the functional knowledge of business which are prerequisites to the advanced MBA core courses. Individuals with undergraduate degrees in business from accredited institutions, or with adequate preparation may waive foundation courses in those areas. Thus, it is possible that some individuals could accomplish the degree requirements with the successful completion of the 30 hours of MBA core courses.

Foundation Courses	Credits
Econ. 501 — Principles of Economic Analysis	3
Acct. 502 — Financial Acct. Concepts for Administrators	3
B.A. 503 — Management Practices	3
B.A. 505 — Management Information Systems	3
B.A. 506 — Quantitative Analysis	3
B.A. 525 — Financial Management	3
B.A. 543 — Marketing Management	3
B.A. 580 — Organizational Theory	3
Total Required Foundation Courses	24

Advanced MBA Core Courses

The MBA core courses constitute the second year in the program. Admission to the MBA core courses presupposes completion of the foundation core courses. At the discretion of the MBA Committee, a student who has *substantially* met the prerequisite requirements may be permitted enrollment in an MBA core course prior to completion of the foundation core program.

M.B.A. Core Courses	*Credits*
Econ. 624 — Managerial Economics	3
Acct. 650 — Management Accounting Seminar	3
B.A. 651 — Organizational Behavior	3
B.A. 680 — Seminar in Finance	3
B.A. 683 — Seminar in Marketing	3
B.A. 684 — Production and Operations Management	3
B.A. 690 — Administrative Policy	3
B.A. 691 — Research Methods and Design	3
B.A. 698 — Research Project	3
An elective chosen from B.A. 661 — Human Resource Management, Econ. 603 — Macro Economic Theory or other electives approved by the graduate committee	3
Total Required M.B.A. Core Courses	30
Total Program Requirements	54

1. Candidates with an undergraduate major or an emphasis in Economics will substitute an additional elective approved by the Graduate Committee for Managerial Economics — Econ. 624.
2. Thesis, 6 credits will substitute for B.A. 698, research project and 3 credits of electives.

Computer Information Systems

Minor Program

The computer information systems minor is designed to permit students in bachelor of arts degree programs to study a particular field of computer systems and to be introduced to a reasonable segment of information systems relating to the business enterprise.

Requirements

Requirements for the Minor in Computer Information Systems

	Credits
Acct. 101 — Elementary Accounting I	3
Acct. 102 — Elementary Accounting II	3
B.A. 101 — Introduction to Data Processing and BASIC	3
B.A. 201 — COBOL	3
B.A. 220 — Basic Programming Languages	3
B.A. 310 — Management Information Systems	3
Acct. 316 — Accounting Information Systems	3
Total	21

Economics

Degrees: B.A., B.B.A., M.S.

Minimum Requirements for Degrees: B.A. — 130 Credits B.B.A — 130 Credits M.S. — 30 additional credits

Economics is the study of those social activities of man which are concerned with the production, distribution, and consumption of goods and services. In today's complex world, nearly all social phenomena and problems have economic aspects. Organized knowledge of the functioning of our economy and its relations with other economic systems is therefore essential to an understanding of the world in which we live.

The department considers the goal of its undergraduate instruction to be three-fold: (1) to provide students with basic tools of analysis, and factual, statistical, and descriptive materials which will assist them in discharging their duties as citizens; (2) to introduce students majoring in this department to the various fields of economics in order to prepare them for positions in business, government, and graduate study; and (3) to offer a course of study suitable for a minor in economics.

The Department of Economics offers work leading to the master of science degree in resource economics. The graduate program in economics is designed to develop economists for research and administrative positions in business, governmental agencies and other organizations. Graduate courses and seminars are offered in economic theory, econometrics, mathematical economics, and resource economics.

Faculty

Department Head and Associate Professor: J. Patrick O'Brien
Professors: Richard J. Solie, Wayne C. Thomas
Associate Professors: Paul M. Comolli, Willaim G. Workman
Assistant Professor: Abby H. Gorham, Warren L. Jones, Monica E. Thomas, Nancy A. Williams

Requirements

Economics — B.A. Degree

1. Complete general university requirements and B.A. degree requirements as listed on page 23.
2. Complete the following program (major) requirements:

	Credits
Acct. 101 — Elementary Accounting	3
Econ. 201-202 — Principles of Economics I & II	6
Math. 161 — Algebra for Business and Economics	3
Math. 162 — Calculus for Business and Economics	4
P.S. 101 — American Government and Politics	3
P.S. 102, 202, 211 or 301 —	3

Complete 27 additional credits in Economics including:	*Credits*
Econ. 226 — Introduction to Statistics for Economics & Business	3
Econ. 227 — Intermediate Statistics for Economics and Business	3
Econ. 321 — Intermediate Microeconomics	3
Econ. 324 — Intermediate Macroeconomics	3
*Electives in Economics	15

*Must be 200-level or higher and 6 credits of the following courses may be included: B.A. 325; 343, 360, 423, 425, 480; C.S. 201; Geog. 103; and ANS 415.

Economics — B.B.A. Degree

Acceptance of upper division transfer credits toward major and foundation course requirements for the B.B.A. degree.

Courses taken at a two-year institution, or as a lower-division course in a four-year academic institution, will not be considered as replacements for upper-division course requirements for the B.B.A degree unless the student can demonstrate a level of knowledge equivalent to material obtained in UAF courses. That level of knowledge will be determined by the department offering the course, and must be supported in writing by the department head.

1. Complete general university requirements and B.B.A degree requirements as listed on pages . The 6 credit humanities electives shall include a combination of courses (classified as humanities) in which 3 credits shall be selected from either philosophy, English (other than composition) or foreign language at the 200 level or above.
2. Complete the following program (major) requirements:

Common Body of Knowledge (CBK) Requirements	*33 Credits*
Acct. 101 and 102 — Elementary Accounting	6
B.A. 101 — Introduction to Data Processing and BASIC Language	3
Econ. 226 — Introduction to Statistics for Economics and Business	3

B.A. 325 — Financial Management 3
B.A. 331 — Business and Law 3
B.A. 343 — Principles of Marketing 3
Econ. 324 or 350 — Intermediate Macroeconomics or Money and Banking 3
B.A. 360 — Operations Management 3
B.A. 390 — Organizational Behavior 3
B.A. 462 — Administrative Policy 3

Economics Major Requirements — *33 Credits*

1. General Requirements
P.S. 201, 211, 263, or 302 3
B.A. 310 or Acct. 316 3
2. Economics Requirements
Econ. 227 — Intermediate Statistics for Econ. and Business 3*
Econ. 321 — Intermediate Microeconomics 3*
Econ. 324 — Intermediate Macroeconomics (if not taken in CBK) 0-3
Econ. 463 — International Economics 3
Nine hours from the following courses (At least three hours must be at the 400 level): Econ. 335, 350, 351, 409, 420, 421, 436, 437, 438, 451, and ANS 415 ..... 6-9*
Electives approved by major advisor 9**
3. Free Electives
These credits may be used for an optional minor or second BBA Major. (At least 3 credits must be in courses offered outside of School of Management.) ..... 20 Credits

Total 130 Credits

*Only six credit hours of electives in this category are required if Econ 350 is taken as part of the CBK.

**Courses in this category must at the upper division level and may be accounting, business, or economics courses, where three (3) credits must be taken in either accounting or business administration. Courses in this category may be utilized to satisfy the requirements of other BBA degree majors.

Requirements for a Minor in Economics

All minor programs must be approved by the head of the Economics Department.

A Minor in Economics Requires: — *Credits*

Econ. 201 — Principles of Economics I 3
Econ. 202 — Principles of Economics II 3
9 credits in approved economics courses at the 300-level or above 9

Total 15

Resource Economics — M.S. Degree

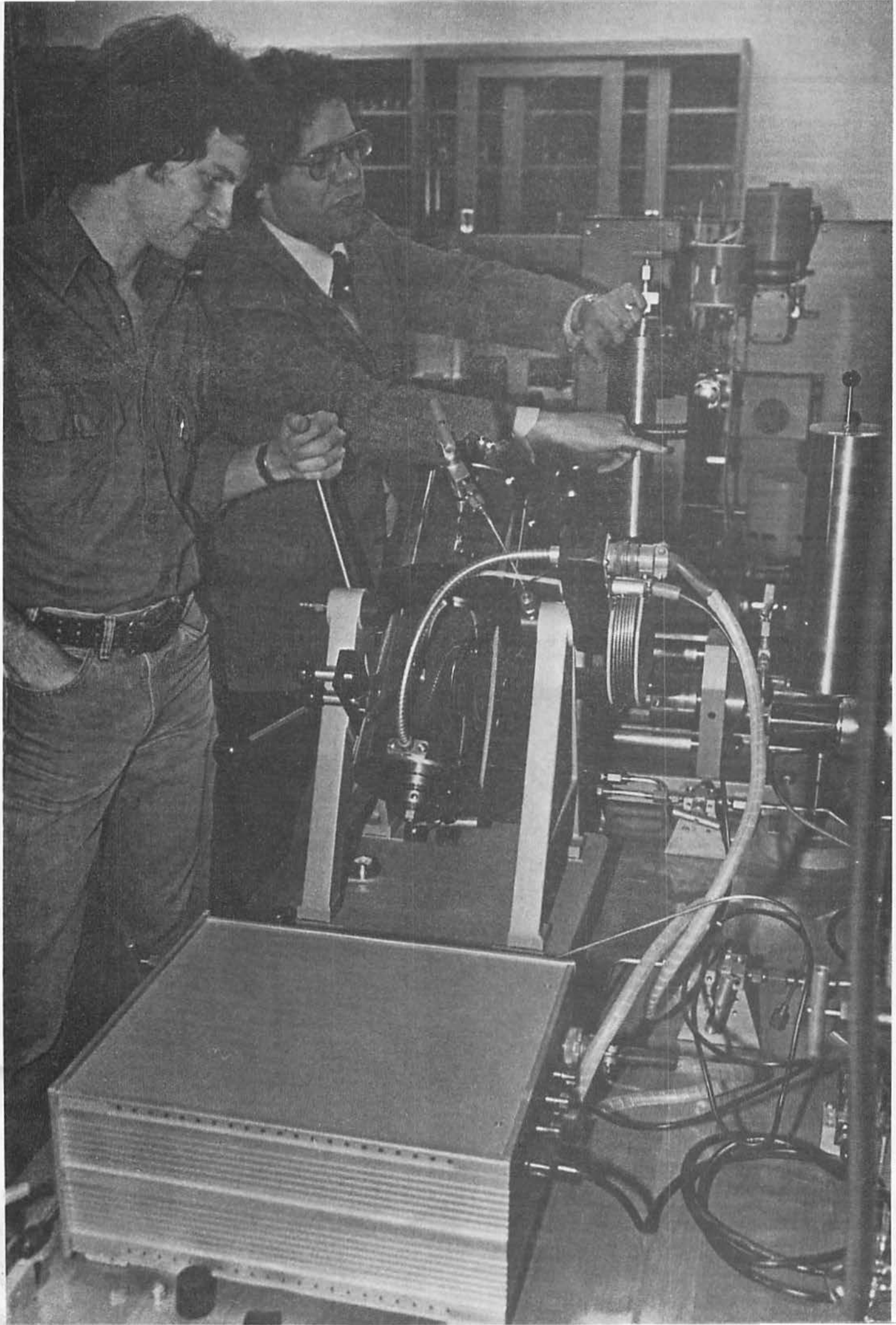
1. Admission Requirements
a. Baccalaureate degree in appropriate undergraduate major.
b. Unconditional acceptance requires completion of intermediate microeconomics and macroeconomics, basic statistics, and one semester of calculus. Students may be accepted into the program subject to identified deficiencies being rectified.
c. Scores of the general aptitude sections of the Graduate Record Examination.
2. Complete the general university requirements and master's degree requirements as listed on pages 23 and 25
3. Complete a minimum of 30 credits of course work, including Econ 699 — Thesis, in the field of resource economics.
4. Program Requirements:

Required Courses: — *Credits*

Econ. 601 — Microeconomic Theory I 3
Econ. 603 — Macroeconomic Theory I 3
Econ. 623 — Mathematical Economics 3
Econ. 626 — Econometrics 3
Econ. 635 — Resource Economics I 3
Econ. 636 — Resource Economics II 3
Econ. 670 — Seminar in Research Methodology 0

Elective Courses:
A minimum of 6 credits, depending on the thesis credit, and approval by graduate committee.

Thesis: A minimum of 6 credits.



School of Mineral Industry

David Maneval, *Acting Dean*

Mineral materials have been basic to man's society throughout the time of recorded history. In the space age of the present and future they will continue to be of even greater importance to the high standard of living of the people of the nation, as well as to its economic strength. Within the field, excellent opportunities exist for challenging, stimulating, and satisfying careers.

The School of Mineral Industry is composed of four major units: the Department of Mineral Engineering, the Mining Extension Program, Department of Petroleum Engineering, and the Mineral Industry Research Laboratory.

Instruction and research programs use classrooms on the Fairbanks campus in the Brooks, the Duckering and O'Neill Buildings and in addition the nearby University's Silver Fox Mine and Stampede Mine, located in Denali National Monument, are used for appropriate field instruction and research.

Mineral Engineering

The department has statewide responsibility for academic instruction in the fields of geological engineering and mining engineering. Overall, the objectives of the department are to prepare students for their places as contributive citizens and for professional careers in the mineral industry.

Undergraduate Degrees — The Department has programs that lead to bachelor of science degrees in geological engineering and mining engineering.

Graduate Degrees — Programs leading to a master of science degree are offered in mining engineering, mineral preparation and geological engineering.

The professional degree Engineer of Mines (E.M.) may be earned by engineering graduates of the school.

Faculty

Department Head and Professor: Chris A. Lambert, P.E.
Professors: Ernest N. Wolff, P.E.; D. Maneval; P.D. Rao; F. Skudryzk.
Associate Professors: N. Johansen, P.E.; J. Sims, Affiliate Assoc. Professor
Assistant Professors: S. Bandopadhyay; P.J. Cannon; S. Huang.
Instructor: P. Metz

Mineral Industry Research Laboratory Faculty

Director: David Maneval
Associate Director and Geologist: Ernest N. Wolff, P.E.
Professor of Coal Technology: P. Dharma Rao
Professor of Mining Engineering: Chris A. Lambert, P.E.
Associate Professor of Geological Engineering: Nils I. Johansen, P.E.
Instructors: Paul A. Metz, Mark S. Robinson
Adjunct Professor of Mining Engineering: Bruce I. Thomas, P.E.
Affiliate Associate Professor of Palynology: Robert Sanders

Mining Extension Faculty

Professor of Mining Extension: Leo Mark Anthony
Assistant Professor of Mining Extension: James A. Madonna

Geological Engineering

Degree: B.S., M.S.

Minimum Requirements for Degree: Bachelor of Science — 130 credits plus 6 credits field course; Master of Science — 30 additional credits including a thesis; E.M. — thesis and five years of experience

Geological engineering is a branch of engineering dealing with the application of geology. Geological engineers work with man's environment in the true sense of the word. Properties of earth materials exploration activities, geophysical and geochemical prospecting, site investigations and engineering geology are all phases of geological engineering.

Candidates for the bachelor of science degree in geological engineering will be required to take a comprehensive exam in their general field (completion of the State of Alaska Engineering-in-Training examination will satisfy the requirement). The State of Alaska Engineer-in-Training examination is a first step toward registration as professional engineers.

Graduates of the program are employed by industry, consulting companies, and government agencies.

Students may initiate their geological engineering program in Anchorage and transfer to Fairbanks upon completion of the freshman and sophomore years. Such students should be in communication with a faculty member of the Mineral Engineering Department, UAF.

Undergraduate Degrees: The Department of Mineral Engineering offers the bachelor of science degree in geological engineering and the bachelor of science in mining engineering (see separate description of this degree under mining engineering).

Graduate Degrees: The graduate program allows for awarding the master of science degree in geological engineering. The degree consists of a core program and electives in either geotechnical engineering or exploration engineering. The university policies pertaining to graduate study leading to a master's degree apply as approved by the student's advisor and the Mineral Engineering faculty.

Requirements

Geological Engineering — B.S. Degree

1. Complete the general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

First Year

Fall Semester	*17 Credits*
Engl. 111 — Methods of Written Communications	3
Math. 200 — Calculus	4
Chem. 211 — Chemical Principles[1]	4
E.S. 111 — Engineering Science	3
*Social Science or Humanities Elective[2]	3

Spring Semester	*15 or 16 Credits*
SpC. Elective	3
Math. 201 — Calculus	4
E.S. 101 — Graphics	2
Geos./G.E. 261 — General Geology for Engineers	3
Chem. 212 — Introductory Quantitative Analysis or M.Pr. 418 — Emission Spec., X-Ray and Atomic Absorption[4]	3 or 4

Second Year

Fall Semester	*18 Credits*
Math. 202 — Calculus	4
Geos. 213 — Mineralogy	4
Phys. 211 — General Physics	4
Engl. 211 or 213 — Intermediate Exposition	3
*Social Science or Humanities Elective[2]	3

Spring Semester	*17 Credits*
E.S. 201 — Computer Techniques	3
Phys. 212 — General Physics	4
E.S. 208 — Mechanics	4
Geos. 214 — Petrology	3
Min. 202 — Mine Surveying	3

Third Year

Fall Semester	*17 Credits*
E.S. 331 — Mechanics of Materials	3
E.S. 341 — Fluid Mechanics	4
G.E. 365 — Fundamentals of Geological Engineering	3
Math. 302 — Differential Equations	3
Geos. 407 — Geology of Mineral and Energy Resources	4

Spring Semester	*14 Credits*
Geos. 314 — Structural Geology	3
Geos. 408 — Map and Airphoto Interpretation	2
A.S. 301 — Elementary Probability and Statistics	3
G.E. 372 — Rock Engineering	3
*Social Science or Humanities Elective[2]	3

Summer	*Credits*
Geos. 351 — Field Geology	6

Fourth Year

Fall Semester — *14 Credits*

Min. 403 — Operations Research in Mineral Industries 3
G.E. 471 — Remote Sensing for Engineers 3
*Social Sciences or Humanities Elective[2] 4
Technical Elective[3] 4

Spring Semester — *17 Credits*

G.E. 405 — Exploration Geophysics 4
G.E. 401 — Rock Mechanics 3
Min. 408 — Mineral Valuation and Economics 4
*Social Sciences or Humanities Elective[2] 3
Technical Elective[3] 3

Notes:

[1] A Chemistry sequence of Chem. 105 and Chem. 106 may replace Chem. 211.

[2] Of the 16 social science/humanities credits, at least 6 must be above the 100 level or advanced courses in a 100-level sequence.

[3] Technical electives are dependent upon professional interest and selected by the student in conference with his or her advisor and approved by department faculty.

[4] M.Pr. 418 to be taken later in the program and at least 1 credit must be added to the technical electives as indicated.

* As approved by advisor.

Geological Engineering — M.S. Degree

1. Complete the general university requirements and graduate degree requirements on pages 23 and 24, and:

Fall Semester — *15 Credits*

Min. 621 — Advanced Mineral Economics 3
Min. 631 — Research Methods 3
G.E. 666 — Advanced Engineering Geology
or G.E. 675 — Applied Mining Geology 3
Approved Technical Electives 3
G.E. 471 — Remote Sensing for Engineers 3

Spring Semester — *15 Credits*

Approved Technical Electives (minimum) 3
Thesis (maximum) 12

Electives will consist of an approved course of study which will prepare the student for either exploration engineering or geotechnical engineering.

All graduate students will be expected to acquire some teaching and/or research experience in addition to thesis work as part of their M.S. degree program.

Interdisciplinary Studies

Students are encouraged to develop interdisciplinary degree programs through the School of Mineral Industry. For further information about the Interdisciplinary Studies program, see page 64.

Mining Engineering

In the mining engineering curriculum, particular emphasis is placed upon engineering as it applies to the exploration and development of mineral resources and upon the economics of the business of mining. The program allows the student the choice of technical electives to develop in areas of exploration, mining, or mineral beneficiation.

Candidates for the bachelor of science degree in mining engineering will be required to take a comprehensive examination in their general field (completion of the State of Alaska Engineer-in-Training examination will satisfy this requirement). The state of Alaska Engineering-in-Training is a first step toward registration as professional engineers.

Students may initiate their mining engineering program in Anchorage and transfer to Fairbanks upon completion of their freshman or sophomore year. Such students should be in communication with a faculty of the Mineral Engineering Department, UAF.

Undergraduate Degrees — The Department of Mineral Engineering offers the bachelor of science degree in mining engineering and the B.S. in geological engineering (see separate description of this degree under geological engineering).

Graduate Degrees — The graduate program allows for the awarding of master of science degree in mining engineering. The curricula consist of required and elective course work as outlined below. University policy pertaining to graduate study leading to a master's degree applies.

***Professional Degrees** — The graduate program also provides for the awarding of a professional degree, Engineer of Mines (E.M.). This degree may be conferred upon engineering graduates who present satisfactory evidence of continuous engagement in responsible engineering work for not less than five years and a satisfactory thesis.

Requirements

Mining Engineering — B.S. Degree

1. Complete the general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements.

First Year

Fall Semester — *17 Credits*

Engl. 111 — Methods of Written Communications 3
Math. 200 — Calculus 4
*Chem. 211 — Chemical Principles[1] 4
E.S. 111 — Engineering Science 3
*Social Science or Humanities Elective[2] 3

Spring Semester — *16 Credits*

Min. 104 — Mining Operations Lab 1
Sp.C Elective 3
Math. 201 — Calculus 4
E.S. 101 — Graphics 2
Geos./G.E. 261 — General Geology for Engineers 3
*Social Science or Humanities Elective[2] 3

Second Year

Fall Semester — *18 Credits*

Math. 202 — Calculus 4
Geos. 213 — Mineralogy 4
Phys. 211 — General Physics 4
A.S. 301 — Elementary Probability and Statistics 3
Eng. 211 or 213 — Immediate Exposition 3

Spring Semester — *17 Credits*

E.S. 201 — Computer Techniques 3
Phys. 212 — General Physics 4
E.S. 208 — Mechanics 4
Math. 302 — Differential Equations 3
Min. 202 — Mine Surveying 3

Third Year

Fall Semester — *17 Credits*

E.S. 331 — Mechanics of Materials 3
E.S. 341 — Fluid Mechanics 4
Min. 300 — Fundamentals of Mining 3
M.Pr. 304 — Introduction to Metallurgy 3
E.S. 307 — Elements of Electrical Engineering 4

Spring Semester — *15 Credits*

E.S. 346 — Basic Thermodynamics
or Chem 331 — Physical Chemistry 3
Min. 401 — Rock Mechanics 3
M.Pr. 418 — Emission Spec., X-Ray, Atomic Absorption 3

E.S. 308 — Instrumentation and Measurements 3
*Social Science or Humanities Elective[2] 3

Fourth Year

Fall Semester — *15 Credits*
Min. 403 — Operations Research in Mineral Industries 3
M.Pr. 313 — Introduction to Mineral Preparation 3
Min. 410 — Surface Materials Handling Systems 3
Technical Electives[3] 3
**Social Science or Humanities Elective[2] 3

Spring Semester — *15 Credits*
Min. 320 — Seminar and Senior Field Trip 0
Min. 408 — Mineral Valuation and Economics 4
Min. 407 — Mineral Industry and the Environment 2
Min. 406 — Mining Plant Engineering 3
Technical Electives[3] 2
*Social Science or Humanities Elective[2] 4

Notes:
[1] A Chemistry sequence of Chem. 105 and Chem. 106 may replace Chem. 211.
[2] Of the 16 social science/humanities credits, at least 6 must be above the 100 level or advanced courses in a 100 level sequence.
[3] Technical electives are selected by the student in conference with his or her advisor and approved by Mineral Engineering Department faculty.
* As approved by advisor.

Mining Engineering — M.S. Degree

Complete the general university requirements and graduate degree requirements, pages and .

Fall Semester — *15 Credits*
Min. 631 — Research Methods 3
Min. 621 — Adv. Min. Economics 3
G.E. 675 — Applied Mining Geology 3
*Approved elective 3
Min. 699 — Thesis 3

Spring Semester — *15 Credits*
Min. 333 — Mining and Mineral Leasing Law 2
*Approved electives 10
Min. 699 — Thesis 3

All graduate students will be expected to acquire some teaching and/or research experience in addition to thesis work as part of their M.S. degree program.

*Electives will consist of an approved course of study which will prepare the student for one or the other of the fields of mining or exploration.

Engineer of Mines — E.M. Degree

1. Requirements to be fulfilled:
a. The applicant must be a graduate from the School of Mineral Industry, University of Alaska-Fairbanks, with an engineering degree.
b. A minimum of five years of responsible engineering work is required.
c. An acceptable thesis* must be submitted.
2. The applicant must complete and submit a University of Alaska-Fairbanks graduate application for admission form to the Director of Admissions and Records for the engineer of mines degree program. Included with the application must be a resume of engineering work experience as mentioned in 1(b).
3. The application will be reviewed by the dean of the School of Mineral Industry for acceptance recommendation and concurrence with the thesis topic selected.
4. The thesis will be prepared to meet the format requirements as outlined in the *Manual of Procedures and Information for Graduate Students*, including filing a copy in the university library.
5. Submission of thesis should follow the same procedures and lead-times as outlined on page , as should the submission of the application for graduation form.
6. The dean of the School of Mineral Industry will convene a committee of four faculty members, one from outside the school, to review the thesis, give guidance as needed and to assure that the thesis is satisfactory to meet the degree requirements and finally approve the thesis. A defense of thesis, oral or written, will be made to the committee.

Class work beyond the initial degree is not required, and credits for the thesis will be a minimum of six.

Registration at UAF during the semester of the thesis submittal is required.

*An "acceptable thesis" is defined as a demonstration of professional competence combined with normal research methods working with the student's committee.

Mineral Preparation Engineering

Degree: M.S.
Minimum Requirements for Degree: 30 credits beyond B.A.

Requirements

Mineral Preparation Engineering — M.S. Degree

1. Complete the general university requirements and master's degree requirements as listed on pages 23 and 25.
2. Complete the following degree and program requirements:

Fall Semester — *15 Credits*
M.Pr. 601 — Froth Flotation 3
M.Pr. 433 — Coal Preparation 3
Min. 408 or 621 — Mineral Economics 3
G.E. 431 — Applied Ore Microscopy 2
M.Pr. 699 — Thesis 4

Spring Semester — *15 Credits*
M.Pr. 684 — Mineral Preparation Research 3
M.Pr. 606 — Plant Design 3
M.Pr. 699 — Thesis 3
*Electives 6

*Electives will be in the field of chemistry, physics, and mathematics and will be chosen to broaden the candidate's fundamental knowledge, depending upon his/her specific background and interest.

Petroleum Engineering

Degrees: B.S., M.S.
Minimum Requirements for Degrees: B.S. — 130 credits; M.S. — 30 additional credits.

Petroleum engineering at the University of Alaska-Fairbanks offers a unique look at the challenging problems confronting the petroleum industry. Both the bachelor of science and the master of science degrees are available. Requirements for the degrees focus on many disciplines, including mathematics, physics, chemistry, geology and engineering science. In addition, courses in petroleum engineering deal with drilling, formation evaluation, production, reservoir engineering, computer simulation and enhanced oil recovery.

The curriculum at UAF was designed to prepare graduates to meet the demands of modern technology while emphasizing, whenever possible, the special problems encountered in Alaska. Located in one of the largest oil producing states in the nation, the Department of Petroleum Engineering offers one of the most modern and challenging degree programs available.

The M.S. program is intended to provide the student with an advanced treatment of petroleum engineering concepts. Students with B.S. degrees in petroleum, chemical or mechanical engineering may be accepted to the programs as full fledged candidates while those with degrees in peripheral fields may be accepted without class standing and advanced without class standing and

advanced to candidacy following the completion of certain prerequisite courses. A number of generous research and teaching assistantships are available for the qualified candidate.

Faculty

Department Head and Assistant Professor: Christine Ehlig-Economides
Assistant Professors: Michael J. Economides, Russell D. Ostermann, Ali Al-Khafaji

Requirements

Petroleum Engineering — B.S. Degree
1. Complete the general university requirements as listed on page 23.
2. Complete the following degree and program (major) requirements:

First Year

Fall Semester	*17 Credits*
Pet.E. 103 — Survey of the Energy Industry	3
Math. 200 — Calculus I	4
Chem 105 — General Chemistry or Chem 211 — Chemical Principles	4
Engl. 111 — Method of Written Communication	3
*Humanities[1] or Social Science[1] Elective	3

Spring Semester	*17 Credits*
E.S. 201 — Computer Techniques	3
Math. 201 — Calculus II	4
G.E./Geos. 261 — Geology for Engineers[2]	3
Chem 106 — General Chemistry II[3] or Chem. 212 or elective	4
*Speech Communication Elective	3

Second Year

Fall Semester	*17 Credits*
Pet.E. 205 — Petroleum Drilling Engr	3
Chem. 321 — Organic Chemistry or Chem. 331 — Physical Chemistry	3
Math. 202 — Calculus III	4
Phys. 211 — General Physics I	4
Engl. 211/213 — Intermediate Exposition	3

Spring Semester	*18 Credits*
Pet.E. 206 — Oil Well Design and Production	3
Pet.E. 211 — Drilling Laboratory	1
E.S. 208 — Mechanics	4
Math. 302 — Differential Equations	3
Phys. 212 — General Physics II	4
E.S. 346 — Basic Thermodynamics	3

Third Year

Fall Semester	*17 Credits*
Pet.E. 301 — Formation Evaluation and Lab	4
Pet.E. 321 — Advanced Thermodynamics for Pet. Engr.	3
E.S. 331 — Mechanics of Materials	3
E.S. 341 — Fluid Mechanics	4
*Humanities[1] or Social Science[1] Elective	3

Spring Semester	*16 Credits*
Pet.E. 405 — Underground Fluid Behavior and Lab	4
*Geology Elective (e.g. Geos. 314)	3
M.E. 441 Heat and Mass Transfer	3
*Humanities[1] or Social Science[1] Elective	4
*Humanities[1] or Social Science[1] Elective	2

Fourth Year

Fall Semester	*16 Credits*
Pet.E. 331 — Petroleum Process Engr.	3
Pet.E. 400 — Practical Engr. Experience	1
*Engineering Elective (e.g. ME 416 or E.S. 307)	3
*Technical Elective (e.g. C.E. 603 Arctic Engr.)	3
*Humanities[1] or Social Science[1] Elective	3
Free Elective	3

Spring Semester	*14 Credits*
Pet.E. 476 — Reservoir Engineering	4
Pet.E. 489 — Reservoir Simulation	3
Min. 408 — Mineral Evaluation and Economics[4]	3
G.E. 405 — Exploration Geophysics[5]	4

Notes:
[1] Fifteen credits in humanities and social sciences are required. All electives must be approved by the petroleum engineering faculty advisor. At least 6 of the 15 credits must be (a.) above the 100-level or (b) advanced courses in a 100-level sequence; and at least 3 credits must be in the humanities and 3 in the social science designation.
[2] Students who take Chem. 211 may choose an elective in the spring in place of Chem. 212.
[3] Geos. 101 may be taken in a fall semester in place of G.E. 261.
[4] ESM. 450 may be taken in place of Min. 408.
[5] Geos. 418 may be taken in a fall semester in place of GE 405.
* As approved by advisor.

Petroleum Engineering — M.S. Degree
1. General Requirements: (a) The student must complete the general university requirements and master's degree requirements; (b) the student must complete at least 24 semester units of course work and a minimum of 6 units of thesis detailing the research done on a project approved by the student's committee; (c) the student must earn a satisfactory score on a written comprehensive exam prior to submission of the thesis, and must subsequently present an oral defense of the thesis.
2. Course Requirements: Core courses for a total of 12 semester hours will be required of all students for the master of science degree in petroleum engineering. These courses are listed below:

A.	*Credits*
C.E. 603 — Arctic Engineering	3
Pet.E. 610 — Advanced Reservoir Engineering	3
Pet.E. 620 — Introductory Graduate Seminar	1
Acct. 623 — Property Valuation and Petroleum Accounting	3
Pet.E. 650 — Advanced Topics in Petroleum Engineering	2
Core Courses	12

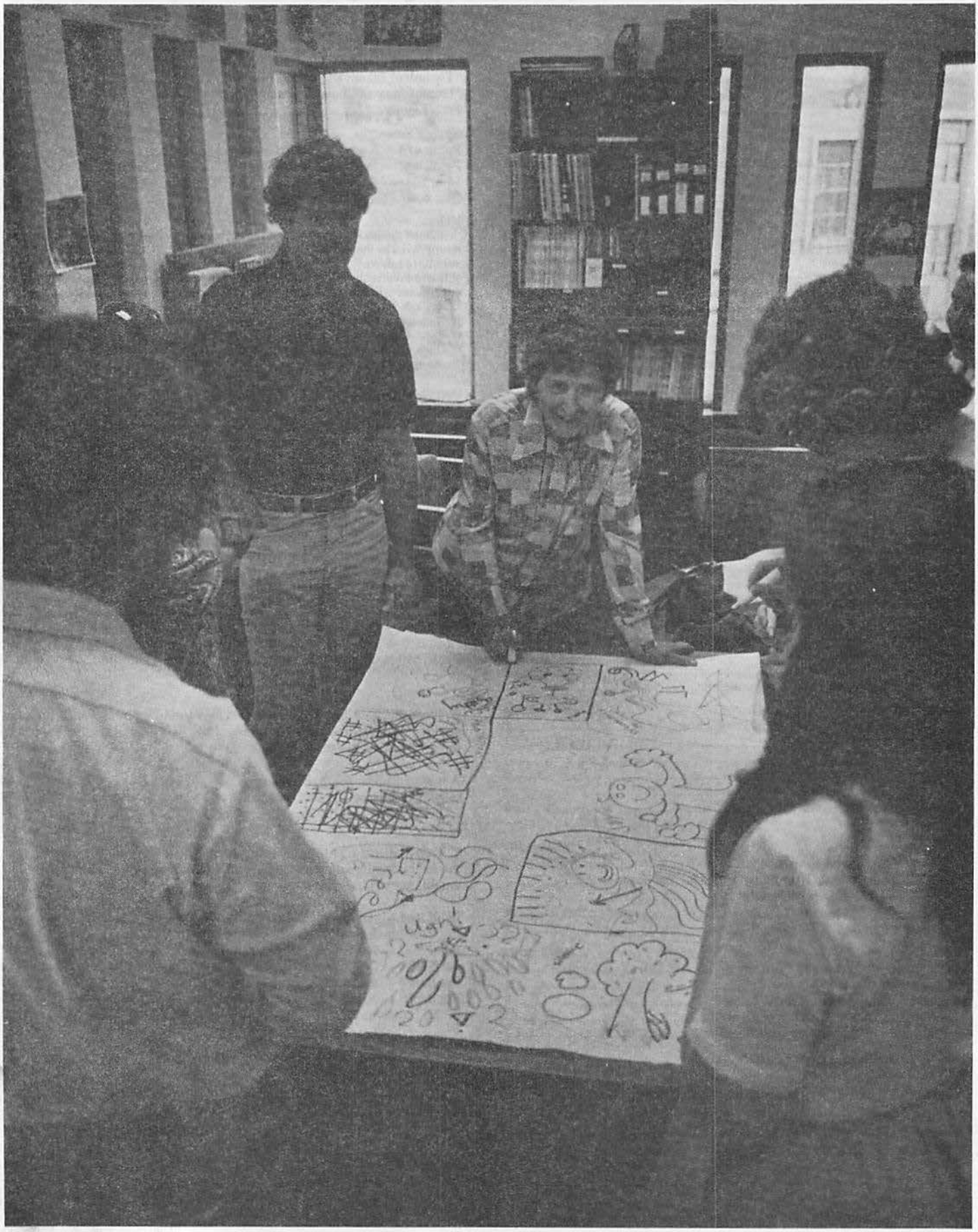
B. In addition, 3 hours of advanced level mathematics and 3 hours of geology electives must be completed. Course selection will be subject to the approval of the student's committee.

	Credits
Advanced Engr. Math. Electives	3
Geology Elective	3
Electives	6

C. Two additional petroleum engineering electives will be required from the following list of courses to be offered in rotation, each course being taught every third semester:

	Credits
Pet.E. 661 — Advanced Well Testing	3
Pet.E. 662 — Enhanced Oil Recovery	3
Pet.E. 663 — Advanced Reservoir Simulation	3
Pet.E. 664 — Geothermal Reservoir Engineering	3
Pet.E. 665 — Advanced Phase Behavior	3
Pet.E. 666 — Arctic Drilling and Well Completion	3
Pet.E. Elective	6
Total Courses	24

D.	*Credits*
Pet.E. 699 — Thesis	6



Course Descriptions

Course Numbers

The first numeral of a course numbered in the hundreds indicates the year in which the course is normally offered in its own department. For example, Engl. 111 is given for first-year students and Engl. 318 is given for third-year students. Freshman and sophomore students are cautioned to register for upper division (300 and 400) level courses only if they have had adequate preparation and background to undertake advanced study in the field in which those courses are offered.

100-299 — Lower-division courses.

300-499 — Upper-division courses. Freshman and sophomore students may be required to obtain special permission to take 300 and 400 level courses unless such courses are required in the first two years of their curriculum as printed in this catalog.

500-599 — Post-baccalaureate courses which are considered professional and specialized. Such courses are not interchangeable with 600 level courses for graduate degree programs.

600-699 — Graduate courses to which a few well qualified undergraduates may be admitted with the permission of the head of the department in which the course is offered.

Special or Reserved Numbers — Courses identified with numbers ending in -92 are seminars; ending in -93 are special topics courses, approved to be offered only during one academic year; -94, approved trial courses; -95, special topics summer session courses, offered only during the summer; -97 indicates individual study -98, individual research; -99, thesis.

Courses identified with these special or reserved numbers may be available at all levels (i.e., 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 chancellor (e.g., 600-level offerings in areas without approved graduate programs). These courses may be repeated for credit.

Course Credits

One credit represents satisfactory completion of 840 minutes of lecture or 1680 or 2520 minutes of laboratory, whichever is appropriate. Credit hours may not be divided, except one-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*, and no more than one credit may be earned per week, per student.

Following the title of each course, the figures in parentheses indicate the number of lecture and laboratory hours the class meets each week for one semester. The first, lecture hours; the second, laboratory. For example (2+3) indicates that a class has two hours of lecture and three of laboratory work week.

The number of credits listed is for each semester. Thus "3 credits" means three credits may be earned.

Course Classification

Courses that may be used in satisfying generally stated degree requirements (e.g., "social science elective") are classified in the course listings by the following designators: s-Social Sciences; n-Natural Sciences; and h-Humanities. For instance, Hist. 341, History of Alaska (3+0)s may be utilized to satisfy the "social science elective" requirement.

Accounting

Admittance to upper division School of Management courses will be granted only to students with junior standing or above. Others will be admitted only with the written permission of the appropriate department head.

Acct. 100 **3 Credits** **Fall**
Intro. to Small Business Accounting (3+0)
Financial accounting for small business enterprises including a study of the entire accounting cycle utilizing a practice set and a detailed study of payroll reporting. Accounting procedures will be stressed.

Acct. 101 **3 Credits** **Fall and Spring**
Elementary Accounting (3+0)
An introduction course in accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor.

Acct. 102 **3 Credits** **Fall and Spring**
Elementary Accounting (3+0)
A continuation of introductory accounting concepts and procedures emphasizing the problems of businesses organized as partnerships or corporations and performing manufacturing operations. (Prerequisite: Acct. 101.)

Acct. 310 **3 Credits** **Fall**
Income Tax (3+0)
A study of federal and state income taxes relating primarily to the individual residing in Alaska and an introduction to corporate income taxation. The course entails tax reporting, planning, and research. (Prerequisite: Acct. 102 or permission of instructor.)

Acct. 316 **3 Credits** **Spring**
Accounting Information Systems (3+0)
The design and analysis of accounting systems for business entities in various industries. Internal control for the business, data processing and its relationship to accounting systems examined. (Prerequisite: Acct. 102.)

Acct. 322 **3 Credits** **Fall**
Governmental Accounting (3+0)
Principles and operation of fund accounting; financial reporting, budgetary control for governmental, municipal and non-profit organizations. (Prerequisite: Acct. 102.)

Acct. 323 **3 Credits** **Alternate Fall**
Petroleum Accounting (3+0)
Financial reporting and accounting for the petroleum industry with an emphasis on the exploration, development and production phases of oil and gas operations. (Prerequisites: Acct. 101 and 102 or permission of instructor. Next Offered: 1984-85.)

Acct. 342 **3 Credits** **Spring**
Managerial Cost Accounting (3+0)
A cost accounting course with a managerial emphasis focusing on cost-volume-profit analysis, job order and process costing, joint costs, by-products, inventory costing alternatives, systems design, responsibility accounting, profit planning, standard costs, and flexible budgeting. This course is designed for accounting majors and will include emphasis on CPA and CMA examination coverage and practical business application. (Prerequisite: Acct. 102.)

Acct. 352 3 Credits Fall
Management Accounting (3 + 0)
A managerial accounting course focusing on business policy profit planning, resource planning, control concepts, reporting for management control, and the impact of public reporting on management decisions. (Prerequisites: Acct. 101 and Acct. 102.)

Acct. 361 3 Credits Fall
Acct. 362 3 Credits Spring
Intermediate Accounting (3 + 0)
A treatment in depth of the balance sheet accounts and procedures for their analysis and correction. Study of working capital and fixed assets will receive special emphasis during fall semester. Special attention will be given to long-term liabilities and stockholders' equity during spring semester. (Prerequisite: Acct. 102.)

Acct. 401 3 Credits Fall
Advanced Accounting (3 + 0)
A thorough study of accounting for parent-subsidiary relationships, partnerships, and fiduciaries. The principles of fund accounting will be introduced and international accounting problems will be emphasized. (Prerequisite: Acct. 312.)

Acct. 403 3 Credits Spring
Advanced Taxes (3 + 0)
A study of federal income tax for all entities, gift, estate, and payroll taxes. The course entails tax research, tax planning, and tax reporting for domestic and foreign tax payers. (Prerequisite: Acct. 310.)

Acct. 404 3 Credits Controllership + Inter acct. **Fall**
Adv. Cost Accounting and Controllership (3 + 0)
Advanced phases of cost analysis including problems of allocation, cost behavior patterns, variance analysis, systems, investment decisions, decentralization, decision models, sales mix, and other cost analysis. Quantitative methods will be evaluated and applied in various decision-making settings. The controllership function will be emphasized throughout the course as will the role of management accounting in contemporary organizations. The role of business and society as applicable to the controllership function will involve reporting requirements (including emphasis on the Securities and Exchange Commission), conceptual foundations and ethical considerations. (Prerequisites: all 300 level Common Body of Knowledge BA courses, Econ. 227 and all 300 level accounting major requirements.)

Acct. 405 3 Credits Spring
Contemporary Issues in Accounting (3 + 0)
A study of current developments in financial and managerial accounting theory and research. Relevant court cases, SEC rulings, FASB and AICPA publications, and academic accounting research will be emphasized. (Prerequisite: Acct. 401.)

Acct. 452 3 Credits Fall
Auditing (3 + 0)
A study of the procedures for verification of financial data and the professional standards applicable to the auditor's examination of financial statements and his expression of opinion relative to them. (Prerequisite: Acct. 312.)

Acct. 471 3 Credits Alternate Fall
Tax Planning and Research (3 + 0)
Tax planning and research primarily for business organizations. Tax planning for estates, trusts, and individuals will be examined. The course is designed for tax practitioners as well as for students without work experience in taxation. (Prerequisites: Acct. 310 and 403 or permission of instructor. Next offered: 1984-85.)

Acct. 472 3 Credits Spring
Computer Control and Advanced Auditing (3 + 0)
An examination of advanced auditing theory and practice, including audit techniques and internal control of computer systems. The course is designed for auditor practitioners as well as for students without field experience in auditing. (Prerequisites: Acct. 316 and Acct. 452. This course assumes prior exposure to auditing and information systems.)

Acct. 481 1 Credit Spring
Personal Tax Planning (1 + 0)
The course will concern personal tax planning rather than tax preparation. The course will focus on the provisions of tax law affecting the individual taxpayer. (Prerequisites: Upper division standing, permission of instructor.)

Acct. 482 1 Credit Spring
Business Tax Planning (1 + 0)
The course will concern business tax planning rather than tax preparation. The course will focus on applicable tax credits, business deductions, profit sharing plans, and various state taxes. (Prerequisites: Upper division standing or permission of instructor.)

Acct. 483 1 Credit Spring
Estate Tax Planning (1 + 0)
The course will entail estate tax planning. The course will focus on gift, estate, and social security taxes. (Prerequisites: Upper division standing or permission of instructor.)

Acct. 502 3 Credits Spring
Financial Accounting Concepts for Administrators (3 + 0)
A complete and balanced treatment of the concepts, procedures and uses of financial accounting, including the accounting cycle, mass processing of transactions, internal control, inventories and merchandising operations, long-lived assets and liabilities, corporate accounting and reporting, partnership accounting, accounting principles, interpretation of financial statements, consolidated financial statements, analysis of funds flow, manufacturing operations and cost systems, managerial accounting and capital budgeting. (Prerequisite: Graduate Standing.)

Acct. 650 3 Credits Spring
Management Accounting Seminar (3 + 0)
Use of accounting information for managerial decisions, planning and control in economic entities. Topics covered include: the accounting process, responsibility accounting, performance measurement, capital budgeting, financial analysis and financial reports for managers, government, investors and the public. Student participation will include problem analysis and oral and written report preparation. (Prerequisite: Graduate standing. Acct. 101 and 102, or permission of instructor.)

Acct. 623 3 Credits Fall
Land Valuation and Petroleum Accounting (3 + 0)
Accounting concepts and principles, financial reporting and basic tax procedures applicable to the petroleum industry. (Prerequisites: Graduate standing and permission of instructor.)

Agriculture and Land Resources

A.L.R. 101 3 Credits Fall
Conservation of Natural Resources (3 + 0)
Consideration of natural resources including discussion of their biological and physical nature, social and economic aspects of use, conflicts of use, and alternative means for conservation. Majors in all fields are welcome.

A.L.R. 300 1-3 Credits Fall, Spring, Summer
Internship in Natural Resources Management
Supervised programs designed to provide carefully selected upper division or graduate students with practical experience working with government units or agencies in natural resources management. Opportunities to apply theories and practical application, observe procedures and operations of the agencies, and become better prepared for professional employment. (Prerequisite: A.L.R. 101, at least upper division standing, and permission of instructor.)

A.L.R. 310 3 Credits Alternate Spring
Agricultural Concepts and Techniques (3 + 0)
Concepts and techniques of agriculture in its broadest sense as related to past, present, and future cultures; food and fiber production; uses of wild and domestic plants and animals; esthetics; and quality and protection of the environment. (Prerequisite: Biol. 105, 106; Chem. 105, 106. Next offered: 1983-84.)

A.L.R. 311 3 Credits Alternate Fall
Introduction to Agronomy and Horticulture (2 + 3)
Principles of plant science as related to production of economic crops, with special attention to those grown in Alaska. (Prerequisite: A general course in botany. Next offered: 1983-84.)

A.L.R. 312 3 Credits Alternate Fall
Range Management (3 + 0)
Principles of management of grazing lands for livestock production; relationships with and similarities to habitat use by wildlife; range plant ecology; and techniques for range improvement and development. Includes detailed discussions of Alaskan conditions and animals such as reindeer, muskox, and bison. (Prerequisites: Biol. 105-106, Biol. 239, A.L.R. 320 and 321 highly recommended. Next offered: 1984-85.)

A.L.R. 313 4 Credits Alternate Spring
Introduction to Plant Pathology (3 + 3)
An introduction to the field of 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. 105 and 106; Biol. 239 recommended. Next offered: 1984-85.)

A.L.R. 320 3 Credits Alternate Fall
Introduction to Animal Science (2 + 3)
Origin, history, and economic significance of breeds of dairy and beef cattle, swine, sheep, and poultry. Discussion of reindeer, bison, and muskox. Introduction to management and production systems with special reference to Alaska. (Prerequisite: A course in general biology. Next offered: 1984-85.)

A.L.R. 321 3 Credits Alternate Fall
Applied Animal Nutrition (2 + 3)
Application of feeding standards and feedstuffs analysis to the nutrition of farm animals. Comparative anatomy of the digestive system of pig, horse, and cow. (Prerequisite: A course in general biology. Next offered: 1983-84.)

A.L.R. 340 3 Credits Alternate Spring
Natural Resources Measurements (2 + 3)
Introduction to the techniques and instrumentations used in the measurement and inventory of natural resources. Measurements used by managers of land, timber, range, wildlife, water, and recreation resources will be discussed. (Prerequisites: junior standing or permission of instructor. Next offered: 1984-85.)

A.L.R. 350 3 Credits Spring
Introduction to the Forest System (2 + 3)
The physiological and ecological foundations for forest resource management. Forestry concepts involving soils, silvics, silviculture, fire, pathology, and entomology are discussed. Emphasis on Alaska's forest resources. (Prerequisites: Biol. 271 and A.L.R. 101 or permission of instructor.)

A.L.R. 360 3 Credits Alternate Spring
Outdoor Recreation Planning (3 + 0)
The course develops on the basic theory and practices related to the allocations of natural resources for recreational purposes, including concomitant services related to that use. Macrobehavioral patterns are studied as they influence the allocation process. (Prerequisites: A.L.R. 101 and Econ. 235 or equivalent, or with permission of instructor. Next offered: 1983-84.)

A.L.R. 370 3 Credits Fall
Introduction to Watershed Management (2 + 3)
Examination of the hydrologic cycle and the influence of land management techniques on water quantity, quality, and timing. Topics of water yield, soil erosion and non-point pollution, snowpack management, and land use alternatives will be discussed. (Prerequisites: Biol. 239, and Geos. 101, or permission of instructor.)

A.L.R. 380 3 Credits Spring
Soils (2 + 3)
Origin and development, weathering, classification, terminology; physical and chemical properties, biology, aeration, and moisture; reaction and liming; manures and fertilizers; management; problems in Alaska. (Prerequisite: Chem. 105.)

A.L.R. 400 3 Credits Alternate Spring
Natural Resource Policies (3 + 0)
The origin, development, and significance of major public policies in fields such as forest management, water resources, outdoor recreation, public land management, wildlife management, mineral and petroleum resources, and agriculture. Focuses on Alaskan issues and national issues relevant to the problems of northern natural resource management. (Prerequisites: Upper division or graduate standing. Next offered: 1983-84.)

A.L.R. 401 3 Credits Alternate Spring
Natural Resources Legislation (3 + 0)
An examination of the background and potential importance of selected federal and Alaskan legislation in the fields of land use, land planning, and resource development and management. A study of the legislative process of policy development. (Prerequisites: Junior, senior, or graduate standing with major in agriculture, wildlife, fisheries, natural resources management, or, with instructor's permission, related fields. (Next offered: 1984-85.)

A.L.R. 403 3 Credits Alternate Spring
Farm Planning and Management (3 + 0)
Overview of all aspects of farm and ranch management, emphasizing decision making, use of available economic tools, farm planning, and development of alternate farm plans, and farm and ranch accounting and monitoring. Addresses practical farm management and examines alternatives to traditional agriculture in light of changing economic conditions. Detail on Alaskan farm management practices and procedures. (Prerequisites: A.L.R. 311, A.L.R. 320, Econ. 235, Econ. 335 or permission of instructor. Next offered: 1983-84.)

A.L.R. 411 3 Credits Alternate Fall
Plant Propagation (2 + 3)
Principles of plant propagation, including seeds, bulbs, divisions, layers, cuttings, buds, grafts, and rootstocks. Where possible, emphasis will be placed on the propagation of indigenous plants. (Prerequisites: A.L.R. 311 or permission of instructor. Next offered: 1984-85.)

A.L.R. 412 3 Credits Alternate Fall
Field Crop Production (3 + 0)
An applied course in agronomy for both undergraduate and graduate students. The subject matter will emphasize agronomic principles and practices that are involved in the production, storage, marketing, and utilization of field crops. (Prerequisites: A.L.R. 311. Next offered: 1984-85.)

A.L.R. 420 3 Credits Alternate Spring
Animal Nutrition and Metabolism (3 + 0)
Nutrition and metabolism of domestic animals; ruminant and monogastric. (Prerequisites: Chem. 105, 106; biochemistry recommended. Next offered: 1983-84.)

A.L.R. 430 3 Credits Alternate Spring
Land-Use Planning (3 + 0)
Land use and resources planning principles and practices in the United States, with primary emphasis on the state and regional levels, and with special attention to Alaska. (Prerequisite: Upper division standing. Next offered: 1984-85.)

A.L.R. 450 3 Credits Alternate Fall
Forest Management (3 + 0)
Introduction to forest land management for production of goods and services; relation of timber production to other forest land uses; topics include sustained yield, allowable cut, management planning inventory, valuation. (Prerequisites: A.L.R. 350, Econ. 235, or permission of instructor. Next offered: 1984-85.)

A.L.R. 451 3 Credits Alternate Spring
Regeneration of Alaskan Woody Plants (3 + 0)
Consideration of major aspects of reproduction and regeneration of important woody plants in Alaska. The course will be particularly useful to persons presently or potentially working in land management involving vegetation type conversions, sustained harvest, rehabilitation, and related fields. (Prerequisites: Courses in botany, forestry, or related fields, or permission of instructor. Next offered: 1984-85.)

A.L.R. 452 3 Credits Alternate Spring
Forest Protection (3 + 0)
The basic principles and practical management systems for forest protection from fire, insects, and diseases are presented. Emphasis is on understanding the role of these factors in managing forest ecosystems, and problems and techniques particularly important in the forest of high latitudes, especially in Alaska. (Prerequisites: Biol. 105, 106, 271, 239; A.L.R. 350 or instructor's permission. Next offered: 1983-84.)

A.L.R. 453 3 Credits Alternate Fall
Harvesting and Utilization of Forest Products (3 + 0)
The first half of this course will be an in-depth study of timber harvesting systems including timber cutting, yarding, and transport processes. Both manual and mechanized aspects will be considered. The second half of the course will cover the technology of processing wood into various products including lumber, plywood, veneer, pulp, and energy. (Prerequisites: A.L.R. 101 and 350. Next offered: 1984-85.)

A.L.R. 460 3 Credits Fall
Principles of Outdoor Recreation Management (2 + 3)
Theories, practices, economics, and problems fundamental to the use of land and related natural resources for recreation. (Prerequisite: Junior standing or permission of the instructor.)

A.L.R. 461 3 Credits Alternate Spring
Interpretive Services (3 + 0)
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: At least junior standing or permission of instructor. Next offered: 1984-85.)

A.L.R. 480 2 Credits Alternate Fall
Soil Management (2 + 0)
An applied course in soil science for both undergraduate and graduate students. The subject matter will emphasize soil management principles and practices that increase crop yields and reduce soil losses from wind and water erosion. (Prerequisites: A.L.R. 380. Next offered: 1983-84).

A.L.R. 630 3 Credits Alternate Fall
Regional Planning (3 + 0)
An advanced course in which specific problems in regional planning, of importance to Alaska, are considered in depth. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1984-85.)

A.L.R. 631 3 Credits Alternate Spring
Regional Planning Practicum (3 + 0)
Application of planning theories and methods to specific regional problems in Alaska. Students will work in small teams on problems illustrating regional development, land use planning, environmental management, growth policy, and other issues in Alaska. (Prerequisite: A.L.R. 630 or permission of instructor. Next offered: 1984-85.)

A.L.R. 640 3 Credits Alternate Spring
Simulation and Modeling in Resource Management (3 + 0)
An introduction to and discussion of the use of simulation and modeling in natural resource management. Emphasis on concepts, strategies, and case studies. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1983-84.)

A.L.R. 641 3 Credits Alternate Spring
Natural Resources Applications of Remote Sensing (2 + 3)
An introduction to the interpretation of remote sensing data and applications to natural resources. Course topics include a discussion of types of remote sensing data and product displays, the advantages and limitations of data types, and techniques of data interpretation for various natural resources problems. Emphasis is placed on vegetation survey and inventory, wildlife habitat, forest and range management, agriculture, geobotanical correlations, and change detection-monitoring. Techniques include manual interpretation and computer-aided analysis. (Prerequisites: Geos. 422 or permission of instructor. Next offered: 1984-85.)

A.L.R. 670 3 Credits Alternate Fall
Biometeorology (3 + 0)
Solar radiation, energy balance relationships, and disposal of incident energy at the earth's surface; physical environment in relation to biological activity of plants and animals. Concepts emphasized. (Prerequisites: Calculus, physics, biology or permission of the instructor. A.L.R. 350 recommended. Next offered: 1983-84.)

A.L.R. 675 3 Credits Alternate Fall
Applied Ecosystem Science (3 + 0)
Modern concepts of ecosystem science and their application to solving problems of land use and management. Worldwide patterns and control processes of and management implications for major ecosystems. Designed for students in biology and renewable resources management. (Prerequisites: Undergraduate major in biological sciences or renewable resources including at least one course in ecology, one approved college-level mathematics course and graduate standing or permission of instructor. Next offered: 1984-85.)

A.L.R. 680 3 Credits Alternate Fall
Environmental Decision-Making (3 + 0)
Analyzes theoretical and practical problems of prediction from the standpoint of social, environmental, and economic disciplines. Examines the potential and actual role of scientific prediction in political decision-making especially through the National Environmental Policy Act's Environmental Impact Statement process and similar state legislation. (Prerequisites: Graduate status or upper division standing and permission of instructor. Next offered: 1984-85.)

Alaska Native Languages

ANL 141 3 Credits Alternate Fall
ANL 142 3 Credits Alternate Spring
Beginning Athabaskan — Koyukon (3 + 0) h
An introduction to Koyukon, the Athabaskan language of the Koyukuk and Central Yukon rivers, 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. (Next offered: 1983-84.)

ANL 215 3 Credits Fall
ANL 216 3 Credits Spring
Alaska Native Languages (3 + 0) h
A survey of all Native languages of Alaska, open to all students. History, present, and future of these languages; examples of Indian and Eskimo language structures, with native speakers in class; present situation and prospects for the future as a cultural and political force in Alaska and elsewhere. Fall semester devoted mainly to Eskimo and Aleut; Spring to Athabaskan, Eyak, Tlingit, Haida, Tsimshian. Semesters may be taken independently.

ANL 241 3 Credits Alternate Fall
ANL 242 3 Credits Alternate Spring
Intermediate Athabaskan — Koyukon (3 + 0) h
Continuation of Elementary Athabaskan — Koyukon, concentrating on development of conversational ability with presentation of additional grammar and vocabulary. (Prerequisites: ANL 141 and 142 or permission of instructor. Next offered: 1983-84.)

ANL 387 3 Credits Fall
ANL 388 3 Credits Spring
Bilingual Methods and Materials (3 + 0) h
Training and research in bilingual education methods in Alaska Native languages and preparation of books and materials in any of them.

Alaska Native Studies

ANS 120 3 Credits Fall
Cultural Differences in Institutional Settings (3 + 0) s
Introduction to the phenomena of culturally organized thought processes, with emphasis on the communication patterns resulting from the interaction of peoples from different linguistic/culture traditions in modern institutional settings. Special attention is paid to Alaskan Native and non-Native communication patterns.

ANS 251 1-3 Credits Fall and Spring
Practicum in Native Cultural Expression (0 + variable)
Students actively and regularly engaged in the formal organization, promotion, and expression of Alaskan Native cultural heritage may enroll in this practicum for 1-3 credits. The practicum may be repeated through three semesters providing the accumulated credits do not exceed three. (Prerequisite: Permission of the Head, Alaska Native Studies Program.)

ANS 301 3 Credits Fall
Native Cultural Heritage Documentation (3 + 0) h
A study of the methods by which significant but disappearing aspects of Native traditional life may be documented for purposes of preservation and/or revitalization. Students are expected to accomplish research and analysis in cultural heritage. This course is particularly suitable for students actively engaged in cultural heritage expression through the creative arts, Native language programs, media productions, etc. (Prerequisites: Hist. 100 and Anth. 242 or permission of instructor.)

ANS 310 3 Credits Fall
The Political Economy of ANCSA (3 + 0) s
Analysis of the implementation of the Alaska Native Claims Settlement Act (ANCSA). Examination is made of goals and methods of the different Native corporations as they establish themselves within the larger political economy. (Prerequisites: Anth. 242 or P.S. 263 or Hist. 100; Econ. 101 and Econ. 137; or permission of instructor.)

ANS 320 3 Credits Spring
Language and Ethnicity: Applications to Alaska (3 + 0) s
Examination of aspects of language, ethnicity, and their interrelationships. Emphasis is placed on the systems language uses to communicate ethnic identity and how communication between ethnic groups is affected by patterns of language use. The potential effects of current developments in communication media on language usage will also be examined. Special attention is paid to the applicability of these concepts to Native/non-Native communication patterns. (Prerequisites: ANS 120 and ANL 215 or 216; or permission of instructor.)

ANS 375 3 Credits Spring
Native American Religion and Philosophy (3 + 0) h
A study of the philosophical aspects of Native American world views, with emphasis on systems of belief and knowledge, explanations of natural phenomena, and relations of human beings to the natural environment through ritual and ceremonial observances. (Prerequisites: Anth. 242 or permission of the instructor; Phil. 201 is recommended.)

ANS 415 3 Credits Spring
Comparative Economic Development Processes: Applications for Native Alaska (3 + 0) s
Comparative examination of economic development processes in third and fourth world societies. Emphasis is placed on the identification of different economic development theories and practices, and on their applicability to socioeconomic conditions of Alaska Native people. (Prerequisites: Anth. 242 or Hist. 100; Econ. 101; or permission of instructor.)

ANS 425 3 Credits Fall
Federal Indian Law and Alaska Natives (3 + 0) s
As a result of transfers of land ownership and recognition of tribal sovereignty, a "special relationship" has developed between the federal government and Native Americans. This course examines federal Indian law and policy as it has developed under this relationship. Emphasis is given to the legal rights and status of Alaska Natives. (Prerequisites: P.S. 101 and Hist. 100; or permission of instructor; P.S. 263 is recommended.)

ANS 430 3 Credits Fall
Alaska Native Education (3 + 0) s
Examination of the development of Alaskan Native education, with emphasis on the structure and function of the different school systems historically serving Native people and on current efforts toward local control. (Prerequisites: Anth. 242 or Hist. 100; or permission of instructor.)

ANS 475 3 Credits Spring
Alaska Native Social Change (3 + 0) s
Study is made of tradition and change in Native social institutions in contemporary society. Attention is given to methods of identifying and analyzing significant Native social change processes for better public understanding. (Prerequisites: Anth. 242 or permission of the instructor.)

Anthropology

Anth. 101 3 Credits Fall and Spring
Introduction to Anthropology (3 + 0) s
An introduction to the general field of anthropology, including the physical and social/cultural aspects of man. The course is designed to introduce the basic ideas, methods, and substantive results of anthropology to those desiring some understanding of what anthropology does, how it does it, who does it and where, and something of what has been learned about the variations and similarities of human beings.

Anth. 111 3 Credits Alternate Spring
Ancient Civilizations (3 + 0) s
A survey of the major civilizations of the Old and New World from a comparative, anthropological perspective. Antecedents and influences of these civilizations on their neighbors will be stressed. Major societal institutions to be considered include economics, science, religion, and social organization. (Next offered: 1984-85.)

Anth. 121 3 Credits Alternate Spring
Human Origins (3 + 0) n
A general review of human origins and evolution based on evidence from the fossil record and the anatomy and behavior of nonhuman primates, bio-behavioral trends in hominid evolution, modes of communication and the origin of language, and the biocultural consequences of big-game hunting. (Next offered: 1983-84.)

Anth. 176 3 Credits As Demand Warrants
Anthropology of American Society and Culture (3 + 0) s
Concentrates on the study of American culture and society from the point of view of anthropology. Various aspects of American culture will be addressed: patterns and processes of American lifestyle; values; structure and organization of subcultures. The approach to American culture and society will be comparable to that taken with primitive and peasant societies.

Anth. 200 3 Credits Alternate Fall
Social/Cultural Anthropology (3 + 0) s
A more advanced introduction to social and cultural anthropology designed to be of interest to majors and non-majors. Examination of a variety of social and cultural systems with emphasis on kinds of problems with which anthropologists struggle in seeking to understand the structure, process, and the role of the individual in such systems. Conceptual framework and methodology which social and cultural anthropologists employ in attempting to analyze social action will be closely examined. The course will attempt to develop in the student an awareness of the gaps between the common sense views of our culture and a scientifically adequate account of human action. (Next offered: 1984-85.)

Anth. 203 3 Credits Every Third Spring
Women in Society (3 + 0) s
An examination of the nature of sex roles cross-culturally. The history of the study of sex roles, with an emphasis on female roles, in anthropology is discussed. Current research on the biological and cultural aspects of these rules is presented and various hypotheses in anthropology regarding male and female behavior cross-culturally are discussed and supplemented by in-depth studies of cultures representing different types of techno-environmental adaptation — hunting, horticultural, pastoral, agricultural, and industrial societies. (Next offered: 1984-85.)

Anth. 204 3 Credits Every Third Spring
Language and Culture (3 + 0) s
The role of language and linguistics in anthropology, language differences and cultural differences; the nature of language and its study, and the interrelationships of language and culture/society. Current theories of ethnolinguistics and ethnoscience, sociolinguistic, and language origins are also discussed. (Prerequisites: Anth. 101. Next offered: 1985-86.)

Anth. 205 3 Credits Alternate Fall
Native Cultures of North America (3 + 0) s
A survey course of the native peoples and cultures of North America with respect to their environmental setting and the major institutions of society. (Next offered: 1983-84.)

Anth. 206 3 Credits Every 3 Years
Native Cultures of South America (3 + 0) s
A survey of the native peoples of South America in their natural settings with a focus on the social, economic, political, and religious life. (Next offered: 1985-86.)

Anth. 211 3 Credits Alternate Fall
Fundamentals of Archeology (3 + 0) s
A study of the development and methods of archeology emphasizing the historical background of the discipline and the different approaches characteristic of its development. The application of basic archeological techniques is illustrated through the use of a study module which presents the raw data from an excavation as well as a collection of artifacts which the class analyzes and discusses in terms of possible interpretations using the methods and techniques of archeology as presented in the first part of the course. (Next offered: 1983-84.)

Anth. 222 3 Credits Alternate Spring
Human Evolution (3 + 0) n
The fossils — their morphology, inferred functional and ecological relationships, geochronologic and geochronometric placements. Current taxonomic and phylogenic assessments, theories of evolutionary processes, behavioral primatology and the role of culture in hominid evolution are also major concerns. (Next offered: 1984-85.)

Anth. 242 3 Credits Spring
Native Cultures of Alaska (3 + 0) s
An introduction to the traditional Aleut, Eskimo, and Indian (Athabaskan and Tlingit) cultures of Alaska. Comparative information on Eskimo and Indian cultures in Canada is also presented. Includes a discussion of linguistic groupings as well as the cultural groups; presentation of population changes through time; subsistence patterns, social organization and religion in terms of local ecology. Precontact interaction between native groups of Alaska is also explored. This is a general introductory course presenting an overall view of the cultures of Native Alaskans.

Anth. 300 3 Credits As Demand Warrants
Anthropology of Religion (3 + 0) s
This course focuses on one of the more fascinating subsystems of human culture and society — religion or supernatural belief. As approached from the perspective of anthropology, the study of religion is both comparative and wide ranging. While much of the material will emphasize religion in the context of "primitive" society, its role in the more complex society will also be examined. Among the various topics the student can expect to encounter are: religious practitioners, ritual, belief systems, and the relationship of religious behavior to other aspects of social behavior. (Prerequisite: Junior standing or permission of instructor.)

Anth. 305 3 Credits As Demand Warrants
Comparative Political and Legal Systems (3 + 0) s
An examination of political systems and the law from a comparative standpoint. The primary focus will be on case studies drawn from non-industrial societies, developing nations, and parapolitical systems or encapsulated societies, such as native peoples in the U.S. Major areas of coverage will be political structures and institutions; social conflict, dispute settlement, social control and the law, political competition over critical resources; and ethnicity. (Prerequisites: Anth. 101 or 200 or permission of instructor.)

Anth. 306 3 Credits As Demand Warrants
Economic Anthropology (3 + 0) s
This course addresses the fundamental issue of the relationship between economic and other social relations. The primary focus is on preindustrial societies because a central task of the course is to determine the relevance of formal economics to small-scale societies and developing nations. Included for study are such topics as exchange, formal and substantive economics, market economics, rationality, political economy, and the economics of development. (Prerequisites: Anth. 101 or 200 or permission of instructor.)

Anth. 307 3 Credits Alternate Springs
Kinship and the Family (3 + 0) s
Examination through case studies of the forms and function of family and household organization, kinship and marriage in diverse human sociocultural systems. Case studies will be drawn from tribal and complex societies including contemporary United States. (Prerequisites: Anth. 101 or 200 or permission of instructor. Next offered: 1983-84.)

Anth. 309 3 Credits Every 3 Years
Arctic Prehistory (3 + 0) s
The archaeological cultures of the northern regions from the time of first occupation up to the ethnographic present. Particular attention will be paid to the adaptations to changing environments in time and space as seen through past technological and economic systems, as well as settlement patterns. (Prerequisites: Anth. 101 or 211, or permission of instructor. Next offered: 1984-85.)

Anth. 310 3 Credits Alternate Spring
New World Prehistory (3 + 0) s
The culture history of the Native Americans from their first entry into the New World up to the development of civilization in Mexico through important archeological sites which illustrate the different stages of their development. (Prerequisites: Anth. 101 or 211, or permission of instructor. Next offered: 1983-84.)

Anth. 312 3 Credits Alternate Fall
Old World Prehistory (3 + 0) s
The archeological record for the development of human culture from the very beginnings of humankind to the rise of civilization in the Old World. (Prerequisites: Anth. 101 or 211 or permission of instructor. Next offered: 1984-85.)

Anth. 315 3 Credits Alternate Fall
Human Biology (2 + 3) n
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. (Prerequisite: Anth. 222 or Biol. 105-106. Next offered: 1983-84.)

Anth. 321 3 Credits As Demand Warrants
Human Population Biology (3 + 0) n
An areal survey of the physical anthropology of the peoples of one major geographic region of the world. Areas to be covered during different semesters will include: Circumpolar regions, North and South America, and Oceania. The course will emphasize the analysis of patterns of biological variation within and between prehistoric and modern human populations in a given area. General problems to be considered include origins and historical relationships, analysis of microevolutionary processes and adaptation to climatic stress. (Prerequisite: Anth. 315 or permission of instructor.)

Anth. 410 3 Credits Alternate Fall
History of Anthropology (3 + 0) s
The major theoretical approaches in cultural/social anthropology presented chronologically from the formulation of the discipline of anthropology to current theory. The substance of the various approaches is used for discussions regarding the nature of the discipline, its goals and methods, and the relevance of theoretical perspectives to interpretations in anthropology. (Prerequisite: Junior standing or permission of instructor. Next offered: 1984-85.)

Anth. 413 3 Credits Every Third Spring
Archeological Method & Theory (3 + 0) s
The history of archeological theory will be presented as the framework for discussion and assessment of different theoretical perspectives in archeology. These various perspectives will be illustrated through the study of their application to specific research problems. (Prerequisite: A course in archeology or permission of the instructor. Next offered: 1983-84.)

Anth. 414 3 Credits As Demand Warrants
Environmental Archeology (3 + 0) n
Introduction to Quaternary environmental reconstruction through the integration of geological, archeological, botanical, and zoological data. (Prerequisite: A course in archaeology or permission of the instructor.)

Anth. 421 3 Credits As Demand Warrants
Analytical Techniques (2 + 3)
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 methods of illustrating results of analysis. (Prerequisites: Any 200 level Anthropology course. Next offered: 1983-84.)

Anth. 422 3 Credits — As Demand Warrants
Human Osteology (2 + 3) n
Human skeletal analysis: bone biology, skeletal anatomy, aging and sexing, metric and nonmetric traits of skeleton and dentition, paleopathology, and paleodemography. Inferences on genetic relationships between and patterned behavior within prehistoric groups derived from skeletal material. (Prerequisite: Anth. 315 or permission of instructor).

Anth. 428 3 Credits — As Demand Warrants
Human Ecology (3 + 0) n
Human ecology attempts to understand man by studying individuals and human populations as biological entities profoundly modified by human society and culture. It is considered that animal and human ecology share some basic premises since man, in the native state, is born nearly hairless, naked, and is physiologically a tropical, sea-level dwelling primate. This course is concerned with some of the biobehavioral effects of ecological circumstances on man, expressed in human population size regulations, nutritional energetics, human adaptation, and cultural ecology. The "man in the ecosystem" approach will be utilized. (Prerequisite: Junior standing or permission of instructor.)

Anth. 601 3 Credits — Alternate Fall
Proseminar in Social/Cultural Anthropology (3 + 0)
An intensive graduate level survey on the subdiscipline of social/cultural anthropology dealing with the methods and theories in the field. Special attention will be directed at examining the substantive materials resulting from social/cultural studies. (Prerequisites: Graduate standing or permission of instructor. Next offered: 1983-84.)

Anth. 611 3 Credits — Alternate Fall
Proseminar in Archeology (3 + 0)
An intensive coverage of advanced topics in archeological theory and techniques of data recovery and analysis. The course will emphasize both field and laboratory aspects as well as the substantive results of archeological research. (Prerequisites: Graduate standing or permission of instructor. Next offered: 1984-85.)

Anth. 612 3 Credits — As Demand Warrants
Paleoecology (3 + 0)
Advanced study of Quaternary environments. The influences of climatic change and the interrelationships of physical and biological factors on the distribution and evolution of biota including humans will be discussed. (Prerequisite: graduate standing or permission of the instructor.)

Anth. 621 3 Credits — Alternate Spring
Proseminar in Physical Anthropology (3 + 0)
An intensive graduate level survey of the subdiscipline of physical anthropology dealing with historical developments and current problems in the field. The general areas of human paleontology and human population biology will be stressed. (Prerequisites: Graduate standing or permission of instructor. Next offered: 1983-84.)

Anth. 622 3 Credits — As Demand Warrants
Problems in Human Population Biology (3 + 0)
Preview of current methodological and theoretical advances in human population biology. Problem areas to be considered will include behavior, genetic analysis, the biological basis of human social behavior, phylogenetic reconstruction, the evidence for natural selection in human populations, human ecology, and demography. Emphasis will be placed on the recent literature of the field. (Prerequisites: Graduate standing or permission of instructor.)

Anth. 630 3 Credits — Alternate Spring
Anthropological Field Methods (3 + 0)
This course concentrates on the practical concerns and aspects of doing anthropological field research. Students are exposed to 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. The preparation of research proposals is also given attention. (Prerequisites: Graduate standing or permission of instructor. Next offered: 1984-85.)

Anth. 640 3 Credits — As Demand Warrants
Monograph Analysis (3 + 0)
Examination and criticism of exemplary landmarks in the anthropological literature. The course will be devoted to a subdiscipline during each offering. (Prerequisites: Graduate standing or permission of instructor.)

Applied Linguistics

A.L. 300 3 Credits — Fall
Applied Phonology (3 + 0)
Intensive analysis of the phonologies of Alaska's Native languages. The design of their practical orthographies and history of current writing systems. Philosophy and methodology of literacy teaching emphasized, and consideration given to the role of phonology in language maintenance and language change in Alaska today. May be repeated for credit only with change in topic. (Prerequisites: Ling 101; ANL 215 or ANL 216. Student must demonstrate knowledge of one ANL writing system, or permission of instructor.)

A.L. 310 3 Credits — Spring
Applied Morphology and Syntax (3 + 0)
Examination of morphology and syntax of languages within a major Alaska Native language family. Directed at curriculum design or preparation of materials for Native language programs with attention to the variety of Native language situations in the state. Introduction to syntactic patterns and discourse analysis. May be repeated for credit only with change in topic. (Prerequisites: AL 300 or permission of instructor.)

A.L. 400 3 Credits — Fall
Practicum (3 + 0)
The rationale and methodology for the observation, collection and analysis of data in applied linguistics; the use of appropriate equipment and resources; research and dissemination models; ethics in collection and dissemination. Students will complete individual, supervised projects in their areas of interest. (Prerequisites: AL 310; knowledge of language structure necessary.)

A.L. 450 3 Credits — Alternate Spring
Policy and Planning for Alaska Native Languages (3 + 0)
Consideration of the future viability of Alaska Native languages in light of their histories and their current states. Analysis of the complex factors affecting language maintenance and the efficacy of maintenance and revitalization programs. The roles of communities, organizations, and institutions in policy planning both in Alaska and in other areas where Alaska Native languages are spoken, with perspectives from selected minority language situations in other countries. (Prerequisites: AL 310; a thorough knowledge of an Alaskan Native language is necessary to understand the kinds of impact non-linguistic factors may have on language structures and domains of use. Next offered: 1983-84.)

Applied Statistics

A.S. 301 3 Credits — Fall and Spring
Elementary Probability and Statistics (2 + 3)
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. Parametric and Nonparametric methods. (Prerequisite: Math 107 and junior standing or consent of instructor.)

A.S. 302 3 Credits — Spring
Analysis of Experimental Design and Regression (2 + 3)
Analysis of variance for various experimental designs, including completely random, randomized complete block, incomplete block, Latin square and factorial designs. Linear regression including analysis of covariance and multiple regression. (Prerequisite: A.S. 301).

A.S. 402 3 Credits — Spring
Scientific Sampling (2 + 3)
Sampling methods, including simple random, stratified and systematic; estimation procedures, including ratio and regression method; special area and point sampling procedures; optimum allocation. (Prerequisite: A.S. 301.)

A.S. 451 3 Credits Fall
Statistics for Civil Engineering (3+0)
An introduction to the use of probability and statistics in civil engineering design. Probability theory, choice of frequency models, estimation, significance testing, introduction to Baysian decision making. Application to civil engineering problems. (Prerequisites: Math. 302, junior standing in engineering or physical sciences.)

A.S. 602 3 Credits As Demand Warrants
Experimental Design (3+0)
Constructing and analyzing designs for experimental investigations; completely randomized, randomized block and Latin-square designs, split-plot design, incomplete block design, confounded factorial designs, lattice and cubic lattice designs, treatment of missing data, comparison of designs. (Prerequisites: A.S. 302 or consent of instructor).

Note: The following courses are statistical in orientation. A course description and listing of prerequisites may be found in the appropriate departmental course listings.

Anth. 421 — Analytical Techniques
B.A. 360 — Operations Management
B.A. 506 — Quantitative Analysis
B.A. 684 — Quantitative Methods for Management
Geos. 430 — Statistical and Data Analysis in Geology
Econ. 226 — Introduction to Statistics for Economics and Business
Econ. 227 — Statistical Methods
Econ. 626 — Econometrics
E.S.M. 621 — Operations Research
Math. 371 — Probability
Math 408 — Mathematical Statistics
Med. S. 630 — Epidemiology
Psy. 250 — Introduction to Statistics for Behavioral Sciences
Psy. 360 — Psychological Tests and Measurements
W.F. 630 — Quantitative Fisheries Science

Art

Art 105 3 Credits Fall, Spring
Beginning Drawing (1+4) h
Introduction to basic elements in drawing. Emphasis on a variety of techniques and media.

Art 161 3 Credits Fall, Spring
Two-Dimensional Design (1+4) h
Fundamentals of form; principles of composition, organization, and structure.

Art 162 3 Credits Fall, Spring
Color and Design (1+4) h
Fundamentals of color and visual perception. Emphasis on two dimensions.

Art 163 3 Credits Fall, Spring
Three-Dimensional Design (1+4) h
Work in three dimensions in sheet metal, plaster, paper, wire, etc., using the principles and elements of design.

Art 201 3 Credits Fall, Spring
Beginning Ceramics (1+4) h
Introduction to the making and firing of clay objects. Study of clay methods of forming decorations, glazing, and firing. Foundation experiences in other materials such as plaster, enamels, concrete and glass. (Prerequisites: Art 105 and Art 161 or 162 or 163, or permission of the instructor.)

Art 205 3 Credits Fall, Spring
Intermediate Drawing (1+4) h
Exploration of pictorial composition and creative interpretation of subjects. (Prerequisite: Art 105.)

Art 207 3 Credits Fall, Spring
Beginning Printmaking (1+4) h
Introduction to the concepts and techniques of printmaking. Each semester concentration on working on some of the following:

Relief (collography, linocut, woodcut, wood engraving)
Intaglio (etching, engraving, drypoint, aquatint)
Serigraphy (silkscreen, stencil)
Lithography and various photographic techniques.

(Prerequisites: Art 105 and Art 161 or 162 or 163, or permission of the instructor.)

Art 209 3 Credits Fall, Spring
Beginning Metalsmithing (1+4) h
Introduction to the basic techniques of fine metalsmithing and jewelry. (Prerequisites: Art 105 and Art 161 or 162 or 163, or permission of the instructor.)

Art 211 3 Credits Fall, Spring
Beginning Sculpture (1+4) h
An introduction to sculpture using wood, stone, metal, wire, plaster, etc. This course is designed to make the student artist aware of his materials and the tools required for the execution of sculpture. (Prerequisites: Art 105 and Art 161 or 162 or 163, or permission of the instructor.)

Art 213 3 Credits Fall, Spring
Beginning Painting (Acrylic or Oil) (1+4) h
Investigation of basic materials and techniques in painting in the medium specified. (Prerequisites: Art 105 and Art 161 or 162 or 163, or permission of the instructor.)

Art 223 3 Credits Every Third Spring
Watercolor Painting (1+4) h
Painting in various transparent and opaque media (watercolor, tempra, polymer, casein). Emphasis on techniques and subjects. (Prerequisite: Art 105 and Art 161 or 162 or 163, or permission of the instructor. Next offered: 1984-85.)

Art 261 3 Credits Fall
Art 262 3 Credits Spring
History of World Art (3+0) h
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. Art 261-262 may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester. Term paper required each semester. (Prerequisite: Sophomore standing.)

Art 301 3 Credits Fall, Spring
Intermediate Ceramics (1+4) h
A continuation of basic ceramics with an emphasis on the potter's wheel, glaze calculations, and plaster as they relate to pottery. (Prerequisites: Art 201 or permission of instructor.)

Art 305 3 Credits Spring
Advanced Drawing (1+4) h
Development and refinement of individual problems in drawing. Can be repeated for credit with permission of instructor. (Prerequisites: Art 205 or permission of instructor.)

Art 307 3 Credits Fall, Spring
Intermediate Printmaking (1+4) h
A continuation of Art 207 with emphasis in refinement of technique, the use of color and printing. (Prerequisite: Art 207, or permission of instructor.)

Art 309 3 Credits Fall, Spring
Intermediate Metalsmithing and Jewelry (1+4) h
Further investigation of material processes and techniques for metalsmithing and jewelry with some emphasis on design. (Prerequisites: Art 209 or permission of instructor.)

Art 311 3 Credits Fall, Spring
Intermediate Sculpture (1+4) h
More advanced exploration of the sculptural idea; work on an individual basis with more advanced use of a variety of techniques and materials. (Prerequisites: Art 211 or permission of instructor.)

Art 313 3 Credits Fall, Spring
Intermediate Painting (1+4) h
Continued development of expressive skills in painting in any media. Emphasis on pictoral and conceptual problems. (Prerequisite: Art 213.)

Art 324 3 Credits **Every Third Fall**
Watercolor Painting and Composition (1+4) h
Development of individual approach to watercolor media. Can be repeated for credits with permission of the instructor. (Prerequisite: Art 223. Next offered: 1985-86.)

Art 363 3 Credits **Alternate Spring**
History of Modern Art (3+0) h
Development of modern art forms and theories in the visual arts from the late 19th century until contemporary art. Concentration on explaining the artistic pluralism of 20th century art forms: Cubism, Futurism, Surrealism, Expressionism, Constructivism, Non-objective Art, Abstract Expressionism, Pop Art, Realism and many other "ism." (Prerequisites: Art 262 or permission of instructor. Next offered: 1983-84.)

Art 364 3 Credits **Alternate Spring**
Italian Renaissance Art (3+0) h
The development of the Renaissance from early Florentine beginnings to the High Renaissance of Venice. Study of the works of such artists as Massacio, Michelangelo, DaVinci, Titian, etc. (Prerequisite: Art 261 or permission of instructor. Next offered: 1983-84.)

Art 365 3 Credits **Fall**
Native Art of Alaska (3+0) h
A study of art forms of the Eskimo, Indian, and Aleut ranging from prehistory to the present: emphasis upon the changes in forms through the centuries. (Prerequisites: Advanced standing or permission of instructor.)

Art 401 3 Credits **Fall, Spring**
Advanced Ceramics (1+4) h
Advanced wheel work; design of large scale ceramic murals for incorporation into architecture. Study of the practical application of ceramics in the commercial fields. Advanced body and glaze calculation. May be repeated for credit with permission of instructor. (Prerequisites: Art 301 or permission of instructor.)

Art 407 3 Credits May be repeated **Fall, Spring**
Advanced Printmaking (1+4) h
An individual development of technical and creative processes in printmaking: emphasis on experimentation and the use of the print workshop as a cooperative environment for the production of works of art. (Prerequisites: Art 307, or permission of instructor.)

Art 409 3 Credits **Fall, Spring**
Advanced Metalsmithing and Jewelry (1+4) h
Continued investigation of materials and processes with an introduction to holloware skills and forging. May be repeated for credits with permission of instructor. (Prerequisites: Art 309 or permission of instructor.)

Art 411 3 Credits **Fall, Spring**
Advanced Sculpture (1+4) h
Styrofoam burn-out, bronze casting, steel welding, repoussee sculpture, inlay, and architectural sculpture (stone and concrete). May be repeated for credit with permission of the instructor. (Prerequisites: Art 311 or permission of instructor.)

Art 413 3 Credits **Fall, Spring**
Advanced Painting (1+4) h
Experimentation and development of individual ideas and techniques in painting. Can be repeated for credits with permission of instructor. (Prerequisite: Art 313.)

Art 417 3 Credits **Every Third Fall**
Lithography (1+4) h
An exploration of stone and metal plate lithography: crayon, tusche and color work covered. (Prerequisite: Art 105, 207, or permission of instructor. Next offered: Fall 1983.)

Art 419 3 Credits **Fall, Spring**
Life Drawing (1+4) h
Problems in drawing from life, exploring possibilities in pictorial design and composition. Emphasis on form in space using charcoal, pen, brush, and various other media. (Prerequisite: Art 305 or permission of instructor. Next offered: 1984-85. (CAN BE REPEATED FOR CREDIT)

Art 427 3 Credits **Every Third Spring**
Relief (1+4) h
Woodcut and other traditional relief methods explored in depth. Inks and ink properties are examined and used in the production of relief and monoprints. Color printing emphasized. (Prerequisites: Art 105, 207, and 213, or permission of instructor. Next offered: 1983-84.)

Art 437 3 credits **Every Third Fall**
Intaglio (1+4) h
Intaglio printmaking continued beyond the beginning level with an emphasis on experimentation and on the reproduction of images. Four color printing with emphasis on mezzotint, aquatint, soft ground and color registration. A color ink palette is devised with some emphasis on ink chemistry and physical properties. (Prerequisites: Art 105, 162, 207, or permission of the instructor. Next offered: 1984-85.)

Art 441 3 Credits **Every Third Spring**
Lost Wax Casting (1+4) h
A study of the design and execution of jewelry and other small metal objects by the lost wax casting method. (Prerequisite: Art 409 or permission of the instructor. Next offered: 1985-86.)

Art 442 3 Credits **Every Third Spring**
Nonferrous Forging (1+4) h
A study of the design and execution of hammer forged nonferrous metal objects. (Prerequisite: Art 409 or permission of instructor. Next offered: 1983-84.)

Art 443 3 Credits **Every Third Spring**
Holloware (1+4) h
A study of the design and construction of holloware by raising, dapping, and fabricating. (Prerequisite: Art 409 or permission of instructor. Next offered: 1984-85.)

Art 447 3 Credits **Every Third Spring**
Silkscreen (1+4) h
Silkscreen printing; Tusche and glue, torn paper stencil and photoscreen methods covered as well as discussion of the home workshop. (Prerequisites: Art 105, 162, 207, or permission of the instructor. Next offered: 1984-85.)

Art 450 3 Credits **Every Third Fall**
Raku Pottery (1+4) h
A one semester experience in Raku pottery. Body and glaze development for raku purposes. Special emphasis on decorative techniques. Raku kiln building and burner construction employing a variety of fuels such as: wood, charcoal, electricity, natural gas, propane, oil, etc. (Prerequisite: Art 201 or permission of instructor. Next offered: 1985-86.)

Art 451 3 Credits **Every Third Spring**
Earthenware (1+4) h
A one semester experience in earthenware pottery. Understanding the advantages and disadvantages of earthenware. Intensive laboratory activities in earthenware body and glaze development, decorative techniques and firing procedures. (Prerequisite: Art 201 or permission of instructor. Next offered: 1985-86.)

Art 452 3 Credits **Every Third Fall**
Porcelain (1+4) h
A one semester experience in working with porcelain. Intensive laboratory experiences in developing a full complement of porcelain bodies (and glazes) suitable for hand building, throwing, casting, pressing, etc. Decorative techniques appropriate to this firing range as well as firing procedures associated with porcelain. (Prerequisite: Art 201 or permission of instructor. Next offered: 1983-84.)

Art 453 3 Credits **Every Third Spring**
Kiln Design and Construction (1+4) h
A one semester experience in kiln design and construction. After appropriate classroom instruction in understanding refractories, construction techniques and burners, the class will participate in constructing full size electric and fuel fired kilns. (Prerequisite: Art 201 or permission of instructor. Next offered: 1983-84.)

Art 454 3 Credits **Every Third Fall**
Vapor Glazing (1+4) h
Salt glazing (i.e., vapor glazing). Construction and maintenance of salt kilns. Development and use of clay bodies and decorative techniques peculiar to the salting phenomena, as well as the history and contemporary use of "salt" in pottery. (Prerequisites: Art 201 and permission of instructor. Next offered: 1984-85.)

Art 455 3 Credits **Spring**
Studio Glass (1+4) h
Studio participation in cold glass and hot glass techniques. (Prerequisites: Advanced standing or permission of instructor.)

Art 499 **1-3 Credits** **Fall/Spring**
Thesis Project
Thesis Project. Directed study towards a one person show or individual creative project in art. Work is done outside of the regularly scheduled classes. BFA degree candidates must complete a thesis project. (Prerequisites: Senior standing.)

Biology

Biol. 103 **4 Credits** **Spring**
Biology and Man (3 + 3) n
Introduction to the fundamental principles of biology, with emphasis on their application to man in the modern world. The course is designed for non-science majors. Course includes lectures, laboratory demonstrations and experiments, and discussions of contemporary biological topics.

Biol. 104 **3 Credits** **Fall**
Natural History of Alaska (3 + 0) n
Aspects of the physical environment peculiar to the north and important in determining the biological setting; major ecosystem concepts to develop an appreciation for land use and wildlife management problems in both terrestrial and aquatic situations.

Biol. 105 **4 Credits** **Fall**
Biol. 106 **4 Credits** **Spring**
Fundamentals of Biology I and II (3 + 3) n
An introduction to the principles and basic observation of biology for the science major. Biological principles at levels ranging from molecular and subcellular to ecosystem will be treated through lecture, laboratory and discussion. Biol. 105 and 106 are prerequisite to further courses in the Biological Sciences. Biol. 105 is required for Biol. 106.

Biol. 111 **4 Credits** **Fall**
Biol. 112 **4 Credits** **Spring**
Human Anatomy and Physiology I and II (3 + 3) n
An integrated view of human structure and function, specifically designed for students in nursing, physical and occupational therapy, physical education, and art. This semester will cover cells, tissues and organs, skeletal and muscle systems, the nervous system, and circulation. Biol. 112 is a continuation of Biol. 111, covering the structure and function of respiratory, digestive, excretory, endocrine, and reproductive systems. Biol. 111 is required for Biol. 112.

Biol. 205 **3 Credits** **Alternate Spring**
Vertebrate Anatomy (1 + 6) n
Anatomy of bony fishes, birds, and mammals. Laboratory dissections emphasized. (Prerequisites: Biol. 105-106. Next offered: 1984-85.)

Biol. 210 **4 Credits** **Spring**
Animal Physiology (3 + 3) n
Animal function, including respiration, digestion, circulation, nerve and muscle function, hormones, and reproduction. (Prerequisites: Biol. 105-106; Chem. 103 and 104 or concurrent registration in Chem. 105.)

Biol. 222 **4 Credits** **Fall**
Biology of the Vertebrates (3 + 3) n
An introduction to the fishes, amphibians, reptiles, birds, and mammals emphasizing systematics, structure, behavior and physiological features of each group. (Prerequisites: Biol. 105-106.)

Biol. 239 **4 Credits** **Spring**
Plant Form and Function (3 + 3) n
Structure, function, ecology, and evolutionary patterns of the major groups of plants. (Prerequisites: Biol. 105-106.)

Biol. 242 **4 Credits** **Spring**
Introductory Microbiology (3 + 3) n
A survey of morphology and physiology of microorganisms (viruses, bacteria, fungi, algae and protozoans). The role of these organisms in the environment and their relationship to man are considered. Concepts of immunology are introduced. The laboratory stresses aseptic techniques for handling microorganisms. (Prerequisite: Biol. 105-106.)

Biol. 252 **4 Credits** **Fall**
Principles of Genetics (3 + 3) n
Principles of inheritance; physico-chemical properties of genetic systems. (Prerequisites: Biol. 105-106.)

Biol. 271 **4 Credits** **Fall**
Principles of Ecology (4 + 0) n
Introduction to the basic principles of ecology and evolutionary biology. Environmental factors, their causation and influence upon plants and animals. Basic population biology: population structure, growth, and regulation. The mechanisms of evolutionary change in populations. The organization of biotic communities. The structure and function of ecosystems. (Prerequisites: Biol. 105 and 106.)

Biol. 305 **4 Credits** **Fall**
Invertebrate Zoology (3 + 3) n
Classification, structure, function, evolution, and life histories of invertebrate animals. (Prerequisites: Biol. 105-106, 210, and 271.)

Biol. 307 **3 Credits** **Fall**
Parasitology (2 + 3) n
Structure, function, life history, and ecology of animal parasites. (Prerequisites: Biol. 105-106 and Biol. 222 or permission of instructor.)

Biol. 308 **3 Credits** **Spring**
Principles of Evolution (3 + 0) n
An introduction to the mechanisms of, and evidence for, the evolution of living systems. The coding and transmission of genetic information in populations, population variability, change, and stabilization. (Prerequisites: Biol. 105-106, 252, 271, or permission of the instructor.)

Biol. 317 **5 Credits** **Alternate Spring**
Comparative Anatomy of Vertebrates (2 + 9) n
Anatomy, phylogeny, and evolution of the vertebrates. (Prerequisites: Biol. 105-106. Next offered: 1984-85.)

Biol. 328 **3 Credits** **Spring**
Biology of Marine Organisms (3 + 0) n
Introduction to biology of marine organisms: ocean as a habitat, distribution, classification, functional morphology, and general biology of the major biological groups; man and the oceans. (Prerequisite: Upper division standing in a biologically oriented major.)

Biol. 331 **4 Credits** **Spring**
Systematic Botany (2 + 6) n
Identification and classification of vascular plants with emphasis on Alaskan flora; discussion of taxonomic principles and both classical and experimental methods of taxonomic research. Preregistration is required to insure that each student will prepare a plant collection. (Prerequisite: Biol. 239 or permission of the instructor. Biol. 252 recommended.)

Biol. 333 **3 Credits** **Alternate Fall**
Biology of the Non-Vascular Plants (2 + 3) n
Comparative study of structure, development, phylogenetic trends, and life histories of the major groups of algae, fungi, and bryophytes. (Prerequisite: Biol. 239. Next offered: 1984-85.)

Biol. 334 **4 Credits** **Alternate Fall**
Morphology and Anatomy of Vascular Plants (3 + 3) n
Comparative study of morphology, development anatomy, phylogenetic trends, and life histories of the major groups of vascular plants. (Prerequisite: Biol. 239. Next offered: 1983-84.)

Biol. 343 **5 Credits** **Alternate Fall**
General Bacteriology (3 + 6) n
Morphology, physiology, and systematics of bacteria and viruses and their relationship to man. Introduction to microbial pathogenesis and concepts of immunology. The laboratory stresses bacterial isolation and identification as well as demonstration of the physiological properties of various known bacterial types. (Prerequisites: Biol. 242, Chem. 321 or permission of instructor. Next offered: 1982-83.)

Biol. 352 **3 Credits** **Alternate Spring**
Cytogenetics (2 + 3) n
Chromosome form and function emphasizing gene structure, DNA replication, chromosomal mutation and population cytogenetics. (Prerequisites: Biol. 252 or permission of instructor. Next offered: 1983-84.)

Biol. 361 **4 Credits** **Alternate Spring**
Cell Biology (3 + 3) n
Detailed structure, including ultrastructure, and function of the cell: isolation, composition, and biochemical properties of cell organelles and their integration. (Prerequisites: A year each of college chemistry and biology. Next offered: 1984-85.)

Biol. 406 4 Credits Spring
Entomology (3 + 3) n
The biology and identification of insects and related arthropods, with emphasis on anatomy, physiology, behavior, ecology, and evolution. Laboratories emphasize techniques of collecting and preservation and identification. (Prerequisites: Biol. 105-106 and 271.)

Biol. 414 4 Credits Alternate Fall
Comparative Physiology (3 + 3) n
Functional variations and interrelationships among the major animal phyla; includes ionic and osmotic regulation, temperature regulation, metabolism, excretion, respiration, cardiovascular systems, nerve, and muscle function. (Prerequisites: Biol. 210, Chem. 106; Chem. 321 and Biol. 361 recommended. Next offered 1983-84.)

Biol. 416 3 Credits Alternate Spring
Plant Physiology (2 + 3) n
Functions of the vascular plants: plant-soil-water relations, synthesis and metabolism of organic compounds, and growth and development. (Prerequisites: Biol. 210, Chem. 106, Chem. 321 and Biol. 361 recommended. Next offered 1983-84.)

Biol. 418 4 Credits Alternate Fall
Developmental Biology (3 + 3) n
Chemical, histological, and morphological aspects of the development of organisms from gametes, using examples from plant and invertebrate development and vertebrate embryogenesis. Laboratories will stress the study of vertebrate embryos. (Prerequisites: Biol. 105-106 and 210. Next offered: 1983-84.)

Biol. 423 4 Credits Fall
Ichthyology (3 + 3) n
Major groups of fishes, emphasizing the fishes of northwestern North America. Classification structure, evolution, general biology, and importance to man of the major groups. (Prerequisites: Biol. 205, 222, or 317; or permission of the instructor.)

Biol. 425 3 Credits Fall
Mammalogy (2 + 3) n
Variety of mammals, their behavior, life histories, identification, phylogeny and systematics, morphology, distribution, and zoogeography. (Prerequisites: Biol. 205, 222, or 317; or permission of instructor.)

Biol. 426 3 Credits Spring
Ornithology (2 + 3) n
The evolution, systematics, distribution, migration, breeding biology, population dynamics, and community organization of birds and their classification and identification. Several local field trips will be arranged. (Prerequisites: 20 credits in biology, including Biol. 105-106, 271, and 222, or 205, or 317; or permission of instructor. Concurrent enrollment in Biol. 479 is recommended.)

Biol. 427 3 Credits Alternate Fall
Transmission Electron Microscopy (1 + 6) n
Theory of electron microscopy and its applications to biological problems. Specimen preparation, use of the transmission electron microscope, and intrepretation of results will be covered. Students will choose individual research projects and write a research paper based upon the results. (Prerequisites: Upper division, graduate or medical student status and permission of instructor. Next offered: 1983-84.)

Biol. 441 3 Credits Spring
Animal Behavior (2 + 3) n
Genetic and physiological bases of behavior, evolutionary and ecological principles of individual and social behavior, sociobiology, and the techniques of behavioral observation and analysis. (Prerequisites: Biol. 105-106, 210, 252, and 271; or permission of instructor.)

Biol. 443 3 Credits Alternate Fall
Microbial Ecology (2 + 3) n
Laboratory investigation of ecological activity and impact of bacteria and fungi. Isolation and study of important genera. (Prerequisites: Biol. 242, 271 or 343; or permission of instructor. Next offered: 1983-84.)

Biol. 471 3 Credits Spring
Population Ecology (3 + 0) n
The biology of populations of plants and animals, including population structure, natality, mortality, population growth, the regulation of population size, and population interactions in herbivory, predation, and parasitism. (Prerequisite: Biol. 271.)

Biol. 472 3 Credits Fall
Communities and Ecosystems (3 + 0) n
The ecology of plant and animal communities, analysis of community structure, competition and allelochemistry, energy flow, nutrient cycles, and the control of structure and function in ecosystems, and comparison of the major ecosystem types in the world. (Prerequisite: Biol. 271.)

Biol. 478 2 Credits Spring
Field Ecology (0 + 3) n
An intensive experience in the collection and interpretation of ecological data. The course consists of concentrated study for 10-12 days in early May. Students will engage in the design, execution, and analysis of field projects dealing with various aspects of ecology. Course is graded pass/fail. (Prerequisites: Biol. 271, 471 or 472 [may be taken concurrently], and permission of instructor.)

Biol. 479 2 Credits Spring
Ornithology Field Trip (0 + 3) n
Techniques of field ornithology, emphasizing identification of birds in the field, and bird-habitat relationships. The course consists of advance preparation during the spring semester followed by a field trip of 10-12 days taken in early May. Students are expected to share in expenses. (Prerequisites: Biol. 426, may be taken concurrently, and permission of instructor.)

Biol. 610 3 Credits Fall
Regulation of Biological Processes (3 + 0)
A consideration of regulation of biological processes at levels of organization from the molecular to society and the ecosystem. The course will use animal, microbiol, and plant material and will consider control theory and its applications to biology. (Prerequisites: Graduate Standing and, in cases of highly qualified undergraduates, the instructor's permission.)

Biol. 614 2 Credits Alternate Spring
Grazing Ecology (2 + 0)
(Same as WF 614)
A study of plant-animal interactions, emphasizing the grazing process, including mechanisms of feeding, feeding behavior, habitat and plant selection, and physiological influences on feeding. Other topics include the evolution and development of grazing systems, including plant and community level responses, anti-herbivore defenses of plants, and the role of grazing in ecosystem function; management and other human influences on grazing systems, including habitat alternation and loss, domestication, pollutants, and management alternatives. (Prerequisites: graduate standing or approval of instructor. Next offered: 1984-85.)

Biol. 616 3 Credits Alternate Spring
Principles and Methods of Taxonomy (2 + 3)
Philosophy and methodology relating to current trends in systematics, particularly morphometric and biochemical systematics. (Next offered: 1984-85.)

Biol. 618 2 Credits Alternate Spring
Biogeography (2 + 0)
Spatial and temporal geography of plant and animal groups; emphasis on environmental and historical features controlling present patterns of distribution. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1983-84.)

Biol. 619 2 Credits Alternate Fall
Marine Mammals (1 + 3)
Topics related to the biology of marine mammals will be considered including evolution, taxonomy, morphology, physiology, ecology, and behavior. (Prerequisites: Graduate standing or permission of instructor. Next offered: 1984-85.)

Biol. 624 3 Credits Alternate Fall
Physiological Ecology: Temperature Regulation and Thermal Adaptation (2 + 3)
A study of physiological processes involved in the interaction of organisms with their environment. Special emphasis will be placed on northern habitats. Temperature regulation and thermal adaptation will cover the effects of temperature upon organisms and the various ways organisms have responded to extreme thermal environments. (Prerequisites: Graduate standing and a physiological course and Biol. 271 or permission of instructor. Next offered: 1984-85.)

Biol. 625 3 Credits Alternate Spring
Physiological Ecology: Energetics and Nutrition (2 + 3)
A study of physiological processes involved in the interaction of organisms with their environment, with special emphasis placed on northern habitats. Energetics and nutrition will cover the nutritional ecology of plants and animals and describe the adaptations of organisms to avoid or minimize nutritional imbalance or inadequacy. (Prerequisites: Graduate standing and a physiological course and Biol. 271 or permission of instructor. Next offered: 1984-85.)

Biol. 626 3 Credits Alternate Spring
Physiological Ecology: Sensory and Reproductive Physiological Ecology (2 + 3)
A study of the physiological processes involved in the interaction of organisms with their environment. Special emphasis will be placed on northern habitats. Sensory and reproductive physiological ecology will cover the physiology and ecology of reproduction, nervous and hormone systems, and circadian rhythms. (Prerequisites: Graduate standing and a physiological course and Biol. 271 or permission of instructor. Next offered: 1983-84.)

Biol. 629 3 Credits Alternate Fall
Advanced Animal Behavior (3 + 0)
Adaptive nature of behavior in relation to the physical, biological, and social environment. Current problems and controversies in the study of behavior. (Prerequisites: Biol. 441 and permission of the instructor. Next offered: 1984-85.)

Biol. 637 2 Credits Alternate Fall
Modern Evolutionary Theory (2 + 0)
Contemporary ideas of and problems with the mechanics of evolution. (Prerequisites: Graduate standing or permission of instructor. Next offered: 1983-84.)

Biol. 652 3 Credits Alternate Spring
Marine Ecology (3 + 0)
The sea as a biological environment, organisms in the ocean, factors influencing the growth of organisms, nutrient cycles, productivity, food web, and interdependence of organisms. Several field trips may be required. (Prerequisites: Biol. 271, Chem. 212, 322; Geol. 411 or permission of the instructor. Next offered: 1984-85.)

Biol. 674 3 Credits Alternate Spring
Advanced Plant Ecology (2 + 3)
Current concepts, controversies, and advances in plant ecology, emphasis on community-level ecology, methods of classification and ordination, and recent literature. (Prerequisite: Biol. 474. Next offered: 1984-85.)

Business Administration

Admittance to upper division School of Management courses will be granted only to students with junior standing or above. Others will be admitted only with the written permission of the appropriate department head.

B.A. 101 3 Credits Fall and Spring
Introduction to Data Processing and BASIC Language (3 + 0)
A beginning course covering topics in machine organization, problem formulation, BASIC, programming, information flow management, and applications of automatic data processing systems: to include input-output procedures and the utilization of prepared programs available to students on the computer at the University of Alaska.

B.A. 151 3 Credits Fall and Spring
Introduction to Business (3 + 0)
Business organization, nature of major business functions such as management, finance, accounting, marketing, personnel administration. The opportunities and requirements for professional business careers.

B.A. 160 3 Credits Fall
Tourism Principles and Practices (3 + 0)
Forces which influence the international and domestic hospitality, leisure, travel, and recreation industries. Socio-economic models and measure of regional impact, demand, and supply.

B.A. 201 3 Credits Alternate Spring
COBOL (2 + 2)
Training and practice in writing problems in the COBOL language. Multiple file processing, editing, and report generating routines. (Prerequisite: B.A. 101 or permission of instructor. Next offered: 1983-84.)

B.A. 220 3 Credits Alternate Fall
Basic Programming Languages (3 + 0)
Programming in selected computer languages including ASSEMBLER, RPG, and machine language. (Prerequisite: B.A. 101. Next offered: 1983-84.)

B.A. 253 1-3 Credits Fall-Spring-Summer
Internship in Business (0 + 1-3)
Supervised work experience in an approved position which is related to the student's career interests or objectives. Number of credits given will depend on types of position and amount of time worked by the student. No student can count more than eight internship credits towards a degree. (Prerequisite; approval of program or department head.)

B.A. 301 3 Credits Fall and Spring
Processes of Management (3 + 0)
A systematic examination of the basic functions of management with particular attention on the human side of the organization. Modes of communication and coordination are evaluated in terms of the need for planning, controlling, and decision-making among the organizational components. An overall framework for effective integration of the distinct processes is emphasized. (Prerequisites: Junior standing or permission of instructor.)

B.A. 303 3 Credits Fall
Advanced Leadership (3 + 1)
(Same as Mil. 303)
Comprehensive analysis of leadership styles and functions applicable to formal organizations. Lab: Advanced leadership development including enrichment seminars. (Prerequisite: Junior standing.)

B.A. 306 3 Credits Spring
Small Business Management (3 + 0)
The course focuses on the operations and special problems of the small business with emphasis on both existing firms and new ventures. Subjects to be covered include starting new businesses, buying going concerns, acquiring and operating franchises, establishing lines of credit, management, legal matters, profit planning, pricing, inventory levels, record systems, tax regulations, and employee supervision.

B.A. 310 3 Credits Fall and Spring
Management Information System (3 + 0)
Concepts and techniques of designing information systems. Topics include systems theory: data collection, classification, transmission, and display, data base organization, sequential and random techniques, online systems, computer software related to system design. COBOL programming language will be utilized to implement a systems project. Emphasis will be placed on management planning and control modes. (Prerequisites: B.A. 101.)

B.A. 325 3 Credits Fall and Spring
Financial Management (3 + 0)
Intensive analysis of the methods of corporate financial planning and control, asset management, capital budgeting, and financial markets and instruments. (Prerequisites: Acct. 102, Econ. 201, 202, 226. Highly recommended Math 162 or equivalent. And Econ. 227.)

B.A. 326 3 Credits Spring
Principles of Advertising (3 + 0)
(Same as J-B 326)
Theory and practice of advertising: including strategy, media use, creation and production of advertisements, and measurement of advertising effectiveness. (Prerequisite: Junior standing.)

B.A. 331 3 Credits Fall and Spring
Business and Law (3 + 0)
An introduction to the legal environment of business and management. Topics include the judicial system, legal processes, administrative processes, torts and criminal law, contracts and remedies, sales, property, and government regulation. (Prerequisite: Junior standing or permission of instructor.)

B.A. 332 3 Credits Fall and Spring
Advanced Topics in Business and Law (3 + 0)
Selected topics in the legal aspects of business. Topics include insurance, agency, employment, labor-management relations, business structures, securities, securities regulation, credit and banking, consumer protection, and trade regulation. (Prerequisite: B.A. 331.)

B.A. 343 3 Credits Fall and Spring
Principles of Marketing (3 + 0)
Role of marketing in society and economy. The business firm as a marketing system, and management of the firm's marketing effort. (Prerequisite: Acct. 102, Econ. 201, 202, 226.)

B.A. 349 3 Credits Spring
Sales Management (3 + 0)
Examine managerial strategies, goals, and analytical tools in the administration of an effective sales force with primary focus on professional salesmanship and sales management. (Prerequisites: B.A. 343.)

B.A. 350 3 Credits Spring
Introduction to Real Estate and Land Economics (3 + 0)
Study of processes and considerations that influence decisions of individuals and groups concerning real estate investment and utilization. Functions of various types of real estate operators are also considered in the course. (Prerequisites: Junior standing or permission of instructor.)

B.A. 356 2 Credits Alternate Spring
Beverage Production Preparation and Control (2 + 0)
The importance of beverage function in today's hospitality operations. The production, preparation, service, and control of beverages will be systematically presented. (Next offered: 1982-83.)

B.A. 360 3 Credits Spring and Fall
Operations Management (3 + 0)
An introduction to the operational field of production with emphasis on the design of efficient operating systems. Specific areas considered are: forecasting, facilities planning, inventory management, production scheduling, and job design as applicable to all types of organizations. (Prerequisites: B.A. 101 or equivalent, Acct. 102, Econ. 201, 202, 226. Highly recommended, Math. 162 or equivalent and Econ. 227.)

B.A. 361 3 Credits Fall
Personnel Management (3 + 0)
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. (Prerequisites: B.A. 301 or permission of instructor.)

B.A. 372 3 Credits Spring
Hotel Administration (3 + 0)
An intensive examination of the practices and concepts necessary for successful hotel operation in Alaska including but not limited to management systems financing of hotels, budgeting and food costing, housekeeping, and front office management. (Prerequisites: B.A. 160, B.A. 253 and B.A. 301.)

B.A. 375 3 Credits Spring
Marketing of Hospitality Service (3 + 0)
Principles of marketing applied to service industries, advertising, promotion, public relations, and personal selling to achieve profitable public recognition and good will. (Prerequisites: B.A. 343.)

B.A. 377 3 Credits Alternate Fall
Food and Beverage Management (3 + 0)
Students will follow the development of a successful food and beverage system from its inception to operation and will deal with the diverse subjects of menu planning, purchasing, preparation, service, and food beverage cost control. (Prerequisites: B.A. 160, B.A. 253, B.A. 301. Next offered: 1984-85.)

B.A. 378 3 Credits Fall
Passenger Transportation Management (3 + 0)
Students will become familiar with all modern forms of passenger transportation. Main emphasis will be put on those carriers presently operating in Alaska and future development of transportation in Alaska. (Prerequisites: B.A. 160 and B.A. 253.)

B.A. 390 3 Credits Fall
Organizational Behavior (3 + 0)
A study of the behavior of individuals and small groups within organizations, including motivation, leadership, communications, group dynamics, organizational development, and conflict management. (Prerequisites: Psy. 101 or Soc. 101.)

B.A. 423 3 Credits Fall
Investment Management (3 + 0)
Principles of investing in marketable securities from the individual's perspective, the determination of value, analysis of growth, technical analysis, and portfolio management. (Prerequisite: B.A. 325 or equivalent.)

B.A. 425 3 Credits Spring
Advanced Corporate Financial Problems (3 + 0)
A consideration of corporate financial problems, planning and controls, and major functions performed by corporate financial managers. (Prerequisite: B.A. 325.)

B.A. 430 3 Credits Fall
Current Topics in Finance (3 + 0)
An in-depth consideration of sophisticated and specialized applications of financial management principles. The topics covered will be those most timely to the Alaskan economy. (Prerequisites: B.A. 445.)

B.A. 436 3 Credits Spring
Consumer Behavior (3 + 0)
Examination of the complex system of communication in marketing. The role of culture and its effects on product discrimination. Social class, personality, symbolism, and persuasion are studied from the marketing manager's point of view. The analysis is extended to the organizational influences on corporate buyers and the impact of buyer behavior on the strategy and tactics of marketing management. (Prerequisites: B.A. 343.)

B.A. 443 3 Credits Spring
International Marketing (3 + 0)
There are significant changes occurring in the world with respect to trade. Thus, comparisons of foreign markets with domestic markets are required. If the market is attractive, then it can be enlarged via direct export, direct investment, or joint ventures. All three methods will be examined. The problems of foreign pricing, communications, distribution, and advertising will also be viewed in terms of marketing management and research. (Prerequisite: B.A. 343.)

B.A. 445 3 Credits or 446 **Spring**
Marketing Research (3 + 0)
To familiarize students with the basic processes and tools of marketing research with emphasis on utilization of research findings as an integral part of the managerial decision-making process. Students will apply technique of data-gathering and analysis to a marketing problem. (Prerequisites: Econ 227, Math 162 or equivalent and B.A. 343.)

B.A. 453 3 Credits Fall and Spring
Internship in Business Administration (0 + var.)
A supervised practical work experience designed to provide students with a meaningful external involvement in their major discipline. Admission dependent upon completion of satisfactory sponsorship arrangements and permission of the instructor. (Prerequisite: Senior standing and permission of instructor.)

B.A. 460 3 Credits Fall
International Business (3 + 0)
An analysis of the 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 will be addressed. (Prerequisite: B.A. 301.)

B.A. 461 3 Credits Spring
International Finance (3 + 0)
A study of the financing of foreign investment projects including foreign capital markets, financing exports, hedging foreign exchange risks, and capital budgeting in an international setting. (Prerequisites: B.A. 325.)

B.A. 462 3 Credits Fall and Spring
Administrative Policy (3 + 0)
An advanced case course which focuses on the questions of organizational purpose and design through the eyes of the general manager. Marketing, management, and financial considerations are integrated with external influences to forge strategic planning and control. (Prerequisites: Completion of all 300 level common body of knowledge requirements and senior standing.)

B.A. 465 3 Credits Alternate Spring
Tourism Destination Planning and Development (3 + 0)
Tourism resource characteristics, location, and market demand considerations. Analysis of development potential, planning processes and procedures, capital and personnel requirements, and tourism destination developments. (Prerequisites: B.A. 160, B.A. 301. Next offered: 1983-84.)

B.A. 471 3 Credits Alternate Spring
Tourism Seminar (3 + 0)
A senior seminar bringing together all areas of the travel-tourism industry. Lecturer, guest industry speakers, and the case study method will all be utilized. (Prerequisite: Admission by instructor's permission and upper division standing. Next offered: 1984-85.)

B.A. 475 3 Credits Spring
Transportation and Logistics (3 + 0)
The essential focus of teaching and research in transportation is on systems planning, especially multimode systems. The program builds upon basic knowledge of the properties of transportation systems components, and the ability to analyze interactions among these components and between the transportation system and its environment. Special consideration will be given to Alaskan transportation problems by experienced specialists. (Prerequisites: Econ. 226, B.A. 343.)

B.A. 480 3 Credits Spring
Organization Theory (3 + 0)
A review of the literature on organization theory, emphasizing theoretical concepts, social science research techniques, and organizational behavior. Development and study of the various approaches to organizational change including the initiation of change and the evaluation of change programs. (Prerequisites: B.A. 301 or permission of instructor.)

B.A. 483 3 Credits Fall
Marketing Management (3 + 0)
Analysis planning and implementation of the total marketing program of an organization: goal setting, marketing mix, problem recognition and analysis, and current issues. (Prerequisite: B.A. 343.)

B.A. 503 3 Credits Fall
Management Practices (3 + 0)
A graduate level introduction to issues in management which focuses on the essentials of effective management for the practicing manager. A critical look at current operating management theory including planning, managing, staffing, and leadership skills. (Prerequisite: Graduate standing.)

B.A. 505 3 Credits Fall
Management Information Systems (3 + 0)
Application of systems concepts for producing information to be used in business decision making. Computer hardware and BASIC and COBOL programming languages. Design of computer-based decision systems. (Prerequisite: Graduate standing.)

B.A. 506 3 Credits Spring
Quantitative Analysis (3 + 0)
An introductory study of the quantitative methods, tools, and statistics applicable to the solution of business and economic problems. Concepts, techniques, and statistical analysis, including probability, statistical inference and analysis of variance, and correlation and regression analysis. (Prerequisites: Graduate standing and Math 161-162 or equivalent.)

B.A. 525 3 Credits Spring
Financial Management (3 + 0)
A broad based introduction to the theories and techniques of corporate financial management. Topics covered include capital budgeting, cost of capital, leverage and valuation. (Prerequisites: Graduate standing, Econ. 501, B.A. 502, B.A. 505.)

B.A. 543 3 Credits Fall
Marketing Management (3 + 0)
An introductory graduate level course in marketing including the study of product and product planning, research, distribution channels, logistics, consumer behavior, pricing, sales promotion and management, and the institutional structure of markets. (Prerequisites: Graduate standing, Econ. 501.)

B.A. 580 3 Credits Spring
Organizational Theory (3 + 0)
The structure and design of modern organizations, including the critical review of topics such as organization functions, design parameters, contingency factors, and structural configurations. (Prerequisites: Graduate standing, B.A. 503.)

B.A. 651 3 Credits Fall
Organizational Behavior (3 + 0)
A study of the behavior of individuals and small groups within organizations including the following concepts: personality, perception learning, motivation, group attraction and formation, group processes, conflict, and leadership. (Prerequisites: Graduate standing in M.B.A. Program or B.A. 503.)

B.A. 661 3 Credits Spring
Human Resources Management (3 + 0)
The study of the effective management of human resources in organizations including employee planning, employee attraction, selection and orientation, career development, evaluation, training, compensation, EEO, safety, and labor relations. (Prerequisites: Graduate standing, B.A. 580, B.A. 651.)

B.A. 680 3 Credits Fall
Seminar in Finance (3 + 0)
A study of the finance function of the firm and the major problems faced by the financial managers, including capital investment analysis and valuation, capital budgeting, financial structure and dividend policies, working capital management, and other current topics in financial management. (Prerequisites: Graduate standing. Completion of foundation core courses. B.A. 325 or B.A. 525.)

B.A. 683 3 Credits Spring
Seminar in Marketing (3 + 0)
A survey of marketing institutions, systems, policies, and practices. Review of marketing constituents in economic development, marketing theory, and current problems. (Prerequisites: Graduate standing. Completion of foundation core courses. B.A. 343 or B.A. 543.)

B.A. 684 3 Credits Fall
Production and Operations Management (3 + 0)
A study of the technical management skills needed to effectively manage the activities of selecting, designing, operating, controlling, and updating the productive and operating systems in diverse types of organizations, ranging from manufacturing to service. (Prerequisite: Graduate standing in M.B.A. Program.)

B.A. 690 3 Credits Spring
Administrative Policy (3 + 0)
The broad aspects of administrative policy and the major social, political, legal, economic, and international forces impacting on complex organizations. Development of an intuitive systematic scientific understanding of the design and use of formal systems for comprehensive long-range planning and policy formulation in large corporations. (Prerequisites: Graduate standing. Completion of foundation core courses. Recommended that B.A. 690 be taken last semester of program.)

B.A. 691 3 Credits Fall
Research Design and Methods (3 + 0)
Emphasis on the general applications of the methods of business research and the scientific method of research in business administration. Topics to be considered include the planning of a research project and problem identification, scientific methods in business administration, research design and models, library, survey, and experimental research methods. The course is designed to aid the MBA student in identifying and specifying research problems prior to involvement in the preparation of the research project. (Prerequisite: Graduate standing in MBA Program.)

Chemistry

Chem. 103 4 Credits — **Fall**
Chem. 104 4 Credits — **Spring**
Contemporary Chemistry (3 + 3) n
Descriptive courses with laboratory designed to provide orientation in chemistry for students in non-science and science related curricula. Either semester may be taken separately without prerequisites: Chem. 103: Introductory principles of inorganic chemistry and their applications. Chem. 104: Principles and applications of the chemistry of carbon in a modern economic, social and biological context.

Chem. 105 4 Credits — **Fall and Spring**
Chem. 106 4 Credits — **Fall and Spring**
General Chemistry (3 + 3) n
An introduction to chemistry, including atomic and molecular structure, the principles of chemical change, and related energy changes. Chemistry 106 includes the chemistry of the elements. (Prerequisites: High school algebra and high school chemistry or permission of the instructor. For Chem. 106, Chem. 105 is required.)

Chem. 120 4 Credits — **Fall**
Survey of Chemistry (3 + 3) n
A one semester survey of general chemistry beginning with fundamental concepts and laws and applying them to inorganic and organic chemistry. Applications are done in such a way as to prepare the student to study the chemistry of biological systems. This course is preparatory for Chem. 121, Beginnings in Biochemistry. (Prerequisites: High school chemistry or consent of instructor.)

Chem. 121 4 Credits — **Spring**
Beginnings in Biochemistry (4 + 0) n
A freshman-level course covering the fundamentals of chemistry as applied to biological systems. It is intended to bridge the gap between a general chemistry course and the biochemical concepts of other health-related sciences. Recommended for health-science degree candidates. (Prerequisite: Chem. 120 or consent of instructor.)

Chem. 211 4 Credits — **Fall**
Chemical Principles (3 + 3) n
An intensive, systematic study of the laws and concepts of chemistry, with considerable emphasis on mathematical aspects. Laboratory work will include both qualitative and quantitative procedures. (Prerequisites: High school chemistry or Chem. 103-104 and satisfactory performance on an advanced placement examination given three weeks into the semester with Math. 200 at least corequisite. Completion of the Chem. 211-212 sequence with grades of "C" or better results in 4 credits of advanced placement credit.)

Chem. 212 4 Credits — **Spring**
Introductory Quantitative Analysis (2 + 6) n
The theoretical treatment of statistics, electro-chemistry, and spectroscopic methods. A rigorous treatment of acid-base, oxidation-reduction, and complex equilibria. The laboratory includes practice in volumetric, gravimetric, spectroscopic, and electrochemical methods. (Prerequisites: Chem. 106 or 211 Math 107-108 or equivalent.)

Chem. 321 3 Credits — **Fall and Spring**
Chem. 322 3 Credits — **Spring**
Organic Chemistry (3 + 0) n
A systematic study of the more important classes of carbon compounds, reactions of their functional groups, methods of synthesis, relations, and uses. (Prerequisite, Chem. 106 or 211 for Chem. 321; Chem. 321 for Chem. 322.)

Chem. 324 3 Credits — **Fall and Spring**
Organic Laboratory (1 + 8) n
A laboratory designed to illustrate modern techniques of isolation, purification, analysis, and structure determination of covalent, principally organic, compounds. (Prerequisites: Chem. 321 or permission of the instructor.)

Chem. 331 3 Credits — **Fall**
Chem. 332 3 Credits — **Spring**
Physical Chemistry (3 + 0) n
Fall semester; kinetic theory of gases, principles of thermodynamics, with applications to solutions, phase equilibria and chemical equilibria. Spring semester, chemical kinetics, electrochemistry, atomic, and molecular structure. (Prerequisites, Chem. 106 or 211, Math. 202, Phys. 104 or 212 or permission of the instructor; Chem. 331 for Chem. 332.)

Chem. 402 3 Credits — **Alternate Spring**
Inorganic Chemistry (3 + 0) n
Systematic application of the theories of atomic structure and chemical bonding to the elements as they appear in the Periodic System. (Prerequisite or corequisite: Chem. 332. Next offered: 1982-83.)

Chem. 421 3 Credits — **As Demand Warrants**
Advanced Organic Chemistry (3 + 0) n
The design and reactivity of organic molecules, variable content. (Prerequisites: Chem. 322, 331 or permission of instructor.)

Chem. 431 3 Credits — **Fall**
Advanced Physical Chemistry (3 + 0) n
Introduction to quantum chemistry. (Prerequisite: Chem. 332.)

Chem. 433 3 Credits — **Fall**
Chem. 434 3 Credits — **Spring**
Instrumental Methods in Chemistry (1 + 6) n
The application of instrumental methods to quantitative, qualitative, and structural analysis of chemical systems. (Prerequisite: Chem 212; or Corequisites: Chem. 331 for Chem. 433; Chem. 332 for Chem. 434.)

Chem. 451 4 Credits — **Fall**
General Biochemistry (4 + 0) n
Chemistry of bio-molecules; enzyme mechanisms and kinetics, aspects of bioenergetics, and catabolic and anabolic pathways. (Prerequisites: Chem. 322; Chem. 331 and 332 recommended or permission of the instructor.)

Chem. 602 3 Credits — **As Demand Warrants**
Advanced Inorganic Chemistry (3 + 0)
Advanced topics in inorganic chemistry. Topic Areas: solid state chemistry, X-ray diffraction, thermodynamic aspects, physical methods, unusual oxidation states, etc. (Prerequisite: Chem. 402 or 431.)

Chem. 612 3 Credits — **Alternate Fall**
Advanced Analytical Chemistry (3 + 0)
Advanced topics in analytical chemistry. Content varies, but emphasis is on chemical equilibria and modern instrumental technique. (Prerequisite: Chem. 332. Next offered: 1983-84.)

Chem. 622 3 Credits — **As Demand Warrants**
Advanced Organic Chemistry II (3 + 0)
Modern interpretations of organic chemical reactions based on structure, kinetics, and energetics. Variable content. (Prerequisites: Chem. 322 and 332.)

Chem. 632 3 Credits — **As Demand Warrants**
Advanced Physical Chemistry II (3 + 0)
Applications of quantum mechanics to molecular bonding and electronic spectroscopy. (Prerequisite: Chem. 431.)

Chem. 652 3 Credits — **Alternate Springs**
Advanced Biochemistry (3 + 0)
Current research in one of the major biochemical disciplines: proteins, lipids, carbohydrates; biochemical genetics; comparative biochemistry; enzymology; physical biochemistry; vitamins and hormones. Variable content. Arranged in consultation with instructor. (Prerequisites: Chem. 451 or equivalent. Next offered: 1983-84.)

Chem. 660 3 Credits — **Fall or Spring**
Chemical Oceanography I (3 + 0)
(Same as OCN 660)
Chemical composition and properties of sea water, evaluation of salinity; pH, excess base, and carbon dioxide system, interface reactions, dissolved gases, organic components, and trace inorganic components. (Prerequisites: Chem. 212, 322, 332, or permission of the instructor.)

Civil Engineering

C.E. 112 3 Credits Spring
Elementary Surveying (2 + 3)
Basic plane surveying; chaining; use of transit, level, theodolite, and plane table. Stadia, public land system, circular curves, and traverses. (Prerequisites: E.S. 111 or permission of the instructor.)

C.E. 334 3 Credits Spring
Properties of Materials (2 + 3)
Introduction to the 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. (Prerequisite: College Chemistry.)

C.E. 344 3 Credits Spring
Water Resources Engineering (3 + 0)
Fundamentals of engineering hydrology and hydraulic engineering. Precipitation, runoff, statistical methods, flood control, open channels, and groundwater. (Prerequisite: E.S. 341.)

C.E. 402 3 Credits Spring
Transportation Engineering (2 + 3)
Administration, economics, location, design, construction, and maintenance of highways, railways, airports, and other transportation facilities. (Prerequisite: C.E. 435 or permission of the instructor.)

C.E. 412 3 Credits Alternate Spring
Elements of Photogrammetry (2 + 3)
Elementary study of aerial and terrestrial photographs as applied to surveying and mapping. (Prerequisite: permission of the instructor. Next offered: 1983-84.)

C.E. 415 3 Credits Fall
Advanced Surveying (2 + 3)
Azimuth by astronomic methods. Route surveying, including horizontal and vertical curves, cross-sectioning, and earthwork. Reduction of electronic distance measurements. Alaska State Plane Coordinate System. (Prerequisite: C.E. 112)

C.E. 416 1 Credit Spring
Boundary Surveying (1 + 0)
Surveying problems related to land subdivision with emphasis on the legal aspects. Both metes and bounds descriptions and platted subdivisions are considered. (Prerequisite: C.E. 112 or permission of the instructor.)

C.E. 422 3 Credits Spring
Foundation Engineering (3 + 0)
Principles of foundation design, ultimate bearing capacity of soils and effects of settlements on structure, design of footings and rafts, design of pile and pier foundations, retaining walls and anchored bulkheads, foundations on frozen soils, and construction problems in foundation engineering. (Prerequisite, C.E. 435.)

C.E. 431 4 Credits Fall
Structural Analysis (3 + 3)
Statistically determinate structures. Loadings. Graphical and analytical solutions, stresses and deflections. Indeterminate structures. Influence lines. Matrix Formulation. (Prerequisite: E.S. 331.)

C.E. 432 4 Credits Spring
Structural Design (3 + 3)
Planning of structural systems. Loadings. Steel and reinforced concrete design. Composite design. Details and connections. (Prerequisite: C.E. 431.)

C.E. 434 1 Credit Spring
Timber Design (1 + 0)
Essentials of structural design in timber. Design of basic components of solid and laminated timber, connections, arches, pole framing, diaphragms, stressed-skin construction, and timber shells. (Prerequisite: E.S. 331.)

C.E. 435 3 Credits Fall
Soil Mechanics (2 + 3)
Soil formation, identification and classification, physical and mechanical properties of soil, seepage, drainage and frost action, subsoil investigation, bearing capacity of soils, and lateral earth pressures and stability of slopes. (Prerequisite: E.S. 331, C.E. 334.)

C.E. 438 3 Credits Spring
Design of Engineered Systems (3 + 0)
Introduction to system design methods for large scale engineering systems. The application linear and dynamic programming and statistical methods to design decisions. Emphasis on problems in civil engineering. (Prerequisite: Senior standing in an engineering program.)

C.E. 441 4 Credits Spring
Sanitary Engineering (3 + 3)
Introduction to fundamentals of environmental engineering including theory and application of water and wastewater engineering practice. Conservation, quality, treatment, and distribution of water supply. Wastewater characteristics, collection, treatment, and disposal. Introductory information on solid waste management and air pollution control. (Prerequisite: E.S. 341 or permission of instructor.)

C.E. 470 1 Credit Fall and Spring
Civil Engineering Internship (0 + 3)
Designed to give students the opportunity to investigate the practical workings of engineering organizations. Assignments individually arranged with cooperating organizations and agencies. (Prerequisites: Senior standing. Permission of Department Coordinator.)

C.E. 603 3 Credits Fall
Arctic Engineering (3 + 0)
Application of engineering fundamentals to problems of advancing civilization to polar regions. Logistics, foundations on frozen ground and ice thermal aspects of structures, materials, transport, and communications, and heating and ventilating. (Prerequisite: Graduate standing or permission of instructor.)

C.E. 617 3 Credits Alternate Fall
Control Surveys (3 + 0)
Geodetic surveying, where the shape of the earth must be considered. Both horizontal and vertical control will be studied. Heavy emphasis on Alaska State Plane Coordinate System. Adjustments of level nets, traverses, triangulation, and trilateration. (Prerequisite, C.E. 415 or other surveying experience acceptable to the instructor. Next offered: 1983-84.)

C.E. 620 3 Credits Alternate Spring
Civil Engineering Construction (3 + 0)
Construction equipment, methods, planning and scheduling, construction contracts, management and accounting, construction estimates, costs, and project control. (Prerequisites: ESM 450 or equivalent. Next offered: 1984-85.)

C.E. 631 3 Credits As Demand Warrants
Advanced Structural Analysis (3 + 0)
Continuation of C.E. 431. Continuity in structure. Elastic and plastic theories. Arches and shells. Tall frames. (Prerequisite: C.E. 431.)

C.E. 632 3 Credits Alternate Fall
Advanced Structural Design (3 + 0)
Design of complex structures and frames. Live, dead, and earthquake loadings. Structural joints, columns, connectors, ties, and struts. Application of modern materials and techniques to design. (Prerequisite: C.E. 431. Next offered: 1984-85.)

C.E. 661 3 Credits As Demand Warrants
Advanced Water Resources Engineering (3 + 0)
Engineering hydraulics and hydrology with emphasis on statewide topics, computer modeling for runoff and groundwater studies, reservoir mechanics, fish hatchery design, and hydro-power generation. (Prerequisite: Permission of the instructor. Next offered: 1983-84.)

C.E. 662 3 Credits Alternate Spring
Open Channel and River Engineering (3 + 0)
Principles of open channel flow, transitions and controls, unsteady flow, river engineering, stream channel mechanics, and mechanics of sedimentation. (Prerequisite: E.S. 341. Next offered: 1983-84.)

C.E. 663 3 Credits Alternate Years
Groundwater Dynamics (3 + 0)
Fundamentals of geohydrology, hydraulics of flow through porous media, well hydraulics, groundwater pollution, and groundwater resources development. (Prerequisite: E.S. 341. Next offered: 1984-85.)

C.E. 676 3 Credits As Demand Warrants
Coastal Engineering (3 + 0)
Review of deep and shallow water waves, littoral drift, coastal structures, pollution problems, and harbor seiches. (Prerequisite: E.S. 341.)

C.E. 681 3 Credits Alternate Spring
Frozen Ground Engineering (3 + 0)
Nature of frozen ground, thermal properties of frozen soils, classification, physical and mechanical properties of frozen soils, sub-surface investigation of frozen ground, thaw settlement and thaw consolidation, slope stability, and principles of foundation design in frozen ground. (Prerequisite: Training or experience in soil mechanics. Next offered: 1983-84.)

C.E. 682 3 Credits Alternate Spring
Ice Engineering (3 + 0)
In this course, the factors governing design of marine structures, which must contend with the presence of ice are discussed. 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. (Prerequisite: E.S. 331, Math 202, training or experience in soil mechanics. Next offered: 1983-84.)

C.E. 683 3 Credits Alternate Years
Arctic Hydrology and Hydraulic Engineering (3 + 0)
The course is designed to present material on 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 circum-polar countries will be included in the course. (Prerequisite: C.E. 344 or equivalent. Next offered: 1983-84.)

C.E. 684 3 Credits Alternate Years
Arctic Utility Distribution (3 + 0)
Practices and considerations of utility distribution in Arctic regions. Emphasis on proper design to include freeze protection, materials, energy conservation, and system selection. (Prerequisite, E.S. 341 or permission of instructor. Next offered: 1984-85.)

Computer Science

C.S. 101 3 Credits Fall and Spring
Computers and Society (3 + 0)
A course in computer literacy for everyone. An overview of computing machines and the automatic processing of data. The interaction between social institutions and automated decision making. Some programming, but as a means of understanding the process rather than skill development.

C.S. 201 3 Credits Fall and Spring
Computer Programming I (2 + 3)
An introduction to problem solving and algorithm development and to the programming language FORTRAN. The design, coding, and documentation of programs using techniques of good programming style. (Prerequisites: Math 108 or equivalent.)

C.S. 202 3 Credits Fall and Spring
Computer Programming II (3 + 0)
An introduction to the concepts of structured programming and to the computer language PASCAL. Algorithm analysis and top-down design of larger programs. (Prerequisites: C.S. 201 or E.S. 201 or B.A. 201.)

C.S. 281 3 Credits Fall
Computer Graphics (3 + 0)
Study of applications, design of graphics software, survey of input and output devices, two and three dimensional geometric transformations, curves, and surfaces. (Prerequisites: C.S. 201, Math. 201, and Math. 211.)

C.S. 301 3 Credits Fall
Computer Organization and Assembly Language (3 + 0)
Organization of computer registers, I/O, and control. Digital representation of data. Symbolic coding, instructions, addressing modes, program segmentation, linkage, macros, and subroutines. (Prerequisites: C.S. 201)

C.S. 311 3 Credits Fall
Data Structures and Algorithms (3 + 0)
Data structures and the algorithms for their manipulation. Arrays, tables stacks, queues, trees, linked lists, sorting, searching, and hashing. (Prerequisites: C.S. 202)

C.S. 321 3 Credits Spring
File Structure and Operating Systems (3 + 0)
The functions of files and operating systems, review of required architectural features. The PROCESS concept. Storage management, access methods and control, interrupt processing, scheduling algorithms, file organization and management, and resource accounting. (Prerequisite: C.S. 301)

C.S. 331 3 Credits Spring
Programming Languages (3 + 0)
A study of the syntax and semantics of widely differing programming languages. Syntax specification, block structure, binding, data structures, operators, and control structures. Comparison of several languages such as ALGOL, LISP, SNOBOL, and APL. Programming assignments in each language. (Prerequisite: C.S. 311)

C.S. 381 3 Credits Alternate Spring
Advanced Computer Graphics (3 + 0)
Graphics hardware, display programming, transformations, hidden line and surface elimination, approximation techniques for curve and surface representation, and project. (Prerequisites: C.S. 281 and Math 310. Next offered: 1984-85.)

C.S. 401 3 Credits Spring
Software Engineering (3 + 0)
Software design as an engineering discipline. Project planning, proposal writing, and management. Program design, verification, and documentation. Additional topics from security, legal aspects of software, and validation. Students will work on group projects and produce appropriate reports and a project history. (Prerequisites: C.S. 311, C.S. 321 & senior standing)

C.S. 405 3 Credits Alternate Fall
Artificial Intelligence (3 + 0)
Study and writing of programs that assimilate information, make inferences, and prove theorems. Representation of knowledge, pattern analysis, inference networks, and expert systems. Natural language analysis and synthesis. LISP as the basis for precise descriptions of AI processes. (Prerequisite: C.S. 311. Next offered: 1984-85.)

C.S. 411 3 Credits Alternate Spring
Analysis of Algorithms (3 + 0)
Analysis of classic algorithms, their implementation, and efficiency. Topics from combinatorics (sets, graphs, bit vectors), algebra (integer arithmetic, primes, polynomial arithmetic, GCD, Diophantine equations), systems (parsing searching, sorting), and theory (recursion, Turing machines). (Prerequisites: Math. 307, C.S. 311. Next offered. 1983-84.)

C.S. 425 3 Credits Alternate Fall
Data Base Systems (3 + 0)
Data independence, relationships, and organization. Hierarchical, network, and relational data models; canonical schema. Data description languages, query facilities, relational calculus. File organization and security, index organization, data integrity and reliability. (Prerequisites: C.S. 311, C.S. 321. Next offered: 1984-85.)

C.S. 442 3 Credits Alternate Fall
Computer Communication and Networks (3 + 0)
Review of communication terminology, baud rates, band width, noise, and error detection. Distributed processing and local and global networks. Interfacing problems, security, and reliability. Networks, ring vs. spoke linkage, packet switching, and path optimization. Examples: The ARPA net, Airline reservation systems. (Prerequisite: C.S. 321. Next offered: 1983-84.)

C.S. 448 3 Credits Alternate Fall
System Architecture (3 + 0)
Hardware, operating systems and their interaction. I/O, interrupts, memory management, concurrent processing, deadlock, modularity, system balancing, scheduling, protection, introduction to communications, and networks. (Prerequisites: E.E. 342, C.S. 321. Next offered: 1984-85.)

C.S. 451 3 Credits Alternate Fall
Automata and Formal Languages (3 + 0)
Finite automata, regular language, finite transducers, context free language, push down automata, parsing algorithms, deterministic context free languages, recursive and recursively enumerable languages, decision procedures, and undecidability. (Prerequisites: Math. 307, C.S. 201. Next offered: 1983-84.)

C.S. 621 3 Credits As Demand Warrants
Advanced Systems Programming (3 + 0)
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 large systems. (Prerequisites: C.S. 311 and C.S. 321)

C.S. 631 3 Credits As Demand Warrants
Programming Language Implementation (3 + 0)
Formal treatment of programming language translation and compiler design. Parsing context free languages, translation specifications, machine independent code, BNF, scanners, symbol tables, parsers, and recursive descent. Programming of compiler or interpreter segments as projects. (Prerequisite: C.S. 331)

C.S. 651 3 Credits As Demand Warrants
The Theory of Computation (3 + 0)
Formal models of algorithms: Turing machines and recursive functions. Space and time complexity of computation and complexity classes of problems. Program verification and methods of proving program correctness. (Prerequisite: C.S. 451)

Cross Cultural Communication

CCC 103 3 Credits As Demand Warrants
Intensive Language Development (3 + 0)
An approach to problems of communication with special sensitivity to differences in culture, language, and the stylistic features which characterize informal, formal, spoken, and written usage. The balance among listening, speaking, writing, and reading will be determined by the needs of each class. Weekly conferences with the instructor are required. (Prerequisite: Approval of Rural Student Services.)

CCC 104 3 Credits Fall and Spring
University Communications (3 + 2)
Concept similar to Communication Skills 103, except that all material used will be correlated with a specified course elsewhere in the university in which the student is concurrently enrolled, and work will be focused on problems peculiar to that course. Weekly conferences with the instructor are required. May be repeated for credits when the correlated course is different. (Prerequisite: Approval of Rural Student Services.)

CCC 105 3 Credits As Demand Warrants
Intensive Reading Development (3 + 0)
Intensive instruction in reading, designed to encourage wide reading and vocabulary development and to develop the reading skills necessary for successful competition in college courses. Emphasis will be in the kind of materials commonly encountered by freshmen. Reading lab material will be available. Weekly conferences with the instructor are required. (Prerequisite: Approval of Rural Student Services.)

CCC 106 3 Credits Spring
Intensive Writing Development (3 + 0)
A writing program emphasizing the differences between speech and writing, narrative and factual reporting, with particular emphasis on the use of connectors and other organizational devices used in college writing. Weekly conferences with the instructor are required. (Prerequisite: Approval of Rural Student Services.)

CCC 107 3 Credits Spring
Intensive Writing Development II (3 + 0)
A continuation of the writing program started in CCC 106 for students inadequately prepared for Engl. 111. Instruction in the basic principles of writing with frequent writing assignments, emphasizing the use of standard English and organization patterns encountered in college assignments. Includes the writing and production of THEATA magazine. (Prerequisite: CCC 106.)

Economics

Admittance to upper division School of Management courses will be granted only to students with junior standing or above. Others will be admitted only with the written permission of the appropriate department head.

Econ. 101 3 Credits Fall and Spring
Introduction to Current Economic Problems (3 + 0) s
A one semester course designed primarily for the student who plans no further work in economics. The course utilizes a less theoretical approach than is customary in introductory economics courses and focuses on such current problems as unemployment, inflation, pollution, poverty, etc.

Econ. 137 3 Credits Spring
The Alaskan Economy (3 + 0) s
A broad introductory examination of economic problems in Alaska; analysis of historical trends and current patterns of economic growth; particular emphasis on present and future alternative economic policies, and their potential impacts.

Econ. 201 3 Credits (122) - Micro **Fall and Spring**
Principles of Economics I (3 + 0)
Theory of prices and markets, income distribution, contemporary problems of labor, agriculture, market structure, pollution, etc.

Econ. 202 3 Credits (121) - Macro **Fall and Spring**
Principles of Economics II (3 + 0) s
Analysis and theory of national income, money and banking, and stabilization policy.

Econ. 226 3 Credits Fall and Spring
Introduction to Statistics for Economics and Business (3 + 0)
Problems in economics and business translated into statistical terms. Topics covered include descriptive measures, probability and probability distributions, sampling methods, sampling distributions, point and interval estimation, hypothesis testing, index numbers, and time series analysis. (Prerequisite: Math. 107-108 or Math. 161.)

Econ. 227 3 Credits old 326 **Fall and Spring**
Intermediate Statistics for Economics and Business (3 + 0)
Extension of topics developed in Economics 226. Development of statistical techniques and their application to economic and business problems. Topics include simple and multiple regression and correlation, analysis of variance, forecasting techniques, quality control, non-parametric methods, and decision theory. (Prerequisites: Econ. 226, Math. 162 or 200.)

Econ. 235 3 Credits Fall
Introduction to Natural Resource Economics (3 + 0) s
Introduction to microeconomic principles and their application to natural resource issues. Specific topics include supply, demand, marginality, optimality, elementary production economics, economic rent, and comparative advantage. These principles are applied to agency budget allocation decisions, multiple use, resource valuation, conservation, market failure, and public outdoor recreation problems.

Econ. 321 3 Credits Fall
Intermediate Microeconomics (3 + 0) s
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. 201, 202 and Math. 162 or equivalent.)

Econ. 322 3 Credits Fall and Spring
Managerial Economics (3 + 0)
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. Particular emphasis upon decision-making based heavily upon analysis of data developed from research. (Prerequisites: Econ. 201, 202 and 226 and Math. 162 or equivalent.)

Econ. 324 3 Credits Spring
Intermediate Macroeconomics (3 + 0) s
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. 201, 202 and Math. 162 or equivalent.)

Econ. 335 3 Credits Spring
Intermediate Natural Resource Economics (3 + 0) s
Extension of concepts developed in Econ. 235, using a higher level of economic analysis in examining natural resource issues. Specific topics include welfare economics and economic efficiency concepts, benefit/cost analysis, resource allocation overtime, resource taxation, common property problems, externalities, public goods, valuation of non-market resources, and land use planning issues. (Prerequisites: Econ. 202 or Econ. 235.)

Econ. 350 3 Credits Fall
Money and Banking (3 + 0) s
The liquid wealth system in the United States, to include 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. 201 and 202.)

Econ. 351 3 Credits Alternate Spring
Public Finance (3 + 0) s
Economic justifications for government; federal, state and local government, taxation, spending and debt; their effects on allocation, distribution, stabilization and growth. (Prerequisites: Econ. 201 and 202. Next offered 1983-84.)

Econ. 409 3 Credits Alternate Spring
Industrial Organization and Public Policy (3 + 0) s
The study of 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 concentration, and aggregate concentration. (Prerequisites: Econ. 201, 202, and 321. Next offered: 1983-84.)

Econ. 420 3 Credits Fall
Labor/Management Relations (3 + 0) s
History of the organized labor movement, labor legislation, and cases with emphasis on Taft-Hartley, Landrum-Griffin, Railway Labor, and Alaska Public Employment Relations Acts. Labor market analysis and wage theory, collective bargaining, equal employment opportunity laws, and cases. (Prerequisites: Econ. 201 and 202.)

Econ. 421 3 Credits Alternate Spring
Collective Bargaining (3 + 0)
History, theory, and practice of collective bargaining. Attention will also be given to the administration of collective bargaining contracts with special emphasis in the grievance procedure and the process of grievance arbitration. (Prerequisites: Econ. 201, 202; or permission of instructor. Econ. 420 recommended. Next offered: 1984-85.)

Econ. 436 3 Credits Spring
Energy Economics (3 + 0) s
A course concerned with market forces and institutions affecting the allocation of energy resources. Special attention is given 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. 201 or 235.)

Econ. 437 3 Credits Alternate Fall
Regional Economic Development (3 + 0)
Determinants and effects of the spatial distribution of economic activity. Impact of public policy on regional development within the Alaska context. (Prerequisites: Econ. 201 and 202. Next offered: 1984-85.)

Econ. 438 3 Credits Spring
The Economics of Fisheries Management (3 + 0)
The course will provide a review of theoretical economic concepts as they are applied to the management of a commercial fishery, as well as an introduction to major current management policy issues affecting United States' commercial fishing. Major emphasis will be placed on the practical application of the economic theory and policy insights derived from the course to the problems of the management of Alaska's fisheries. (Prerequisites: Econ. 321, or equivalent, or Econ. 335.)

Econ. 451 3 Credits Spring
Public Expenditure Analysis (3 + 0)
Purposes and economic effects of governmental expenditures, budgeting techniques, and their effects on resource allocation. (Prerequisite: Econ. 201 and 202 or equivalent.)

Econ. 463 3 Credits Alternate Fall
International Economics (3 + 0) s
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, economic development through international trade. (Prerequisites: Econ. 201 and 202. Next offered: 1983-84.)

Econ. 475 1-3 Credits Fall and Spring
Economic Internship
Designed to give students the opportunity to do research or other practical work with business, governmental agencies, or research organizations. (Prerequisite: Admission by permission of instructor.)

Econ. 501 3 Credits Fall
Principles of Economic Analysis (3 + 0)
An accelerated course in economic principles and analysis with applications to business decisions. This course is designed for masters of business administration students without sufficient undergraduate preparation in economics, and engineering students desiring a rigorous one semester course in economics. This course will not be accepted for elective credit in the MBA program. (Prerequisites: Graduate standing.)

Econ. 601 3 Credits Fall
Microeconomic Theory I (3 + 0)
Analysis of consumer and producer theory, price determination, and welfare economics. (Prerequisites: Econ 321 or equivalent; Math 162, Math 200, Math 273 or equivalent.)

Econ. 603 3 Credits Spring
Macroeconomic Theory I (3 + 0)
Analysis of the underlying causes of unemployment, economic instability, inflation, and economic growth. (Prerequisites: Econ. 321 or equivalent; Econ. 324 or equivalent; Math. 162, Math. 200, Math. 273 or equivalent.)

Econ. 623 3 Credits Fall
Mathematical Economics (3 + 0)
Mathematical techniques including matrix algebra, differential and integral calculus. Particular attention is given to static and comparative statics analysis and dynamic models. (Prerequisite: Math. 162, Math. 200, Math. 273 or equivalent.)

Econ. 624 3 Credits Fall
Managerial Economics (3 + 0)
This course includes the development of basic economic concepts and their application to managerial decision-making. Major topics to be covered will include: demand and cost analysis, pricing decisions, capital budgeting and capital management, and decision-making under conditions of risk and uncertainty. The case method will be used as a principle technique for application of the concepts and tools to "real world" situations. (Prerequisites: Econ. 201 and 202; or Econ. 501; and graduate standing.)

Econ. 626 3 Credits Spring
Econometrics (3 + 0)
Introduction to econometric theory. Single equation and multiple equation system estimation, including inference and hypothesis testing and results of assumption violation. (Prerequisites: Math 162, Math 200, Math 273 or equivalent; AS 301, Econ. 227 or equivalent.)

Econ. 635 3 Credits Fall
Resource Economics I (3 + 0)

Econ. 636 3 Credits Spring
Resource Economics II (3 + 0)
The theory, methods of analysis, and current literature of natural resource economics and policy. Topics include socially optimal intertemporal use of resources, common property resources, common property resources, externalities, property rights, public goods, benefit-cost analysis, amenity values and other non-market resource services, and environmental policy. (Prerequisites: Econ. 321 or equivalent; Math. 200, 273 or equivalent. For Econ. 636, Econ. 635.)

Econ. 670 0 Credits Spring
Seminar in Research Methodology (0 + 1)
Philosophy of research and importance of the scientific method to solution of research problems. (Prerequisite: Graduate standing.)

EDUCATION

Ed. 201 3 Credits Fall and Spring
Orientation to Elementary Education (1 + 6)
Designed to acquaint the prospective elementary teacher with the nature of teaching, including the scholastic, professional, and personality requirements for effective teaching. Involves laboratory time in the public schools as teacher's aide. Required for students majoring in elementary education. (Prerequisite: Sophomore standing.)

Ed. 303 3 Credits Alternate Fall
Language Development (3 + 0)
Principles, procedures, and materials for enhancing the language development of young children. (Prerequisite: Ed. 312. Next offered: 1983-84.)

Ed. 304 3 Credits Fall
Literature for Children (2 + 3)
Criteria for evaluating children's books and application of criteria to books selected by student, study of outstanding authors, illustrators and content of specific categories of literature, book selection aids, and effective use of literature to promote learning. (Prerequisite: Junior standing.)

Ed. 305 4 Credits Fall and Spring
Introduction to Secondary Education (3 + 3)
Development of a working concept of secondary education in the U.S., its history, objectives, curriculum, organization, practices, and consideration of current issues. Laboratory experience involves three hours per week of observation and participation in local junior and senior high schools. (Prerequisite: Junior standing or permission of instructor.)

Ed. 309 3 Credits Fall
Elementary School Music Methods (3 + 0) (Same as Mus. 309)
Principles, procedures, and materials for teaching music to children at the elementary level. (Prerequisite: Ed. 314.)

Ed. 311 2 Credits Spring
Audio-Visual Methods and Materials (1 + 3)
Selection and use of audio-visual materials in teaching and learning at all levels of education. (Prerequisite: Ed. 314.)

Ed. 312 3 Credits Fall and Spring
Human Development (3 + 0)
Content is a synthesis of the interrelated principles of human growth, development, adjustment, and learning. It is designed primarily for students preparing for a career in teaching but is also open to parents, counselors, community workers, and others interested in human development and learning. (Prerequisite: Psy. 101.)

Ed. 314 3 Credits Fall and Spring
Learning and Evaluation (3 + 0)
Detailed information about specific aspects of the teaching-learning process in the classroom emphasizing how to use educational psychology in making teaching decisions. Emphasizes planning with instructional objectives, standardized and teacher-made evaluation instruments, and reporting student progress. (Prerequisites: Ed. 312, Psy. 101.)

Ed. 315 2 Credits Fall and Spring
Elementary Methods: Classroom Management (1 + 3)
General methods and management procedures in the elementary school classroom. (Prerequisites: Admission to Teacher Education and Ed. 314.)

Ed. 316 3 Credits Fall and Spring
Elementary Methods: Language Arts and Social Studies (2 + 3)
Concepts, methods and materials of teaching social studies, and all aspects of the language arts, except reading. Includes field experience in the public schools. (Prerequisites: Admission to Teacher Education and Ed. 314.)

Ed. 317 3 Credits Fall and Spring
Elementary Methods: Mathematics and Science (2 + 3)
Modern concepts, process skills, methods, and materials of teaching mathematics and science with a field-based emphasis. (Prerequisites: Admission to Teacher Education, Math. 205 or equivalent, and Ed. 314.)

Ed. 318 2 Credits Spring
Methods: Art in the Elementary School (2 + 0)
Methods and materials necessary for teachers in the schools to conduct basic art instruction. Combines theory and practical experience in working with a variety of media. (Prerequisite: Junior standing.)

Ed. 333 3 Credits As Demand Warrants
History of Childhood (3 + 0)
Surveys child rearing practices in the major cultures of the world examining how parents and children related to each other in different time periods. Examines the central force for change in history as psychogenic changes in personality, occurring between parent-child interaction through successive generations. (Prerequisite: Junior standing.)

Ed. 345 3 Credits Fall
Sociology of Education (3 + 0)
Examination of the ways in which social, political, and economic forces influence what happens in schools with focus on how the organization of schools affects what teachers can do in the classroom, how peer groups affect student learning, and how national political and economic concerns determine what becomes an educational issue. (Prerequisites: Soc. 101 and Junior standing.)

Ed. 402 3 Credits Fall and Spring
Methods of Teaching (2 + 3)
Principles and methods of teaching appropriate for junior high and high school classrooms. Includes planning for effective teaching, classroom management, and the implementation of teaching plans in classroom settings. (Prerequisite: This course should be taken the semester prior to Ed. 453, Secondary Student Teaching.)

Ed. 407 3 Credits Fall
Reading Strategies for Secondary Teachers (3 + 0)
Techniques and materials to be used in helping the secondary students acquire the skills necessary for greater comprehension of subject matter at the secondary level. Should be taken concurrently with Ed. 402. (Prerequisites: Ed. 305 and Ed. 314.)

Ed. 409 3 Credits Fall
The Teaching of Beginning Reading (3 + 0)
Concepts, methods, materials, and language arts content relevant to the beginning stages of a developmental reading program. Includes limited field experience. (Prerequisites: Admission to Teacher Education and Ed. 314.)

Ed. 410 3 Credits Spring
Developmental Reading in Content Areas (3 + 0)
Concepts, methods, materials, and language arts content relevant to the intermediate and advanced stages of a developmental reading program. Stresses reading skills in the content areas. Includes limited field experience. (Prerequisites: Admission to Teacher Education, Ed. 314 and Ed. 409.)

Ed. 424 3 Credits Spring
Small High School Programs (3 + 0)
After examining secondary programs in general, students will be exposed to alternative approaches to the design of small high school programs, with particular emphasis on the problems of designing secondary programs for the small rural communities of Alaska. (Prerequisites: Ed. 305 and Ed. 314.)

Ed. 443 3 Credits As Demand Warrants
Foundations of Vocational Education (3 + 0)
A study of the social and philosophical roots of vocational education in America and public policy as a response to the need for an educated labor force. The relationship of vocational, technical, and special education to general education and the responsibility of public education in a technological society. (Prerequisite: Teaching credential consistent with program design.)

Ed. 446 3 Credits Fall
Structure of American Education (3 + 0)
Fundamentals of public school organization, control, and support. Relation of federal, state, and local agencies. Problems incidental to public school organization, control, and support in Alaska. (Prerequisite: Senior standing in education.)

Ed. 452 9 Credits Fall and Spring
Elementary Student Teaching (1 + 24)
Supervised teaching in elementary schools approved by the department of education. The school may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. Students should expect to be involved in the public school setting for a minimum of one-half of each school day for the duration of the university semester in fulfilling their assignment. Some full days are required. (Prerequisites: See requirements for admission to student teaching.)

Ed. 453 12 Credits Fall and Spring
Secondary Student Teaching (1 + 33)
Supervised teaching in secondary schools approved by the department of education. The school may limit registration, determine assignments, and cancel the registration of students doing unsatisfactory work. Students should expect to be involved in the public school setting for the entire school day for the duration of the university semester in fulfilling their assignment. (Prerequisites: See requirements for admission to student teaching.)

Ed. 480 3 Credits Spring
Cultural Influences in Education (3 + 0)
Interdisciplinary study of the educational problems, concerns and successes encountered by students and teachers in a variety of cultural contexts. Students will consider social, cultural and psychological factors inherent in the educational process and how they are affected by the multicultural setting through an investigation of a variety of cultural contact situations. Specific attention will be given to curriculum improvement and teaching strategies appropriate for the multicultural classroom and school. (Prerequisites: Ed. 314 and junior standing).

Ed. 601 3 Credits Fall and Spring
Graduate Seminar (3 + 0)
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. (Prerequisite: Graduate standing.)

Ed. 604 3 Credits Fall
Diagnosis and Correction of Reading Deficiencies (3 + 0)
Nature of the reading process, emphasis on psychology involved in discerning reading difficulties, testing programs to ascertain specific disabilities in readiness, vocabulary and word-attack, comprehension, speed and accuracy, specific suggestions for their correction, and newer approaches to teaching reading. (Prerequisites: Ed. 409 and Ed. 410 and experience in the teaching of reading.)

Ed. 605 3 Credits Spring
Reading Lab (0 + 9)
Working with a child who has been identified as having reading problems using testing and remedial techniques appropriate to his need. (Prerequisites: Ed. 409, Ed. 410 and Ed. 604.)

Ed. 607 3 Credits Spring
Reading in Secondary Schools (3 + 0)
Identification of the general goals of reading instruction on the secondary level. An approach to the improvement of learning in the content subjects through the refinement of needed reading skills. Includes guidelines and practical projects for pre- and in-service content area teachers. (Prerequisites: Graduate standing and teaching experience.)

Ed. 608 3 Credits Alternate Spring
The Improvement of Elementary Teaching (3 + 0)
Emphasis on improvement of elementary teaching: a re-evaluation of teaching practices, relating of principles of learning, instructional procedures, and recent developments in education to situations made meaningful through the student's teaching experience. (Prerequisites: Graduate standing in education and elementary teaching experience. Next offered: 1983-84.)

Ed. 612 3 Credits Spring
Human Relations in Education (3 + 0)
Designed to develop actualizing behavior for the student and those he/she encounters. (Prerequisite: Graduate standing.)

Ed. 615 3 Credits Spring
Foundations of Guidance and Counseling (3 + 0)
Introduction to the philosophies, organization, patterns, and techniques that aid counselors in preparing clients for responsible decision-making in modern society. (Prerequisite: Graduate standing.)

Ed. 619 3 Credits Fall and Spring
Practicum in Counseling: Higher Education/Agency (0 + 9)
Provides supervised field experience, including preparatory activities in a higher educational or agency setting. This course is not open to public school counselor-trainees. (Prerequisites: Ed. 623, Ed. 624, and 3 approved graduate credits in the area of specialization.)

Ed. 620 3 Credits Fall
Curriculum Development (3 + 0)
Basic definition of curriculum. Present need for curriculum improvement. Criteria for selection of broad goals. Types of curriculum framework examined. Consideration of the organization of specific learning experiences as part of the curriculum structure. (Prerequisites: Ed. 314 and graduate standing in education.)

Ed. 622 3 Credits Spring
Cultural and Philosophical Foundations of Education (3 + 0)
Students will be introduced to the nature of philosophical inquiry and apply a philosophical perspective to examining assumptions inherent in cultural systems and culturally organized behavior. Education as a function of culturally organized behavior is based upon assumptions which are not always explicit. The philosophical perspective provides a framework and approach for explicitly subjecting these assumptions to analysis. (Prerequisite: Graduate standing in education.)

Ed. 623 3 Credits Fall
Principles of Individual Counseling (3 + 0)
Counseling techniques and procedures in education, social work and on a limited basis, clinical psychology; their applications by the classroom teacher and guidance specialist in assisting students with adjustment problems within a normal range. (Prerequisites: Ed. 426 and permission of the instructor.)

Ed. 624 3 Credits Spring
Group Counseling (3 + 0)
Kinds and types of groups with emphasis on methods, problems, and needed skills in working with groups in a counseling situation. (Prerequisites: Ed. 426, 623.)

Ed. 625 3 Credits Spring
Higher Education: Basic Understandings (3 + 0)
Historical and philosophical foundations of higher education, both in America and abroad. Examination of curriculum development, instruction, administration, and interinstitutional cooperation, with emphasis on trends and innovations in higher education. (Prerequisites: Graduate standing and permission of the instructor.)

Ed. 626 3 Credits Fall and Spring
Practicum in Student Personnel Administration (1 + 6)
Supervised field experience in student service agencies. Each of two semesters will require six hours per week in the pre-arranged work setting, as well as one additional hour per week for seminar sessions with the supervisors, instructor, and other practicum students. (Prerequisite: Permission of the instructor.)

Ed. 627 3 Credits Fall and Spring
Education Research (3 + 0)
Designed to teach students how to locate and evaluate research of significant educational issues, teaches students how to carry out interviews, design surveys, and use other research tools so that they can conduct small-scale educational studies of their own. (Prerequisite: Graduate standing in Education.)

Ed. 628 3 Credits Spring and Fall
Life Span Development (3 + 0)
This course is the scientific study of the growth, development, and behavioral changes of humans from conception through death. The course provides an overview to the field of development, including basic concepts and theories, history of the field, research in biological and biosocial influences on development. (Prerequisite: Graduate standing.)

Ed. 629 3 Credits Alternate Fall
Individual Tests of Intelligence (2 + 3)
Individual intelligence tests with emphasis on the Stanford-Binet Intelligence Scale and the Wechsler Intelligence Scales. Practicum experience in the administration of major tests is provided. (Prerequisites: Ed. 314 and permission of the instructor. Next offered: 1983-84.)

Ed. 630 3 Credits Fall
Evaluation: Methods and Procedures for Counselors and Educators (3 + 0)
Practical experience in selecting, administering, and interpreting standardized tests to form judgements which in turn are to be used in decision making by students, parents, teachers, counselors, and administrators. (Prerequisite: Graduate standing.)

Ed. 631 3 Credits Spring
Advanced Educational Psychology (3 + 0)
Stresses understanding of human emotional, mental, physical, and social development. Emphasis on individual differences. Assumes one previous course in human development, educational psychology, and teaching experience. (Prerequisite: Graduate standing.)

Ed. 634 3 Credits Fall and Spring
Counseling Practicum I (0 + 9)
Practicum provides supervised experiences in the public school setting emphasizing the organization and supervision of guidance services and staff. (Prerequisites: Ed. 426, 623, 624, 629, 630, 632, 633 and permission of instructor.)

Ed. 635 3 Credits Alternate Fall
Current Issues in Student Personnel Administration (3 + 0)
The contemporary problems and issues affecting student personnel workers in higher education. Includes an examination of the changing role of students, student diversity, students' rights, freedoms, and responsibilities; evaluation, research, and accountability; financing; and relationship to central administrative services. (Prerequisite: Permission of instructor. Next offered: 1984-85.)

Ed. 636 3 Credits Fall and Spring
Counseling Practicum II (0 + 9)
Practicum provides supervised experiences in the public school setting emphasizing individual and group counseling methods and techniques. (Prerequisites: Ed. 634 and permission of instructor.)

Ed. 637 3 Credits Spring
Public School Administration (3 + 0)
Responsibility pertaining to the organization of a school and the direction of personnel. Functions of instructional leadership. Public school administration as a career. Problems incidental to public school administration in Alaska. (Prerequisite: Graduate standing in education.)

Ed. 638 3 Credits Alternate Spring
Supervision and Improvement of Instruction (3 + 0)
The development, characteristics and functions of effective school supervision as it relates to the improvement of instruction with special attention to the roles of the principal and classroom teacher. (Prerequisite: Graduate standing in education. Next offered: 1984-85.)

Ed. 639 3 Credits Spring
Public School Finance (3 + 0)
Contemporary basis for raising and distributing federal, state and local education funds; problems of school financing in Alaska. (Prerequisite: Graduate standing in education.)

Ed. 640 3 Credits Fall
Educational Administration and Organization (3 + 0)
The course provides an introduction to basic administrative and organizational processes and a background in the application of those processes in an educational setting. Particular attention will be given to the problems and issues confronting administrators in the small rural school districts in Alaska. (Prerequisite: Graduate standing in education.)

Ed. 641 3 Credits Fall
School Law (3 + 0)
Rights and responsibilities of teachers and pupils, rulings of the Attorney General, decisions of the courts, and regulations of the State Board of Education. (Prerequisite: Graduate standing in education.)

Ed. 642 3 Credits As Demand Warrants
Career Education in Public Schools (3 + 0)
An introduction and examination of career education concepts, teacher strategies and career guidance structure in grades K-12. (Prerequisite: Graduate standing in education.)

Ed. 643 3 Credits As Demand Warrants
Cooperative Occupational Education in the Curriculum (3 + 0)
A study of cooperative work experience programs as an interdependent combination of instruction and employment. The course will focus on key elements of the cooperative work experience plan as a vehicle for applying and testing what has been learned in the classroom. (Prerequisite: Teaching credential consistent with program design.)

Ed. 645 3 Credits Alternate Spring
Behavioral Consultation (3 + 0)
This course presents techniques developing skills in consultation with parents, teachers, and other socialization agents to solve developmental and educational problems of children in the elementary school. Through application of the models consultants are taught to assist in defining problems and to apply psychological principles in the development of plans to solve problems. (Prerequisites: Admitted student in Elementary Counseling Consultant Program. The course is specific to the elementary setting and would be of little value to professionals in other disciplines. Next offered: 1984-85.)

Ed. 650 3 Credits Fall
Field Study Methods in Educational Research (3 + 0)
The field methods course will acquaint the student with various techniques for conducting field research in a cross-cultural setting, with particular attention given to research in education or a related field. Students must have access to a field setting in which to conduct a research project, and if possible, should enroll in "Education and Cultural Processes" concurrently. (Prerequisite: Graduate standing in education.)

Ed. 653 3 Credits Fall and Spring
Methodology of Teaching and Supervising (1 + 6)
Students will develop supervisory procedures leading to the improvement of teaching/learning behavior through study and practical experience with pre-student teachers in a field practicum. Course may be repeated one time for credit. (Prerequisite: Limited to teachers working with elementary practicum students in the regular classroom. Not open to teachers in specialized classrooms.)

Ed. 660 3-6 Credits Fall and Spring
Internship
Field work in an appropriate educational or agency setting. Each student will complete an approved field study project. (Prerequisites: Approval of student's advisory committee and admission to candidacy for the M.Ed. or Ed.S. degree.)

Ed. 670 3 Credits Fall and Spring
Culture and Thought Processes (3 + 0)
The course explores the relationship between culture and thinking, with particular emphasis on the implications for formal schooling. Content will focus on cultural influences on language, perception, conceptual processes, memory, and problem solving. The course content will be related to practical teaching problems. (Prerequisite: Graduate standing in education.)

Ed. 675 3 Credits Spring
Language, Literacy and Learning (3 + 0)
This course examines the relationships among language, culture, and thinking as issues of literacy and learning. Specific areas of emphasis include linguistic relativity, discourse, role of context in communication, variant language learning strategies and styles, speech community, open and closed linguistic systems, cognitive styles, and literacy as a cultural and cognitive phenomenon. (Prerequisite: Graduate standing.)

Ed. 680 3 Credits Fall
Education and Cultural Processes (3 + 0)
The course emphasis will be on 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 field study in which they examine some aspect of education in a particular cultural context. (Prerequisite: the course should be taken subsequent to or concurrent with Ed. 650, Field Study Methods in Educational Research.)

Ed. 685 3 Credits Spring
Educational Administration in Cultural Perspective (3 + 0)
The course will examine 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. (Prerequisite: Graduate standing.)

Electrical Engineering

E.E. 102 3 Credits Spring
Introduction to Electrical Engineering (3 + 0)
Basic modern devices, concepts, technical skills, and instruments of electrical engineering. (Corequisite: Math. 200.)*

E.E. 203 4 Credits Fall and Spring
Electrical Engineering Fundamentals I (3 + 3)
Analysis of alternating-current circuits using complex notation and phasor diagrams, resonance, transformers, Fourier analysis, the complex frequency plane, and three-phase circuits. Introduction to network and system analysis. (Prerequisites: Math. 200. E.E. 102.)*

E.E. 204 4 Credits Fall and Spring
Electrical Engineering Fundamentals II (3 + 3)
Electronics of vacuum and solid state devices, amplifier design, digital circuits, energy conversion, electromechanics, control systems, and instrumentation. (Prerequisite: E.E. 203.)*

E.E. 303 4 Credits Fall
Electrical Machinery (3 + 3)
Electromechanical energy conversion principles, characteristics and applications of transformers, DC machines, synchronous and induction machines. Introduction to electric power systems. (Prerequisite: E.E. 204.)*

E.E. 331 1 Credit Fall
High Frequency Lab (0 + 3)
Laboratory experiments in transmission lines, impedances, bridges, scattering parameters, hybrids, and waveguides. (Corequisite: Phys. 331.)*

E.E. 332 1 Credit Spring
Waves and Antennas Laboratory (0 + 3)
Use of Maxwell's equations in the analysis of waveguides, cavity resonators, transmission lines, antennas, and radio propagation. (Corequisite: Physics 332.)*

E.E. 333 4 Credits Fall
Physical Electronics (3 + 3)
Basic properties of semiconductors. Principles of semiconductor devices diodes, transistors, and integrated circuits. (Prerequisite: E.E. 204.)*

E.E. 334 4 Credits Spring
Electronic Circuit Design (3 + 3)
Application of semiconductor devices in the design of circuits used in computation, automatic control, and communication. (Prerequisite: E.E. 333.)*

E.E. 341 4 Credits Fall
Computer Organization I (3 + 3)
Modular structure of computer systems: hardware and firmware techniques of realizing logical functions and types and purposes of peripherals with methods of interface. (Prerequisites: C.S. 201 and one year of college physics.)

E.E. 342 4 Credits Spring
Computer Organization II (3 + 3)
Techniques of constructing input/output device drivers, dedicated signal processors, and central processor unit microprogrammable bit slice devices. (Prerequisite: E.E. 341.)

E.E. 353 3 Credits Fall
Circuit Theory I (3 + 0)
Transient analysis by Laplace transform, state variable, and Fourier methods, filter networks, and computer aided analysis. (Prerequisite: E.E. 204.)*

E.E. 354 3 Credits Spring
Circuit Theory II (3 + 0)
State variable methods, advanced network analysis, and synthesis. (Prerequisite: E.E. 353.)*

E.E. 404 4 Credits Spring
Electrical Power Systems (3 + 3)
Alternate energy sources, transmission system components, elements of control, system protection, and interconnections. (Prerequisite: E.E. 303.)*

E.E. 406 3 Credits Spring
Electrical Power Engineering (3 + 0)
Symmetrical and unsymmetrical faults, load flow, economic operation of power systems, dynamic power system, stability, and computer aided fault and load flow analysis. (Prerequisites: EE. 404 or equivalent.)

E.E. 442 4 Credits Fall
Digital System Analysis and Design I (3 + 3)
Digital hardware, combinational and sequential logic, computer function, structure, and control, data conversion, and basic I/O interfacing. (Prerequisite: Junior standing.)*

E.E. 443 4 Credits Spring
Digital System Analysis and Design II (3 + 3)
Digital instrumentation, application of small computers and programmable controllers, assembly language, real-time operating systems, application languages, interface design, and instrumentation specifications for computer applications. (Prerequisite: E.E. 442.)*

E.E. 462 4 Credits Spring
Communication Systems (3 + 3)
Theory and practice of communications systems, introduction to probability, statistics, and information theory, systems design and laboratory experience in analog and digital communication. (Prerequisite: E.E. 354, E.E. 334.)*

E.E. 471 4 Credits Fall
Fundamentals of Automatic Control (4 + 0)
Linear system representation by transfer functions and state variables. The concept of feedback. Time and frequency response of linear systems. Identification. Controllability and observability. Stability by Routh-Hurwitz criterion and frequency plane methods. Specifications of higher order linear systems. System design and compensation; introduction to sampled data systems. (Prerequisites: E.E. 354 and Math 421.)*

E.E. 481 3 Credits Fall
Electronics and Instrumentation for Scientists and Engineers I (2 + 3)
Theory and design of solid state electronic circuitry for practicing engineers and scientists in the physical and life sciences. Diodes, transistors, field effect transistors, integrated circuits, and other solid state devices. Analysis of modern electronic systems. (Prerequisites: 1 year of college physics; Corequisite: Math 200.)*

E.E. 482 3 Credits Spring
Electronics and Instrumentation for Scientists and Engineers II (2 + 3)
Instrumentation theory and concepts, transducers, data transmission, recording, and reducing. Digital electronics. Electrical measurement of physical variables and error analysis. (Prerequisite: E.E. 481 or equivalent.)*

E.E. 603 3 Credits As Demand Warrants
Advanced Electric Power Engineering (3 + 0)
Selected advanced topics in electric power generation, transmission, utilization, optimization, stability, and economics. (Prerequisite: E.E. 404 or equivalent.)*

E.E. 632 3 Credits As Demand Warrants
High Frequency Devices (3 + 0)
Principles of operation of microwave tubes, microwave semiconductor devices, parametric amplifiers, nonlinear elements, and ferromagnetics. (Prerequisite: E.E. 332.)*

E.E. 635 3 Credits As Demand Warrants
Advanced Electronic Circuit Design (3 + 0)
Low noise level design, networks for extraction of signals from noise, environmental design, and signal conditioning networks. (Prerequisite: E.E. 334.)*

E.E. 662 3 Credits As Demand Warrants
Communication Theory (3 + 0)
Generalized harmonic analysis, probability in communication systems, random variables, power spectral density, characterization of signals, sampling theory, detection, optimum filtering, coded systems, and channel models. (Prerequisite: E.E. 462.)*

*Certain prerequisites may be waived by instructor under special circumstances.

Engineering Science

E.S. 101 2 Credits Fall and Spring
Graphics (0 + 6)
The first half of the semester will cover lettering, freehand drawing and sketching, proper use of drawing equipment, orthographic, isometric, oblique and perspective drawings, descriptive geometry, and graphic solutions. In the second half of the semester students will specialize in topics that are oriented to their individual discipline.

E.S. 111 3 Credits Fall and Spring
Engineering Science (1 + 4)
Engineering problem solving with emphasis on the statics, kinematics, and dynamics of engineering systems. Conservation laws, fluid mechanics, and heat. (Prerequisite: Credit or registration in Math. 107-108.)

E.S. 201 3 Credits Fall and Spring
Computer Techniques (2 + 3)
Basic computer programming, in both FORTRAN and BASIC, with considerable applications from all fields of engineering. (Prerequisite: Math 107-108 or enrollment in Math. 200.)

E.S. 208 4 Credits Fall and Spring
Mechanics (3 + 3)
Statics, kinematics, and dynamics. Both classical and vector methods are used. Graphical solutions, friction, work and energy, impulse and momentum, virtual work. (Prerequisites: E.S. 111 or Phys. 211 and Math. 201.)

E.S. 301 3 Credits Fall
Engineering Analysis (3 + 0)
Application of mathematical tools to engineering with emphasis on the mathematical formulation of typical engineering problems. Selected topics from all fields of engineering. (Prerequisite: Math. 302.)

E.S. 307 3 Credits Fall
Elements of Electrical Engineering (2 + 3)
Electrical fundamentals: elementary circuits and theorems, natural, forced and steady state response, principles of electronics, circuit models and system parameters, and characteristics of AC and DC machines. (Prerequisite: Math. 202, or permission of the instructor.)

E.S. 308 3 Credits Spring
Instrumentation and Measurement (2 + 3)
Instrumentation theory and concepts digital and analog, devices, transducers, data sensing transmission, recording, and display, instrumentation system, remote sensing, and hostile environmental conditions. (Prerequisite: E.S. 307.)

E.S. 331 3 Credits Fall and Spring
Mechanics of Materials (2 + 3)
Theory and practice of structural material. Stress-strain relationships. Torsion. Shear and moment diagrams. Beams, columns, and shafts. Connections and indeterminate analysis. (Prerequisite: E.S. 208, Math. 201.)

E.S. 341 4 Credits Fall and Spring
Fluid Mechanics (3 + 3)
Statics and dynamics of fluids. Basic equations of hydrodynamics, dimensional analysis, and simple hydraulic machinery. (Prerequisites: E.S. 208, Math. 201.)

E.S. 346 3 Credits Fall and Spring
Basic Thermodynamics (3 + 0)
Systems, properties, processes, and cycles. Fundamental principles of thermodynamics (first and second laws), and elementary applications. (Prerequisites: Math 201 and Phys. 211.)

Engineering Science Management

E.S.M. 401 Credits Arr. Fall
Construction Cost Estimating and Bid Preparation (3 + 0)
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.

E.S.M. 450 3 Credits Spring
Economic Analysis and Operations (3 + 0)
Fundamentals of engineering economy, project scheduling, estimating, legal principles, professional ethics, and human relations. (Not offered for credit toward the Master of Science in Engineering Management or Science Management. Prerequisites: E.S. 201 and senior standing in engineering or permission of instructor.)

E.S.M. 605 3 Credits Fall
Engineering Economy (3 + 0)
The science of fiscal decision-making. Graduate level studies in problems of replacement, economic selections, income tax accounting, engineering evaluation, and introduction to the problems of depreciation.

E.S.M. 608 3 Credits Fall
Legal Principles for Engineering Management (3 + 0)
A course devoted to those aspects of law specifically related to technical management. Contracts, sales, real property, business organization, labor, patents, and insurance. (Prerequisites: Graduate standing.)

E.S.M. 611 3 Credits Fall
Accounting for E.S.M. (3 + 0)
Review of accounting principles: industrial accounting including cost accounting, business organization, business finance, and, emphasis on use of data in management rather than its generation.

E.S.M. 612 3 Credits Spring
Finance for E.S.M. (3 + 0)
Development of ability to seek out needed information, analyze it, and make recommendations over a wide range of managerial problems involving fiscal matters: cases involving capital acquisitions, profit maximization, methods improvement, pricing, modification of controls, and other management problems. (Prerequisites: E.S.M. 605, 611.)

E.S.M. 613 3 Credits Spring
Personnel for E.S.M. (3 + 0)
Human element in management: labor relations, human relations, personnel administration, industrial psychology, employee relations, and labor economics from the viewpoint of needs of a manager.

E.S.M. 621 3 Credits Spring
Operations Research (3 + 0)
Mathematical techniques for aiding managerial decision-making. Waiting line theory, inventory models, linear programming, transportation problem, dynamic programming, PERT/CPM, machine scheduling, and simulation. Emphasis on application of techniques to actual management situations.

E.S.M. 623 3 Credits Fall and Spring
Computer Programming for Engineering Managers (3 + 0)
A course in basic FORTRAN programming, with applications to engineering management problems. (Not offered for credit toward the Master of Science in Engineering Management or Science Management.)

E.S.M. 684 3 Credits Spring and Fall
Engineering Management Project (3 + 0)
Individual study of an actual engineering management problem resulting in a report which includes recommendations for action.

English

Note: In the list below, courses which are offered only every other year are indicated by the specific year in which they are next scheduled. Courses with no year scheduled are offered every year, except as noted.)

Engl. 100 3 Credits Fall and Spring
Elementary English (3 + 0)
For students inadequately prepared for Engl. 111. Intensive practice in written comprehension. Frequent writing assignments. Not to be substituted for required courses. (Prerequisite: Placement examination or student desire to enroll.)

Engl. 111 3 Credits Fall and Spring
Methods of Written Communication (3 + 0)
Instruction in writing expository prose, including principles of order and clarity. Close analysis of appropriate texts. Introduction to research techniques. (Prerequisite: Placement examination or English 100.)

Engl. 211 3 Credits Fall and Spring
Intermediate Exposition, with Modes of Literature (2 + 0 + 1)
Instruction in writing through close analysis of literature. Students write for weekly conferences. Research paper required. (Prerequisites: Sophomore standing and completion of Engl. 111 or its equivalent.)

Engl. 213 3 Credits Fall and Spring
Intermediate Exposition (2 + 0 + 1)
Instruction in writing through close analysis of expository prose from the social and natural sciences. Students write for weekly conferences. Research paper required. (Prerequisites: Sophomore standing and completion of Engl. 111 or its equivalent.)

NOTE: Neither English 211 nor English 213 is to be considered or is to be used as a prerequisite for any other course or for any particular course of study. Because both of these courses will be primarily courses in writing, either one of them will fulfill the second half of the requirement in written communication for the baccalaureate degree. A student who has taken one of these courses before declaring a major in which the other course may be considered more appropriate, or a student who changes major from a field in which one of these courses is considered more appropriate than the other, will not be required to take the other course.

Engl. 215 3 Credits Fall
Introduction to Poetry (3 + 0) h
Analysis and appreciation of the various kinds of writing in verse (lyric, narrative, and other poetry), including the terminology used to describe poetic techniques. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 216 3 Credits Fall and Spring
Introduction to Fiction (3 + 0) h
Analysis and appreciation of selected novels and short stories, including the terminology used to describe fictional techniques. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 218 3 Credits Spring
Themes in Literature (3 + 0) h
Exploration of literary themes in various genres of literature, including fiction, poetry and drama. Specific content to be announced at time of registration. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 230 3-7 Credits Fall
English Language Proficiency (3 + 3-6 + 3 + 1)

Engl. 231 3-7 Credits Spring
English Language Proficiency (3 + 3-6 + 3 + 1)
Intensive drill in listening to, speaking, reading, and writing the English language. Especially recommended for all students for whom English is a foreign language. These courses do not meet general degree requirements in written communications and are not classified as humanities. (Prerequisite: Open only to students for whom English is a foreign language. Permission of instructor required.)

Engl. 271 3 Credits Fall and Spring
Introduction to Creative Writing (3 + 0) h
Course for beginning students who have no or little experience in expressing themselves creatively in poetry, fiction, and drama. Class discussion of student work, conferences with teacher. Study of form and technique of major writers. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 301 3 Credits Fall
Continental Literature in Translation: From the Ancient World through the Renaissance (3 + 0) h
Readings in Greek plays, *The Iliad*, *The Aeneid*, Bible, Dante: the classical background out of which the western literary tradition has sprung. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 302 3 Credits Alternate Spring
Continental Literature in Translation: From the Age of Reason to the Present (3 + 0) h
The study of literary, philosophical, and aesthetic ideas of western man as reflected in his/her literature. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1984-85.)

Engl. 306 3 Credits Alternate Fall
Survey of American Literature: From the Colonial Period to the Civil War (3 + 0) h
Comprehensive study of American thought as reflected in its major writers, including works representative of American Calvinism, Rationalism, Transcendentalism, and Romanticism. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1983-84.)

Engl. 307 3 Credits Alternate Spring
Survey of American Literature: From the Civil War to the Present (3 + 0) h
Comprehensive study of American thought as reflected in its major writers, including works representative of Realism, Naturalism, Stream-of-Consciousness, and Surrealism. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1983-84.)

Engl. 308 3 Credits Alternate Fall
Survey of British Literature: Beowulf to the Romantic Period (3 + 0) h
Survey of writers and works in Old and Middle English, including Chaucer, through the Elizabethan period (Shakespeare), the Restoration, and the Neoclassic Period of the 18th Century. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1984-85.)

Engl. 309 3 Credits Alternate Spring
Survey of British Literature: Romantic Period to the Present (3 + 0) h
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. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1984-85.)

Engl. 310 3 Credits Spring
Literary Criticism (3 + 0) h
Introduction to the history and principles of literary criticism, from the earliest days to the end of the 19th century. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 311 3 Credits Fall and Spring
Advanced Exposition (2 + 0 + 1) h
Instruction in writing for students who wish to develop proficiency in organizing and composing essays on factual material in which they have genuine interest. Research paper required. Course will fulfill the second half of the requirement in written communication (i.e., it may replace Engl. 211 or Engl. 213). Note: Technical writing offered under this course number. (Prerequisite: Junior standing, Engl. 111 or its equivalent, or permission of instructor.)

Engl. 318 3 Credits Fall
Modern English Grammar (3 + 0) h
Study of the structure of current English as seen through traditional and contemporary grammatical theories. (Prerequisite: English 111 or permission of instructor.)

Engl. 349 3 Credits Fall
Aleut, Eskimo, and Indian Literature of Alaska in English Translation (3 + 0) h
Survey of the folklore of Alaska's native peoples, including bibliography of published collections, systems of classifying the stories, and study and appreciation of selected stories representing all major Native languages. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 350 3 Credits Spring
Frontier Literature of Alaska (3 + 0) h
Study of representative works of fiction, verse, and non-fiction which deal with the "early days" of the Territory of Alaska. (Prerequisite: Engl. 111 or permission of instructor.)

Engl. 371 1-3 Credits Fall/Spring
Creative Writing (3 + 0) h
Practice and guidance in writing fiction, poetry, drama, and essays. Students' work will be read and discussed in class and in conference with the instructor. Close study of the techniques of established writers. (Prerequisite: Engl. 111 and Engl. 271 or permission of instructor.)

Engl. 403 3 Credits Every Third Spring
American Writers of the 19th Century: Romantic Period (3 + 0) h
Study of authors whose works gave shape to American thinking and writing, transcendentalism and early symbolism. Authors to include (but not limited to): Cooper, Hawthorne, Poe, Emerson, Thoreau, Melville, Whitman, and Dickinson. (Prerequisite: Engl. 111 or permission of instructor. Engl. 306 desirable but not required. Next offered: 1983-84.)

Engl. 404 3 Credits Every Third Spring
American Writers of the 19th Century: Rise of Realism (3 + 0) h
Study of authors between the Civil War and 1914, who pioneered realism and naturalism; authors to include (but not limited to): Twain, Howells, James, Garland, Crane, Norris, London, and Wharton. (Prerequisite: Engl. 111 or permission of instructor. Engl. 307 desirable but not required. Next offered: 1984-85.)

Engl. 405 3 Credits Every Third Fall
British Writers of the 19th Century: Romantic Period (3 + 0) h
The surge of romanticism in England produced some of the world's great literary works. Authors to include (but not limited to): Byron, Keats, Shelley, Coleridge, Wordsworth, Austen, the Bronte sisters, and Scott. (Prerequisite: Engl. 111 or permission of instructor. Engl. 308 desirable but not required. Next offered: 1984-85.)

Engl. 406 3 Credits Every Third Fall
British Writers of the 19th Century: Victorian Period (3 + 0) h
Study of the impact of industrialization, social reformation, religious controversy, and philosophical attitudes on literature. Authors to include (but not limited to): Browning, Tennyson, Thackeray, Eliot, Arnold, Dickens, Hazlitt, Ruskin, and Meredith. (Prerequisite: Engl. 111 or permission of instructor. Engl. 309 desirable but not required. Next offered: 1985-86.)

Engl. 407 3 Credits Every Third Fall
English Writers of the 18th Century: Restoration and Neo-Classical Period (3 + 0) h
Study of the revival of British drama, the age of satire, the rise of the essay, new directions in biography, the beginnings of modern prose, and new thoughts about criticism. Authors to include but not limited to: Dryden, Pope, Swift, Addison, Steele, Goldsmith, Sheridan, Boswell, and Johnson. (Prerequisites: Engl. 111 and junior standing or permission of instructor. Engl. 308 recommended but not required. Next offered: 1983-84.)

Engl. 408 3 Credits Every Third Spring
American Writers of the Colonial and Federal Periods. (3 + 0) h
Study of the writers of the earliest period of American history who contributed to the development of a national literary identity. Authors to include but not limited to: Bradstreet, Taylor, Mather, Edwards, Franklin, Paine, Brackenridge, Tyler, and Irving. (Prerequisites: Engl. 111 and junior standing or permission of instructor. Engl. 306 recommended but not required. Next offered: 1985-86.)

Engl. 414 3 Credits Spring
Research Writing (3 + 0) h
Practice in reporting primary and secondary research in the forms and styles appropriate to the student's field. Weekly conference required. Preference given to seniors. (Prerequisite: Engl. 111 and 211 or 213 or 311 or their equivalent.)

Engl. 421 3 Credits Alternate Spring
Chaucer (3 + 0) h
Major poetry, with emphasis on *The Canterbury Tales*, and survey of Chaucerian criticism. (Prerequisite: Engl. 111 or permission of instructor; Engl. 308 desirable but not required. Next offered: 1984-85.)

Engl. 422 3 Credits Fall
Shakespeare: History Plays and Tragedies (3 + 0)
Major chronicle plays and tragedies, including significant criticism. (Prerequisite: Engl. 111 or permission of instructor. Engl. 308 desirable but not required.)

Engl. 425 3 Credits Spring
Shakespeare: Comedies and Non-Dramatic Poetry (3 + 0) h
Major comedies and non-dramatic poems, including significant criticism. (Prerequisite: Engl. 111 or permission of instructor. Engl. 308 desirable but not required.)

Engl. 426 3 Credits Alternate Spring
Milton (3 + 0) h
Major poetry and prose, and survey of Miltonian criticism. (Prerequisite: Engl. 111 or permission of instructor; Engl. 308 desirable but not required. Next offered: 1983-84.)

Engl. 444 3 Credits Alternate Spring
European Literature (3 + 0) h
Studies in major European writers and periods. (Prerequisite: Engl. 111 or permission of instructor; Engl. 301 and 302 desirable but not required. Next offered: 1983-84.)

Engl. 445 3 Credits Alternate Fall
20th-Century Drama: From Chekhov to Ionesco (3 + 0) h
The major dramatists and their achievements. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1984-85.)

Engl. 446 3 Credits Alternate Spring
20th-Century British and American Poetry (3 + 0) h
The major achievements in modern poetry, including the work of Yeats, Eliot, Pound, Lowell, Roethke, and Stevens, among others. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1983-84.)

Engl. 447 3 Credits Alternate Spring
20th-Century British Literature, Exclusive of Poetry (3 + 0) h
Fiction, drama, essays, and criticism of the major writers, including Joyce, Shaw, Woolf, Lawrence, and Orwell, among others. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1983-84.)

Engl. 448 3 Credits Alternate Spring
20th-Century American Literature, Exclusive of Poetry (3 + 0) h
Fiction, drama, essays, and criticism of the major writers. Comprehensive readings in selected authors. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1984-85.)

Engl. 449 3 Credits Alternate Fall
American Fiction to 1900 (3 + 0) h
Study of the development of the American novel and short story from their earliest foreshawdowings in captivity narratives through the gothic, the romance, symbolism and allegory, and realism and naturalism. Authors to include but not limited to: Rowlandson, Brown, Cooper, Hawthorne, Poe, Melville, de Forest, Twain, Howells, James, Norris, Dreiser. (Prerequisites: Engl. 111 and junior standing or permission of instructor. Engl. 306, 307, 403, 404, 408 recommended but not required. Next offered: 1984-85.)

Engl. 452 3 Credits Alternate Fall
The British Novel to 1900 (3 + 0) h
Origin and development of the novel with concentration on significant novelists from Daniel Defoe to Thomas Hardy. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1983-84.)

Engl. 462 3 Credits Alternate Spring
Applied English Linguistics (3 + 0) h
The topic(s) for each offering of the course will be announced. Examples are teaching English as a second language, dialects and education, dictionaries, stylistics, and composition. (Prerequisite: English 111 or permission of instructor. Next offered: 1983-84.)

Engl. 472 3 Credits Alternate Spring
History of the English Language (3 + 0) h
Origin and development of the English language from prehistoric times to the present. (Prerequisite: Engl. 111 or permission of instructor. Engl. 318 or a linguistics course is desirable, but not required. Next offered: 1984-85.)

Engl. 481 3 Credits Alternate Fall
Craft of Poetry (3 + 0) h
Intensive study of the forms and techniques used by poets, through analysis of selected poems and consideration of selected criticism. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1984-85.)

Engl. 482 3 Credits Alternate Spring
Craft of Fiction (3 + 0) h
Intensive study of the forms and techniques used by novelists and short story writers, through analysis of selected fiction and consideration of selected criticism. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1983-84.)

Engl. 483 3 Credits Alternate Spring
Craft of Drama (3 + 0) h
Intensive study of the forms and techniques used by dramatists, through analysis of selected plays and consideration of selected criticism. (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1983-84.)

Engl. 484 3 Credits Alternate Spring
Craft of Non-Fiction Prose (3 + 0) h
Intensive study of the forms and techniques used by biographers, essayists, and writers of other non-fiction literary prose, through analysis of selected works and consideration of selected criticism. (Not a workshop. See J-B. 420 for a course in writing biography and autobiography, for which this course may serve as preparation.) (Prerequisite: Engl. 111 or permission of instructor. Next offered: 1984-85.)

Engl. 601 3 Credits Fall
Bibliography, Methods, and Criticism (3 + 0)
A study of the basic reference works for research in literature, the methods for conducting research, and the principles of literary criticism. (Prerequisite: Graduate standing or permission of instructor.)

Engl. 603 3 Credits Every Third Fall
Studies in British Literature: Old and Middle English (3 + 0)
Variable subject matter in significant topics in Anglo-Saxon and Middle English literature. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1984-85.)

Engl. 604 3 Credits Every Third Fall
Studies in British Literature: Renaissance and 17th Century (3 + 0)
Variable subject matter in significant topics in 16th and 17th-Century British Literature. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1985-86.)

Engl. 607 3 Credits Every Third Spring
Studies in British Literature: Restoration, 18th and 19th Centuries (3 + 0)
Variable subject matter in significant topics in British literature of the Augustan, Romantic, and Victorian periods. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1984-85.)

Engl. 608 3 Credits Every Third Spring
Studies in British Literature: 20th Century (3 + 0)
Variable subject matter in significant topics in modern British literature. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1985-86.)

Engl. 609 3 Credits Every Third Spring
Studies in American Literature: Colonial Period and 19th Century (3 + 0)
Variable subject matter in significant topics in American literature to the end of the 19th Century. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1985-86.)

Engl. 612 3 Credits Every Third Fall
Studies in American Literature: 20th Century (3 + 0)
Variable subject matter in significant topics in modern American literature. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1983-84.)

Engl. 670 3 Credits Alternate Spring
Studies in Comparative Literature (3 + 0)
Variable subject matter in significant topics in comparative literature. (Prerequisite: Graduate standing or permission of instructor. Next offered: 1983-84.)

Engl. 671 Credits Arr. Fall and Spring
Writers' Workshop
The writing of verse, fiction, drama, or non-fiction 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. May be taken twice for a maximum of six credits. (Prerequisites: At least two courses from among Engl. 481, 482, 483, 484 and permission of instructor; or, permission of the head of Department of English and of instructor.)

Environmental Quality Engineering

EQE 601 3 Credits Fall
Environmental Quality Science Measurements (2 + 3)
Theory and laboratory procedures for determining quality of water supplies. Natural water quality, pollution loads, and water and waste-water treatment plant parameters. Familiarization with *Standard Methods for the Examination of Water and Waste-water*. Experiments on unit processes of treatment systems are included along with consideration for solid waste air pollution monitoring. (Prerequisite: Permission of instructor.)

EQE 602 3 Credits Spring
Engineering Management of Water Quality (3 + 0)
Concepts, rationale, theory, institutions, and engineering aspects of water quality management. Methods of water quality management: low flow augmentation, in-stream aeration, stream and estaurine analysis, ocean disposal systems, land disposal, control of thermal effluents, industrial discharges, and arctic applications. (Prerequisite: Permission of instructor.)

EQE 603 3 Credits Fall
Solid Waste and Air Pollution (3 + 0)
Planning, collecting, and disposing of refuse. Techniques of open dumping, land filling, sanitary land filling, composting, incineration, and resource recovery. Solid waste environmental relationships to water, air, and land pollution. Economics and case studies are included. Air pollution topics will include quantity and quality of atmospheric emissions and their effects on man and his environment. Identification and location of sources, and measurement of quality and standards. (Prerequisite: Permission of instructor.)

EQE 604 3 Credits Spring
Environmental Quality Evaluation (3 + 0)
Topics of environmental impact statements, environmental law (local, state and federal), 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. (Prerequisite: Graduate standing or permission of the instructor.)

EQE 605 3 Credits Fall
Chemical and Physical Water and Wastewater Treatment Processes (3 + 0)
The theory and design of chemical and physical unit processes utilizing the treatment of water and wastewater. Sedimentation and flotation, ion exchange, adsorption, coagulation, precipitation, filtration, disinfection, reverse osmosis, and aeration theories will be studied. Design problems for all unit processes. (Prerequisite: Graduate standing or permission of the instructor.)

EQE 606 3 Credits Spring
Biological Treatment Processes (3 + 0)
Study of the theoretical and applied aspects of wastewater treatment by biological processes including activated sludge, trickling filters, lagoons, sludge digestion and processing, septic tanks, analysis and design, nutrient removal processes, biology of polluted waters, economics, state, and federal regulations. (Prerequisite: Graduate standing or permission of the instructor.)

Eskimo

Esk. 101 5 Credits Fall
Esk. 102 5 Credits Spring
Elementary Yup'ik Eskimo (5 + 0) h
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.

Esk. 108 3 Credits Spring
Yup'ik Literacy (3 + 8)
Literacy training for speakers of Yup'ik languages (Central Yup'ik, St. Lawrence Island Yup'ik, and Alutiiq). Learning to read and write the language.

Esk. 111 5 Credits Fall
Esk. 112 5 Credits Spring
Elementary Inupiaq Eskimo (5 + 0) h
Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound, and 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.

Esk. 118 3 Credits Spring
Inupiaq Literacy (3 + 0)
Literacy training for speakers of Alaskan Inupiaq. Learning to read and write the language.

Esk. 201 3 Credits Fall
Esk. 202 3 Credits Spring
Intermediate Yup'ik (3 + 0) h
Continuation of Eskimo 101-102. Increasing emphasis on speaking, reading, and writing.

Esk. 211 3 Credits Fall
Intermediate Inupiaq Eskimo (3 + 0) h
Continuation of Elementary Inupiaq Eskimo, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary. (Prerequisites: Completion of Elementary Inupiaq Eskimo 111 and 112 or permission of instructor.)

Esk. 212 3 Credits Spring
Intermediate Inupiaq Eskimo (3 + 0) h
Continuation of Intermediate Inupiaq Eskimo, Esk. 211, concentrating on development of conversational ability with presentation of additional grammar and vocabulary. (Prerequisites: Completion of Elementary Inupiaq Eskimo 111-112, and Esk. 211, or permission of instructor.)

Esk. 301 3 Credits Fall
Advanced Yup'ik Eskimo (3 + 0) h
Continuation of Esk. 201-202. Completes the basic study of the Yup'ik grammar. (Prerequisites: Esk. 101, 102, 201-202 or permission of instructor.)

Esk. 415 3 Credits Spring
Additional Topics in Advanced Yup'ik Eskimo (3 + 0) h
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: Esk. 101, 102, 201-202, 203 or permission of instructor.)

Esk. 417 3 Credits Spring
Advanced Inupiaq Eskimo (3 + 0) h
Advanced study in Inupiaq Eskimo. A continuation of Esk. 212. (Prerequisites: Completion of Esk. 111, 112, 211, 212 or permission of instructor.)

Foreign Languages

F.L. 110 2 Credits Every Third Spring
How to Pronounce French, German, Italian, and Spanish (2 + 0)
Designed to meet the needs of students and others in radio, television, journalism, drama, music (esp. voice), etc. who want to pronounce French, German, Italian and Spanish correctly and with confidence. The method is practical and direct. Concrete examples are used. (Next offered: 1985-86.)

French

(For UAF program in France, see p. 52)

Fren. 101 5 Credits Fall
Fren. 102 5 Credits Spring
Elementary French I and II (5 + 0) h
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 audio-visual materials; use of Foreign Language Learning Center.

Fren. 201 3 Credits Fall
Fren. 202 3 Credits Spring
Intermediate French I and II (3 + 0) h
Continuation of Fren. 102. Increasing emphasis on reading ability and culture material. Conducted in French. (Prerequisite: Fren. 102 or equivalent.)

Fren. 288 2 Credits Spring
Individual Study: Reading French h
Emphasis on rapid expansion of passive vocabulary and immediate recognition of frequent idiomatic expressions and grammatical structures, development of true reading skills, modern literary and/or non-literary texts. (Prerequisites: Fren. 201, equivalent training or permission of instructor. Recommended to be taken concurrently with Fren. 202.)

Fren. 301 3 Credits Alternate Fall
Fren. 303 3 Credits Alternate Fall
Advanced French (3 + 0) h
Discussions and essays on more difficult subjects or texts, and translations, stylistic exercises, and special grammatical problems. Conducted in French. (Prerequisite: Fren. 202 or equivalent. Fren. 301 next offered: 1983-84; Fren. 303: 1984-85.)

Fren. 387 2 Credits Alternate Fall
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of word formation, derivation, composition, etc. (Prerequisites: Fren. 202 or permission of instructor. Next offered: 1983-84.)

Fren. 432 3 Credits Spring
Studies in French Literature and Culture (3 + 0) h
Intensive study of authors, literary movements, periods, and/or genres. Analysis of cultural material other than texts. Conducted in French. Student may repeat course for credit when topics vary. (Prerequisites: Fren. 301 or 303 or permission of instructor.)

Fren. 487 **2 Credits** **Alternate Fall**
Individual Study: Translation of French Texts h
Expansion of vocabulary and grammatical knowledge, emphasis on understanding precise shades of meaning, stylistics, artistic expression and cultural values in language, and literary and non-literary texts. Student may repeat course for credit if materials vary. (Prerequisites: Fren. 301 or 303 or equivalent and permission of instructor. Next offered: 1984-85.)

Fren. 488 **3 Credits** **As Demand Warrants**
Individual Study: Senior Project h
Designed to permit the student to demonstrate ability to work with the language and the culture through the 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 6th week of the semester preceding the semester of graduation. (Prerequisites: At least 10 credits in upper division French or permission of instructor.)

Geography

Geog. 101 **3 Credits** **Fall and Spring**
Introductory Geography (3 + 0) s
World regions, an analysis of environment, with emphasis on major culture realms.

Geog. 103 **3 Credits** **Fall**
World Economic Geography (3 + 0) s
Study of the world's major economic activities: their physical and cultural bases, spatial growth and distribution patterns, and their significance in interregional and international development.

Geog. 202 **3 Credits** **Alternate Fall**
Geography of United States and Canada (3 + 0) s
Regional geography of Anglo-America. Introductory systematic study of the area as a whole, followed by detailed study of the physical and cultural landscape forms, patterns, and associations of each major region in turn. Consideration of Anglo-America in current world economic and political geography. (Next offered: 1983-84.)

Geog. 205 **3 or 4 Credits** **Fall and Spring**
Elements of Physical Geography (3 + 0 or 3 + 3) n
Analysis of the processes that form the physical environment and the resulting physical patterns. Study of landforms, climate, soils, water resources, vegetation, and their world and regional patterns. Optional laboratory for one additional credit. (Prerequisite: Geog. 101 or 103.)

Geog. 301 **3 Credits** **As Demand Warrants**
Geographic Field Research Techniques
Theory and application of geographic methods of conducting field investigations. Collection, analysis, synthesis, and interpretation of data concerning the natural and man-made features of regional environments. Preparation and presentation of reports of findings and conclusions. (Permission of instructor.)

Geog. 302 **3 Credits** **Fall and Spring**
Geography of Alaska (3 + 0) s
Regional, physical and economic geography of Alaska. Special consideration of the state's renewable and nonrenewable resources, and of plans for their wise use. Frequent class study of representative maps and visual materials. (Prerequisite: Geog. 101 and 205.)

Geog. 305 **3 Credits** **Alternate Fall**
Geography of Europe (except U.S.S.R.) (3 + 0) s
Regional, physical, economic and cultural geography of Europe, except U.S.S.R. (Prerequisite: Geog. 101 and 205. Next offered: 1983-84.)

Geog. 306 **3 Credits** **Alternate Spring**
Geography of the Soviet Union (3 + 0) s
The physical, cultural and historical geography of the U.S.S.R. with special emphasis on the geographic bases of the expansion of the Great Russians and the contemporary foundation of Soviet national power. (Prerequisite: Geog. 101 or 103 or 205 or permission of the instructor. Next offered: 1984-85.)

Geog. 309 **3 Credits** **As Demand Warrants**
Cartography (1 + 6) s
Graphic techniques for presenting geographic data through the construction of maps, projections and charts. (Prerequisite: Permission of instructor.)

Geog. 311 **3 Credits** **Alternate Fall**
Geography of Asia (3 + 0) s
Regional geography of Asia, exclusive of the Soviet Union. A study of the physical framework, natural resources, peoples, major economic activities, and characteristic landscapes of the major regions of Japan, China, Southeast Asia, India-Pakistan, and the Asiatic countries of the Middle East. (Prerequisite: Geog. 101 or 103 or 205 or permission of the instructor. Next offered: 1984-85.)

Geog. 315 **3 Credits** **As Demand Warrants**
Geography of Africa (3 + 0) s
Physical and cultural geography of Africa, by regions. Significance of Africa in current world cultural, economic, and political geography. Major emphasis on regions south of the Sahara. (Prerequisite: Geog. 101 and 205.)

Geog. 327 **3 Credits** **Spring**
Cold Lands (3 + 0) s
The comparative physical, human, and economic geography of cold regions, with particular attention to Siberia, Greenland, Scandinavia and Canada. Special attention is given to the different approaches which have been taken toward economic development in cold regions. (Prerequisite: Geog. 101 or 103 or 205 or permission of the instructor.)

Geog. 339 **3 or 4 Credits** **Alternate Spring**
Advanced Physical Geography (3 + 0) or (3 + 3) n
Application of methodology of physical geography to analysis of regional landscapes. Optional laboratory for one additional credit. (Prerequisites: Geog. 101 or 103, 205. Next offered: 1984-85.)

Geog. 401 **3 Credits** **Alternate Fall**
Weather and Climate (3 + 0) n
Introduction to the study of weather and classification of climates. (Prerequisite: permission of the instructor. Next offered: 1984-85.)

Geog. 402 **3 Credits** **Alternate Spring**
Man and Nature (3 + 0) s
The relationship of man with the land he occupies, study of the physical environment and human occupation of the world's major regions, consideration of the significance of cultural diversity, differing patterns of livelihood, settlement, and population change. (Prerequisite: Geog. 101 and 205. Next offered: 1983-84.)

Geog. 404 **3 Credits** **Alternate Spring**
Urban Geography (3 + 0) s
A world survey of urbanization with particular emphasis on the accelerating urban revolution in modern times. Conditions favoring the rise of cities: locational and site factors, regional and interregional resource availability, and human factors. Changing functions and patterns of urban areas. National and international problems inherent in trends toward a predominantly urbanized economy and culture. Implications of urbanization in Alaska. (Prerequisite: Geog. 101. Next offered: 1983-84.)

Geog. 405 **3 Credits** **Alternate Fall**
Political Geography (3 + 0) s
Geographical analysis of the evolution, structure, internal coherence, and sources of strength of individual nation states, with emphasis on nations of the Pacific realm and Arctic periphery. Consideration of regional blocs, spheres of influence, and potential for international cooperation. (Prerequisite: Geog. 101. Next offered: 1984-85.)

Geog. 408 **3 Credits** **As Demand Warrants**
Quantitative Research Techniques (2 + 3)
Philosophy and methodology in geography. Theories, laws, and models for measurement, analysis and explanation of geographic patterns and associations. Applications of findings to solution of geographic problems. (Prerequisites: Junior standing and college-level mathematics, or permission of the instructor.)

Geological Engineering

G.E. 261 3 Credits Spring
General Geology for Engineers (2 + 3)
(Same as Geos. 261)
Introduction to applied geology: study of common rocks and minerals, landforms, erosion, transport and deposition of geologic materials, and engineering applications of geology. (Prerequisite: Geology, science, and engineering majors, or permission of instructor.)

New title: Geol Eng I

G.E. 365 3 Credits Fall
Fundamentals of Geological Engineering (3 + 0)
A detailed and quantitative study of the geological and geotechnical factors for the solution of engineering problems. Special emphasis on the soil engineering designs related to excavations, foundations, earth-retaining structures, and soil slopes. (Prerequisites: Geos. 101 or Geos./G.E. 261 and E.S. 208.)

G.E. 372 3 Credits Spring
Rock Engineering (3 + 0)
The application of geologic principles to rock engineering problems related to underground excavation, slope design, and strata control. Both qualitative and quantitative aspects considered. Some field work required. (Prerequisites: Geos. 101 or Geos./G.E. 261 and E.S. 208.)

G.E. 471 3 Credits Fall
Remote Sensing for Engineering (3 + 0)
The applications of remote sensing to engineering problems such as exploration, site selection, and reclamation are presented with the basic principles of remote sensing techniques. An introduction to remote sensing systems is included with primary consideration being given to Alaskan problems and applications. (Prerequisites: Geos. 101 or Geos./G.E. 261, Geos. 408, Physics 212.)

G.E. 401 3 Credits Spring
Rock Mechanics (2 + 3)
Analysis of stress and strain. Physical properties of rock and fundamentals of rock behavior. Rock stresses in mining with design and layout of underground workings. (Prerequisite: E.S. 331 or concurrent registration.)

G.E. 405 4 Credits Spring
Exploration Geophysics (3 + 3)
Introduction to the theory and application of gravity, magnetic, electrical, electro-magnetic, radioactive, and seismic methods as used for geophysical exploration. Some field work required. (Prerequisites: Math. 200 and Phys. 211 or equivalent.)

G.E. 431 2 Credits Alternate Fall
Applied Ore Microscopy (1 + 3)
Preparation of polished sections of ores. Identification of ore minerals in reflected light by physical, optical, and chemical methods. Applications to ore genesis, drill core interpretation, beneficiation, and process control. (Prerequisite: Geos. 213 or permission of the instructor. Next offered: 1984-85.)

G.E. 435 3 Credits Spring
Exploration Design (3 + 0)
Geologic, engineering, and economic considerations applied to the design and development of mineral exploration programs. (Prerequisites: Geos. 314 and Geos. 214 or permission of instructor.)

G.E. 440 3 Credits Alternate Spring
Slope Stability (3 + 0)
Slope design for open pit mining and other excavations. Stability analysis by various methods and on-site measuring and monitoring techniques. (Prerequisites: E.S. 331 or permission of instructor. Next offered: 1983-84.)

G.E. 666 3 Credits Alternate Fall
Advanced Engineering Geology (2 + 3)
An advanced course exploring the interaction between geology and engineering works such as construction, foundations, and tunnels. Case histories will be studied, and one or two major class projects will be undertaken. Written reports will be required. (Prerequisites: Graduate standing, G.E. 365 and G.E. 372 or permission of instructor. Next offered: 1984-85.)

G.E. 675 3 Credits Alternate Fall
Applied Mining Geology (3 + 0)
The course will cover a wide range of investigative procedures involved in mining geology from the preproduction to terminal phases for an operation. Diverse mining models from the open-pit to deep-level underground operations will be examined and attention focused on the methodologies of mapping, sampling, on-going evaluation, and geotechnical aspects in relation to water and strata control hazards. Problem solving of case history type situations in which geological influences are evident will be stressed. (Prerequisites: Graduate standing or permission of instructor. Geos. 407 and G.E. 435 recommended. Next offered: 1983-84.)

Geoscience (Geology and Geophysics)

Geos. 101 3 Credits Fall
General Geology (3 + 0) n
Introduction to physical geology: a study of the earth, its materials, and the processes that effect changes upon and within it. Optional laboratory training in the use of topographic maps and the recognition of common rocks and minerals. Concurrent enrollment in the laboratory class Geos. 101L is required for geology majors and encouraged for others.

Geos. 101L 1 Credit Fall
General Geology Laboratory (0 + 3) n
Students are given basic training in the use of topographic maps and the recognition of common minerals and rocks. Optional lab with Geos. 101. Lab is required for Geology/Geophysics majors. (Prerequisite: Concurrent registration or credit in Geos. 101.)

Geos. 112 3 Credits Spring
Historical Geology (3 + 0) n
An introduction to the principles of historical geologic interpretation, the development of the geologic time scale, the stratigraphic record and its interpretation, geosynclinal theories and plate tectonics, the fossil record and its utilization, biostratigraphy, and the evolution of the North American continent through geologic time. Concurrent registration in Geos. 112L required for geology majors, optional but recommended for others. (Prerequisites: Geos. 101 or Geos. 261.)

Geos. 112L 1 Credit Spring
Historical Geology Laboratory (0 + 3) n
Laboratory instruction reviews mineral and rock identification and the use of topographic maps and introduces exercises on the ordering of geologic events, physical stratigraphy, facies, correlation, invertebrate fossils, geologic map interpretation, regional geology, and applied geology. (Prerequisites: Geos. 101 and Geos. 101L or Geos. 261 plus concurrent registration or credit in Geos. 112.)

Geos. 213 4 Credits Fall
Mineralogy (2 + 6) n
Introduction to mineral chemistry, atomic structure, elementary crystallography, and descriptive and determinative mineralogy. Includes introduction to instrumental determinative techniques (x-ray, spectograph) and simple qualitative chemical tests. (Prerequisites: Geos. 101 or 261; Chem. 105 and concurrent registration in Math. 107-108.)

Geos. 214 3 Credits Spring
Petrology (2 + 3) n
Systematic study of the origin, occurrence, and classification of igneous, sedimentary, and metamorphic rocks. Laboratory work involves hand lens identification of representative rocks. (Prerequisites: Geos. 213.)

Geos. 261 3 Credits Spring
General Geology for Engineers (2 + 3) n
(Same as G.E. 261)
Introduction to applied geology: study of common rocks and minerals, landforms, erosion, transport and deposition of geologic materials, and engineering applications of geology. (Prerequisite: Geology, science, and engineering majors, or permission of instructor.)

Geos. 302 3 Credits Alternate Spring
Marine Geology (3 + 0) n
Survey of marine geology, including structure and composition of ocean basins and continental margins, chemical and physical properties of marine sediments, geological processes in the oceans, physical resources, and conservation/pollution concerns (Prerequisite: Geos. 101, 112, or permission of instructor. Next offered: 1984-85.)

Geos. 304 3 Credits Fall
Geomorphology (3 + 0) n
Study of the Earth's surface features and the processes which create or modify them. Application to Quaternary history, environmental science, and related fields. (Prerequisite: Geos. 101.)

Geos. 314 3 Credits Spring
Structural Geology (2 + 3) n
Origin and interpretation of primary and secondary geologic structures. Graphical solution of structural problems. (Prerequisites: Geos. 112, Geos. 214, Phys. 103 or 211.)

Geos. 321 3 Credits Fall
Sedimentation (2 + 3) n
Broad survey of sediments, including origin, classification, composition, transportation, deposition, and diagenesis. Laboratory instruction in methods of textural and compositional analysis. (Prerequisite: Geos. 213 or permission of instructor.)

Geos. 350 2 Credits Spring
Geologic Field Methods (1 + 3) n
An introduction to geologic field techniques as a spring preparation for field geology (Geos. 351). It includes an introduction to basic field mapping techniques, library research, data presentation, and report writing. Approximately two thirds of the course will be devoted to lecture on geologic mapping techniques, use of instruments, and making field observations. The course ends with completion of a plane table surveying project and various field mapping and observational exercises. (Prerequisites: Junior standing in geology or permission of instructor.)

Geos. 351 4 or 6 Credits Summer
Field Geology n
Practical experience in the procedures employed in collecting and presenting the basic data obtained from the field. Includes field mapping of stratigraphic and structural problems on topographic maps, aerial photographs, plane table maps, and presentation of results in a professional report and finished geologic map. Students pay own transportation, subsistence and course tuition fee. Entrance by preregistration only. Geophysics option students may elect to take this course for 4 credits if they also register for Geos. 451, Field Geophysics. All others must take 6 credits. (Prerequisites: Junior standing in geology, Geos. 350 or equivalent and permission of instructor.)

Geos. 370 3 Credits Spring
Introduction to Petroleum Geology (3 + 0) n
Origin of organic matter and its deposition with sediments. Formation of kerogens and transformation of kerogens into hydrocarbons. Primary and secondary migration of hydrocarbons and their accumulation in traps. Study of reservoir rocks and hydrocarbon habitat. Exploration and exploitation of hydrocarbons. Sedimentary basins and hydrocarbon accumulations in relation to plate movements. (Prerequisite: Geos. 101 or Geos. 261 or equivalent.)

Geos. 401 4 Credits Fall
Invertebrate Paleontology (3 + 3) n
Study of the invertebrate phyla with fossil records. Emphasis on soft-part anatomy and classification, followed by study of hard-part anatomy of fossil groups and their classification. Recurrent emphasis on relevant biologic principles. Laboratory study on fossil materials. (Prerequisites: Geos. 101 or by permission of instructor; Biol. 305 recommended.)

Geos. 402 4 Credits Spring
Stratigraphic Principles (4 + 0) n
An introduction to physical stratigraphy, paleobiology, and biostratigraphy. Emphasis on the interpretation of past environments and correlation through the study of the sedimentary rock record and fossils. (Prerequisites: Geos. 101 or 261 and 401.)

Geos. 405 3 Credits Alternate Spring
Geochronology (3 + 0) n
The 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: Upper division standing in geology or geophysics or consent of the instructor. Next offered: 1984-85.)

Geos. 407 4 Credits Fall
Geology of Mineral Resources (3 + 3) n
An introduction to the occurrence and characteristics of metallic and selected non-metallic mineral deposits — geographic locations, petrotectonic settings, mineralogic and petrologic features, and theories of genesis — with applications to exploration and development. Laboratory work includes identification, characterization and systematic description of major ore types. (Prerequisites: Geos. 214 and Geos. 314 or permission of instructor.)

Geos. 408 2 Credits Spring
Map and Airphoto Analysis (1 + 3) n
Use of topographic maps, geologic maps, aerial photographs, and satellite imagery in the interpretation of geological structures, landscapes, landforms, and geomorphic processes. Techniques included are map compilation, photo mapping, statistical treatment of map data, and composite mapping for planning purposes. (Prerequisite: Geos. 304 or permission of instructor.)

Geos. 410 2 Credits Alternate Spring
Potential Methods in Geophysics (2 + 0) n
The fundamental theory of potential methods and the application to geophysical exploration will be studied along with the basic techniques and methods of interpretation of gravimetric and magnetic measurements. (Prerequisites: Math. 201, Phys. 212, or permission of instructor. Next offered: 1983-84.)

Geos. 411 2 Credits Alternate Fall
Seismic Exploration (2 + 0) n
The study of the fundamental principles of seismic exploration techniques, beginning with the basic laws of seismic wave propagation and ending with the practical application of the techniques, including both reflection and refraction methods. (Prerequisites: Math. 201, Phys. 212, or permission of instructor. Next offered: 1983-84.)

Geos. 412 2 Credits Alternate Spring
Electrical Methods in Geophysics (2 + 0) n
The fundamental principles of electrical resistivity and current flow in the earth and the practical application in the realm of geophysical exploration will be studied. (Prerequisites: Math. 201, Phys. 212, or permission of instructor. Next offered: 1983-84.)

Geos. 416 4 Credits Fall
Optical Mineralogy and Petrography (2 + 6) n
An introduction to optical mineralogy and petrography. Petrographic study of representative igneous, metamorphic, and sedimentary rocks, including recognition of the important rock-forming minerals is stressed. (Prerequisite: Geos. 214.)

Geos. 417 3 Credits Fall
Introduction to Geochemistry (3 + 0) n
Introduction to chemistry of the earth. (Prerequisites: Chem. 105, 106, or permission of instructor.)

Geos. 418 3 Credits Fall
Basic Geophysics (3 + 0) n
The basic concepts and techniques of geophysics as applied on a global scale. Topics covered will include the origin of the earth, its structure, and the large scale dynamic processes responsible for its surface features. Geophysical techniques including seismology, gravity, magnetometry, and electrical methods will be discussed along with measurements of the earth's thermal structure, rotation rates, and the effects of the tides. (Prerequisites: Permission of the instructor.)

Geos. 422 3 Credits Fall
Geoscience Applications of Remote Sensing (3 + 0) n
The objective of the course is to provide an introduction to the scope of remote sensing and its applications to geologic and related investigations. The course includes the explanation of nomenclature, a review of the types of remote sensing systems used, and the study of the forms in which remote sensing data is available. Emphasis is placed upon the use of LANDSAT and radar imagery and multispectral photography. (Prerequisites: Geos. 101, Phys. 103 or 211, junior standing or consent of instructor.)

Geos. 430 3 Credits Spring
Statistics and Data Analysis in Geology (3 + 0) n
An introduction to the use of the computer and statistics in geology and related sciences. The course stresses geologic applications of elementary statistics, Markov chains, time-series analysis, trend-surface analysis, factor analysis, cluster analysis, discriminant analysis, and multiple regression. (Prerequisites: Math. 200 or A.S. 301; senior standing or permission of instructor.)

Geos. 451 2 Credits Summer
Practical Field Geophysics n
This course is designed to be a "hands-on" practical geophysics course involving both data acquisition and reduction. Techniques used will include gravimetric, radiometric, resistivity, magnetic, electro-magnetic, and seismic. This course will be taught concurrently with the last two weeks of Geos. 351, Field Geology. (Prerequisites: Math. 201, Phys. 212, or permission of instructor.)

Geos. 462 4 Credits Fall
Glacial Geology (3 + 3) n
An introduction to glaciers and their geological processes. The course emphasizes recognition and understanding of glacial landforms, sediments, and stratigraphic relationships, and their implications for paleoclimatology, and paleogeography. Non-glacial techniques and methods for interpreting Quaternary sediments are also emphasized. (Prerequisite: Geos. 304.)

Geos. 482 1 Credit Fall
Geology Seminar (1 + 0)
A weekly seminar series designed to explore a geologic theme of current interest for a complete semester. (Prerequisite: Senior or graduate standing or permission of instructor.)

Geos. 601 1 Credit Spring
Scanning Electron Microscopy (1/2 + 1)
The theory and use of the scanning electron microscope. Each student will prepare his/her own samples and will view them in the scanning electron microscope. The X-ray energy dispersive microanalyzer and other special techniques will be introduced. A written project report will be required. (Prerequisites: Graduate Standing and permission of instructor.)

Geos. 607 1-4 Credits Fall-Spring
Advanced Topics in Geology-Geophysics (1-4 + 0)
An advanced course providing a detailed treatment of various topics in geophysics. Specific topics to be covered in different semesters include: A. paleomagnetism, B. volcanology, C. geochronology. Each time the course is offered, only one topic will be presented. (Prerequisites: Senior standing and permission of instructor.)

Geos. 608 2-4 Credits Every Third Year
Advanced Exploration Geophysics (2-4 + 0)
An advanced course covering aspects of the seismic, gravimetric, magnetometric and magneto-electric techniques in geophysical exploration. (Prerequisite: Senior or graduate standing in geophysics or permission of instructor. Next offered: Spring 1984.)

Geos. 609 2-4 Credits Fall-Spring
Advanced Geomorphology (2-4 + 0-3)
An advanced course providing a detailed treatment of geomorphology. Specific topics to be covered in different semesters include A. quantitative geomorphology, B. landscape evolution, C. periglacial geology, and D. geomorphology of Alaska. Each time the course is offered only one topic will be considered. (Prerequisites: Geos. 304 or permission of instructor.)

Geos. 610 2-4 Credits Alternate Years
Earthquake Seismology (2-4 + 0)
Basic theorems in dynamic elasticity, representation of seismic sources, elastic waves from a point dislocation source, seismic plane waves in layered half-space, Lamb's problem, surface-wave theory, free-oscillation of the earth, body waves in media with depth-dependent properties. (Prerequisite: Senior or graduate standing or permission of instructor. Next offered: Fall 1983.)

Geos. 611 1-4 Credits Tectonics + Sedimentation **Spring**
Advanced Geology of Mineral and Energy Resources (1-4 + 0)
An advanced course providing a detailed treatment of the geology of mineral and energy resources. Specific topics will be considered in different semesters or sequentially within one semester. They include: A. mineral exploration, B. regional metallogeny, C. classical mineral districts, and D. selected topics in petroleum geology and basin analysis. Only one topic will be presented at a time. (Prerequisites: Geos. 407 or permission of instructor.)

Geos. 612 3 Credits Alternate Fall
Geology of Alaska (2 + 3)
Study and interpretation of the geology of Alaska. Field trips when possible. (Prerequisites: Geos. 112, 304, 314. Next offered: 1983-84.)

Geos. 613 3 Credits As Demand Warrants
Advanced Marine Geology (3 + 0)
A global study of the geology and structure of the ocean floors and continental margins. Geophysical signatures, including heat flow, seismicity, gravity, magnetics, and seismic structures of the major tectonic elements which make up oceanic crustal plates. (Prerequisite: Graduate standing or permission of instructor.)

Geos. 614 3 Credits 414 Intro to Glaciology **Alternate Fall**
Snow and Ice in the Environment (3 + 0)
A broad survey of and introduction to glaciology including thermodynamics of phase relations, supercooling, nucleation, and freezing of water in the laboratory and in rivers, lakes, oceans, cloud droplets, soil, and animal and plant tissue. Physical processes in seasonal and perennial snow and transformation of snow to glacier ice will be examined, as well as distribution and classification of glaciers, mass balance of glaciers, glacier flow and causes of glaciation. Physical properties of and processes in frozen ground and sea ice will be studied. (Prerequisite: Permission of the instructor. Next offered: 1985-86.)

Geos. 615 3 Credits Alternate Spring
Sea Ice (3 + 0)
A study of sea ice in the natural environment including sea ice properties and processes on the microscale and the macroscale, freezing processes and sea ice growth, ice decay, and ice dynamics. (Prerequisite: Permission of the instructor. Next offered: 1983-84.)

Geos. 616 3 Credits Alternate Spring
Permafrost (3 + 0)
The 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. (Prerequisite: Permission of the instructor. Next offered: 1984-85.)

Geos. 621 3-4 Credits Fall-Spring
Advanced Petrology (2-3 + 3-6)
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: Geos. 214, 416.)

Geos. 624 1-4 Credits Fall-Spring
Advanced Structural Geology (1-4 + 0)
An advanced course giving a detailed treatment of structural geology. Topics to be presented in different semesters include: A. analytical structural geology and B. geotectonics. Each time the course is offered only one topic will be presented. (Prerequisites: Geos. 314 or permission of instructor.)

Geos. 631 1-3 Credits Fall
Advanced Geochemistry (1-3+0)
An advanced course providing an in-depth treatment of physical geochemistry. Specific topics to be presented in different semesters include: A. crystal chemistry, B. thermodynamics, and C. phase equilibria. Each time the course is offered only one such topic will be presented. (Prerequisites: Geos. 417, or Chem. 331, or Chem. 402, or permission of instructor.)

Geos. 635 1-4 Credits Fall-Spring
Advanced Economic Geology (1-4+0)
An advanced course providing an in-depth treatment of various aspects of economic geology. Specific topics will be considered in different semesters or sequentially within one semester. They include: A. ore microscopy, B. industrial minerals, C. economics of minerals, D. geochemistry of ore deposits, and E. modern fossil fuel exploration. Only one topic will be presented at a time. (Prerequisite: Permission of instructor.)

Geos. 641 1-3 Credits As Demand Warrants
Advanced Paleontology (1-3+0)
An advanced course providing a detailed treatment of various topics in paleontology. Specific topics to be presented in different semesters include: A. vertebrate paleontology, B. invertebrate paleontology, C. micropaleontology, and D. paleobotany. Each time the course is offered only one such topic will be presented. (Prerequisite: Geos. 401 or permission of instructor.)

Geos. 643 3 Credits Fall
Advanced Stratigraphy and Sedimentology (3+0/2+3) (2-4+3) n
An advanced course providing a detailed treatment of stratigraphy and sedimentation. Specific topics to be presented in different semesters include: A. ancient and recent sedimentary environments and B. sedimentology and diagenesis. Each time the course is offered only one such topic will be presented. (Prerequisites: Geos. 321 and 402.)

German

(For UAF program in Germany, see p. 52)

Ger. 101 5 Credits Fall
Ger. 102 5 Credits Spring
Elementary German I and II (5+0) h
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 audio-visual materials; use of Foreign Language Learning Center.

Ger. 201 3 Credits Fall
Ger. 202 3 Credits Spring
Intermediate German I and II (3+0) h
Continuation of German 102. Increasing emphasis on reading ability and cultural material. Conducted in German. (Prerequisite: Ger. 102 or equivalent.)

Ger. 288 2 Credits Spring
Individual Study: Reading German h
Emphasis on rapid expansion of passive vocabulary and immediate recognition of frequent idiomatic expressions and grammatical structures, development of true reading skill, modern literary and/or non-literary texts. (Prerequisites: Ger. 201, equivalent training or permission of instructor. Recommended to be taken concurrently with Ger. 202.)

Ger. 301 3 Credits Alternate Fall
Ger. 303 3 Credits Alternate Fall
Advanced German (3+0) h
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises, and special grammatical problems. Conducted in German. (Prerequisite: Ger. 202 or equivalent. Ger. 301 next offered: 1983-84; Ger. 303: 1984-85.)

Ger. 387 2 Credits Fall
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of work formation, derivation, composition, etc. (Prerequisites: Ger. 202 or permission of instructor.)

Ger. 432 3 Credits Alternate Spring
Studies in German Literature and Culture (3+0) h
Intensive study of authors, literary movements, periods, and/or genres. Analysis of cultural material other than texts. Conducted in German. Student may repeat course for credit when topics vary. (Prerequisites: Ger. 301 or 303 or permission of instructor. Next offered: 1983-84.)

Ger. 487 2 Credits Alternate Fall
Individual Study: Translation of German Texts h
Expansion of vocabulary and grammatical knowledge, emphasis on understanding precise shades of meaning, stylistics, artistic expression and cultural values in language; and literary and non-literary texts. Student may repeat course for credit if material varies. (Prerequisites: Ger. 301 or 303 or equivalent and permission of instructor. Next offered: 1984-85.)

Ger. 488 3 Credits As Demand Warrants
Individual Study: Senior Project h
Designed to permit the student to demonstrate ability to work with the language and the culture through the 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 6th week of the semester preceding the semester of graduation. Offered normally in the semester preceding the student's graduation. (Prerequisites: At least 10 credits in upper division German or permission of instructor.)

History

Hist. 100 3 Credits Fall and Spring
History of Alaska Natives (3+0) s
The history of Alaska Natives from contact to the signing of the Claims Settlement Act.

Hist. 101 3 Credits Fall
Western Civilization (3+0) s
The origins and major political, economic, social, and intellectual developments of western civilization to 1500.

Hist. 102 3 Credits Spring
Western Civilization (3+0) s
Major political, economic, social, and intellectual developments of western civilization since 1500.

Hist. 115 3 Credits Spring
Alaska, Land and Its People (3+0) s
A survey of Alaska from earliest days to present, its peoples, problems, and prospects.

Hist. 121 3 Credits Alternate Fall
East Asian Civilization (3+0) s
The Great Tradition. 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. (Next offered: 1983-84.)

Hist. 122 3 Credits Alternate Spring
East Asian Civilization (3+0) s
The Modern Transformation. East Asia from 1800 to the present with emphasis on patterns of social cohesion, transition, and revolutionary change. (Next offered: 1983-84.)

Hist. 131 3 Credits Fall
Hist. 132 3 Credits Spring
History of the U.S. (3+0) s
Fall semester: the discovery of America to 1865: colonial period, revolution, formation of the constitution, western expansion, Civil War. Spring semester: from the reconstruction to the present.

Hist. 221 3 Credits — Alternate Fall
Hist. 222 3 Credits — Alternate Spring
English History (3 + 0) s
Fall semester: pre-Roman Britain to the end of the Puritan Revolution, emphasizing constitutional developments. Spring semester: from the restoration of 1660 to the present, emphasizing social and economic developments. (Next offered: 1984-85.)

Hist. 305 3 Credits — Alternate Fall
Europe: 1815 to 1870 (3 + 0) s
Political, economic, social, and intellectual history. Development of industrial revolution, romantic movement, and unification of Germany and Italy. (Prerequisite: Hist. 102 or permission of instructor. Next offered: 1983-84.)

Hist. 306 3 Credits — Alternate Spring
Europe: 1870 to 1914 (3 + 0) s
Continuation of Hist. 305. The rise of socialism, imperialism, and outbreak of World War I. (Prerequisite: Hist. 102 or permission of instructor. Next offered: 1983-84.)

Hist. 315 3 Credits — Alternate Fall
Europe 1914-1945 (3 + 0) s
World War I, the Russian Revolution, the Paris Peace Conference, Fascism, Nazism, the Stalin Revolution, the Great Depression, and World War II. (Prerequisites: Hist. 101, 102 or permission of instructor. Next offered: 1984-85.)

Hist. 316 3 Credits — Alternate Spring
Europe since 1945 (3 + 0)
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. (Prerequisites: History 101, 102 or permission of instructor. Next offered: 1984-85.)

Hist. 320 3 Credits — Every Third Spring
Modern Scandinavia (3 + 0) s
Scandinavia (Denmark, Finland, Iceland, Norway, and Sweden) from the 19th Century to the present: the development of Scandinavian parliamentary democracy and welfare systems, Scandinavian cooperation and neutrality, and Scandinavia's experience in the world wars. (Prerequisites: Hist. 101 or 102, or permission of the instructor. Next offered: 1983-84.)

Hist. 330 3 Credits — Alternate Fall
Modern China (3 + 0) s
From 1800 to the present, with emphasis on resistance to change, rebellion, reform, revolution, and the rise of the People's Republic. (Prerequisite: Hist. 121 or 122, or permission of instructor. Next offered: 1983-84.)

Hist. 331 3 Credits — Alternate Spring
Modern Japan (3 + 0) s
From 1600 to the present with an examination of change within tradition, rise to world power, and the position of Japan in the modern world. (Prerequisite: Hist. 121 or 122, or permission of instructor. Next offered: 1983-84.)

Hist. 341 3 Credits — Fall
History of Alaska (3 + 0) s
Alaska from prehistoric times to the present. Research methodology and use of archival resources relating to Alaska's past. (Prerequisite: Junior standing.)

Hist. 344 3 Credits — Every Third Spring
Modern Russia (3 + 0) s
Origin and development of modern Russia from the nineteenth century to the present: the development of the Soviet Union and Soviet government, stages of economic development, and Soviet foreign policy. (Prerequisites: Hist. 101, 102, or permission of the instructor. Next offered: 1984-85.)

Hist. 350 3 Credits — Alternate Spring
History of the People's Republic of China (3 + 0) s
A survey of the history of the People's Republic of China, with particular attention being given to political, economic, and social developments, from 1949 to the present. (Prerequisite: Hist. 121 or 122, or permission of instructor. Next offered: 1984-85.)

Hist. 354 3 Credits — Alternate Fall
Canadian History (3 + 0) s
The political, social, and economic development of Canada from the founding of New France to the present. (Next offered: 1984-85.)

Hist. 375 3 Credits — Alternate Fall
History of the Northern Pacific (3 + 0) s
The historical development and interrelationships and problems of the North Pacific (Siberia, Canada, Alaska) from the 18th century to the present. (Prerequisite: Junior standing or permission of instructor. Next offered: 1983-84.)

Hist. 380 3 Credits — Alternate Spring
Polar Exploration and its Literature (3 + 0) s
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. (Prerequisite: Junior standing or permission of instructor. Next offered: 1983-84.)

Hist. 401 3 Credits — Every Third Fall
Renaissance and Reformation Europe (3 + 0) s
Political, economic, and intellectual developments during the 15th and 16th centuries in Europe. (Prerequisites: Hist. 101 or 102 and junior standing, or permission of instructor. Next offered: 1983-84.)

Hist. 402 3 Credits — Every Third Fall
Seventeenth and Eighteenth Century Europe (3 + 0) s
Political, social, economic, and cultural developments during the 17th and 18th centuries in Europe. (Prerequisites: Hist. 101 or 102 and junior standing, or permission of instructor. Next offered: 1984-85.)

Hist. 403 3 Credits — Every Third Fall
The French Revolution and Napoleon (3 + 0) s
The political, social, and economic structure of the old regime, the revolution and the Napoleonic period, theories of revolution and interpretations of the revolutionary period of the late eighteenth century in Europe. (Prerequisites: Hist. 101 or 102 and junior standing or permission of the instructor. Next offered: 1985-86.)

Hist. 420 3 Credits — Every Third Spring
Approaches to Women's History (3 + 0) s
A theoretical and topical approach to the study of the history of women: the role of women in politics, the economy, the family, wartime, the influence of industrialization, and changing social structures on women. (Prerequisites: Hist. 102, 132, or permission of the instructor. Next offered: 1985-86.)

Hist. 430 3 Credits — Alternate Fall
American Colonial History (3 + 0) s
Early America European settlement: economic and social development of the American community establishment of political independence. (Prerequisites: Hist. 131, 132 or permission of instructor. Next offered: 1984-85.)

Hist. 435 3 Credits — Alternate Spring
Civil War and Reconstruction (3 + 0) s
Political, economic, social and diplomatic history of 1860-77, disruption and re-establishment of the Union. (Prerequisites: Hist. 131, 132 or permission of instructor. Next offered: 1984-85.)

Hist. 440 3 Credits — Alternate Fall
The Westward Movement (3 + 0) s
Westward migration: establishment of new states and political institutions. Influences of the West. (Prerequisites: Hist. 131, 132 or permission of instructor. Next offered: 1983-84.)

Hist. 450 3 Credits — Alternate Spring
Twentieth Century America (3 + 0) s
United States from the progressive movement to the present day, with permission emphasis on domestic developments. (Prerequisites: Hist. 131, 132 or of instructor. Next offered: 1983-84.)

Hist. 455 3 Credits — Alternate Fall
Military History (3 + 0) s
A history of warfare from classical times to the present by means of selected examples showing the interrelationships of warfare and society. Attention will also be given to the role of technology and to the development of tactics and strategy. The major emphasis will be land warfare, but sea and air power will also be considered. (Prerequisites: Junior standing or permission of instructor. Next offered: 1984-85.)

Hist. 475 3 Credits **Fall**
Hist. 476 3 Credits **Spring**
Historiography and Historical Method (3 + 0) s
A two-semester sequence given as a tutorial for each student. The first semester is devoted to a comparison of the historical treatment of a particular subject by different historians. Three short papers are required. In the second semester the student writes a lengthy research paper on a topic of his or her own choosing. (Those students needing only 3 credits of Hist. 457-476 will do the work outlined for the first semester. This can be done either the fall or the spring term.) (Prerequisite: Senior standing or permission of instructor.)

Hist. 484 Credits Arr. **Alternate Spring**
Seminar in Northern Studies s
An interdisciplinary seminar focusing on topics relating to the North with emphasis on the physical sciences, the peoples, and the socio-economic and political aspects of the area. Specialists in the various fields will assign readings and conduct discussions. (Prerequisite: At least junior standing or permission of instructor. Next offered: 1984-85.)

Humanities

Hum. 201 3 Credits **Fall**
Unity in the Arts (3 + 0) h
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. (Prerequisite: Open to students beyond the freshman level or by permission of the instructor.)

Hum. 202 3 Credits **Spring**
Unity in the Sciences (3 + 0) h
A detailed treatment of the scientific rudiments, methods, and principles as they emerged from within a larger cultural context. Explanation of the roles of mathematics and logic in the structure of the scientific enterprise. (Prerequisite: Open to students beyond the freshman level or by permission of the instructor.)

Hum. 329 3 Credits **Alternate Fall**
The Modern Media: Man Speaks to Man (3 + 0) h
Review of effects and trends in mass media relating man, media, and culture. (Prerequisites: 6 credits in communication, written or oral, or permission of instructor. Next offered: 1984-85.)

Hum. 332 3 Credits **Alternate Spring**
Varieties of Visual Expression: Art as Image and Idea (3 + 0) h
Discussion of the visual elements of art, principles of visual organization, the process of artistic perception and its evaluation by the viewer. (Prerequisites: 3 credits in the visual arts or permission of instructor. Next offered: 1984-85.)

Hum. 342 3 Credits **Alternate Spring**
Synthesis in Musical Expression (3 + 0) h
In-depth study of one of the classical composers to show culmination of generic efforts and inter-arts relationships. (Prerequisites: Mus. 123 or 124, or permission of instructor. Next offered: 1983-84.)

Hum. 411 3 Credits **Alternate Fall**
Dimensions of Literature (3 + 0) h
Systematic discussion of the medium of literary creation, of the organization of literary texts and the functions of literature. (Prerequisites: 6 credits in literature courses, or permission of the instructor. Next offered: 1983-84.)

Hum. 492 3 Credits **Alternate Spring**
Senior Seminar (3 + 0) h
Report by the instructor on the state of the humanities at the University of Alaska and on alternate approaches elsewhere. Oral presentation and defense by the student, of their humanities project paper. (Prerequisites: Open requirements, or by permission of the instructor. Next offered 1984-85.)

Japanese

(For UAF program in Japan, see p. 52)

Jpn. 101 3 Credits **Fall**
Jpn. 102 3 Credits **Spring**
Elementary Japanese I and II (3 + 0) h
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 500 words, exploration of the cultural dimension, implicitly through language, and explicitly through texts and audio-visual materials use of Foreign Language Learning Center.

Jpn. 201 3 Credits **Fall**
Jpn. 202 3 Credits **Spring**
Intermediate Japanese I and II (3 + 0) h
Continuation of Jpn. 102 with increasing emphasis on reading ability and cultural material. Standard Japanese texts for reading including selections from modern Japanese literature. (Prerequisite: Jpn. 102 or equivalent.)

Journalism — Broadcasting

J-B 101 3 Credits **Fall and Spring**
Introduction to Mass Communications (3 + 0) h
A survey of the history and principles of mass communications and the role of the information media in American society. An introduction to various professional aspects of mass communications, including both print and broadcast media.

J-B 102 3 Credits **Fall**
Broadcasting and Society (3 + 0) h
A study of the principles of broadcasting as it relates to the people of the United States, including history, government involvement, and the ever-changing technologies of radio, television, cable, and satellites.

J-B 203 3 Credits **Fall and Spring**
Basic Photography (2 + 3)
Fundamentals of photography, including use of an adjustable camera, film and exposure techniques, filters, flash techniques, and an introduction to color. Practical black and white darkroom procedures including film processing and printing. Use of design and composition as it applies to photography. Students who enroll must have use of an adjustable camera. (Course may not be used to meet major or minor requirements in journalism - broadcasting).

J-B 204 3 Credits **Fall and Spring**
Basic Photojournalism (2 + 3)
Theory and practice of photographic communications including use of an adjustable camera, basic film developing and printmaking, flash and design elements applied to visual communications. Students will practice making candid-type photos of people involved in news events and will learn how to objectively document visual news. Course emphasizes preparation of pictures for publication. Students who enroll must have the use of an adjustable camera.

J-B 215 3 Credits **Fall**
Audio Production (2 + 3)
Basics of sound production for radio, television, film, and stage amplifications. Emphasis on writing, recording, control room techniques, and editing.

J-B 301 4 Credits **Fall and Spring**
Basic Newsgathering and Processing (2 + 4) h
Fundamentals of news reporting, writing, and editing, including news evaluation and news story structure, editing copy, writing headlines and captions, and cropping and sizing of pictures. (Prerequisites: Engl. 111 and Engl. 211, 213, or 311, junior standing, or permission of the instructor.)

J-B 303 3 Credits **Fall and Spring**
Intermediate Photography (2 + 3)
Continuation of J-B 204 with emphasis on the picture story and freelance photography. (Prerequisite: J-B 204 or permission of instructor.)

J-B 311 3 Credits Fall and Spring
Magazine Article Writing (2 + 1)
Study and practice in writing articles for publication in national media. Students repeating the course limited to a total of six credits. (Prerequisites: J-B 301 or permission of instructor.)

J-B 316 3 Credits Spring
Television Productions (2 + 4)
Basic aspects of television production, floor directing, audio, camera, film chain, staging, lighting, and switching. (Prerequisites: J-B 215 or permission of the instructor.)

J-B 317 3 Credits Fall
Broadcast Journalism (3 + 0)
Preparation of announcements, commercials, interviews, music continuity, special events programs, documentaries, commentaries, news, and other basic broadcast continuity. Administrative aspects of production are included. (Prerequisite: J-B 301, or permission of instructor.)

J-B 320 3 Credits Spring
Journalism in Perspective (3 + 0) h
Examination of present problems and trends in mass communication with emphasis on their historical development, including survey of world press coverage and problems. (Prerequisite: Junior standing.)

J-B 323 3 Credits Fall
Magazine Editing (3 + 0)
Principles and problems of magazine management and editing: content selection, design, editorial responsibility, and economics of publishing. (Prerequisite: Junior standing.)

J-B 324 3 Credits Spring
Typography and Publication Design (2 + 2)
Theory and practice of typography, layout, and design, coupled with a study of the methods of printing production. (Prerequisite: Permission of instructor.)

J-B 326 3 Credits Spring
Principles of Advertising (3 + 0)
Theory and practice of advertising: including strategy, media use, creation and production of advertisements and measurement of advertising effectiveness. (Prerequisite: Junior standing.)

J-B 372 3 Credits Alternate Fall
Methods of Instructional Broadcasting (3 + 0)
Studio practices and procedures for the production of instructional programs. Underlying educational philosophy and actual in-studio practice. (Prerequisite: J-B 215 or permission of the instructor. Next offered: 1984-85.)

J-B 400 3 Credits Fall and Spring
Advanced Media Practicum (1 + 6)
Practical training in print or electronic communication. Participation at an approved publication or broadcast station required. (Prerequisite: Permission of instructor.)

J-B 402 3 Credits Fall and Spring
Advanced Photography (2 + 3)
Special techniques in a variety of areas of publications photography. Each student will concentrate on one or more of the following areas: special lighting, special effects, freelance photography, studio photography, sports, color photography, etc. (Prerequisite: J-B 303.)

J-B 407 3 Credits Spring
Programming and Production (3 + 0)
The study of programming practices at radio and TV stations and networks and cable companies and the relationship of these practices with sales, audience, and government. (Prerequisites: J-B 215 and J-B 316 or permission of instructor.)

J-B 411 3 Credits Fall and Spring
Advanced Magazine Article Writing (3 + 0)
Study and practice in writing advanced articles for publication in national and international media. May be repeated for credit with permission of instructor. (Prerequisite: J-B 311, or permission of instructor.)

J-B 413 3 Credits Fall
Mass Media Law and Regulation (3 + 0)
Study of the common law, statutory law and administrative law that affects the mass media, including libel, slander, censorship, copyright, access to the media, constitutional problems, invasion of privacy, shield laws, and broadcast regulations. (Prerequisite: J-B 301, or permission of the instructor.)

J-B 415 3 Credits Spring
Videography (2 + 2)
The study and practice of ENG (Electronic News Gathering) and EFP (Electronic Field Production) using remote videotape equipment and videotape editing. (Prerequisites: J-B 204 and J-B 215.)

J-B 416 3 Credits Alternate Fall
Advanced Broadcast Production (1 + 6)
An advanced course in broadcast production where the student can choose either TV or radio production projects. Each student will be responsible for producing, directing, and writing productions in either or both media. The productions must be of a quality to air on either KUAC-TV or KUAC-FM. Students repeating the course limited to a total of six credits. (Prerequisites: J-B 215, 316, or permission of instructor. Next offered: 1983-84.)

J-B 420 3 Credits Spring
Book Writing (3 + 0)
Research and writing of biography, autobiography, and other books. May be repeated for credit with permission of instructor. (Prerequisites: J-B 311, 411, or permission of instructor.)

J-B 424 3 Credits Spring
Magazine Production (2 + 3)
Practical experience in all phases of magazine publication, including writing, photography, editing, design, layout, advertising, and circulation. Students edit and produce the magazine. *Alaska Today*, under the supervision of journalism faculty members. (Admission by arrangement; editorial positions open to students who have completed J-B 323.)

J-B 433 3 Credits Fall
Public Relations (3 + 0) h
Insights into the techniques, causes and consequences of influencing public opinion; propaganda, mass communication and public relations as instruments of economic, political, and social change. (Prerequisites: J-B 301, or permission of instructor.)

J-B 444 4 Credits Fall and Spring
Advanced Newsgathering and Processing (2 + 4)
Advanced reporting, writing and editing of news with emphasis on public affairs at all levels, local to national, including government, police and the courts, labor and political organizations, and editorial and critical writing. Development of sophisticated skills in copy editing, headline writing, news judgment and positioning, page layout and use of pictures. (Prerequisites: J-B 301, junior standing, or permission of the instructor.)

Justice

Just. 110 3 Credits Fall and Spring
Introduction to Justice (3 + 0) s
Survey of various philosophies, functions, and methods of social control with emphasis on role of law and those involved in its administration — police, courts, and corrections organizations. Includes study of history, organization, processes, and problems related to law and justice agencies in a heterogeneous, democratic society.

Just. 221 3 Credits Fall
Justice Organization and Management (3 + 0)
Survey of organization and management of police, court, correctional and legal institutions, justice agency roles, goals, structured arrangements and administrative practices, applicability of theory and research, techniques and instruments of organization and management, and principles of change.

Just. 250 3 Credits Fall
Development of Law (3 + 0) s
Study of underlying philosophy, development and structure of law with emphasis on law system of United States and Alaska. Includes "civil" precedents of such constitutional provisions as "due process" and "equal protection" in the United States Bill of Rights, criticisms of law, review of native law ways, and procedures for changing law.

Just. 251 3 Credits Spring
Criminology (3 + 0) s
The study of the major areas of deviant behavior and its relationship to society, law, and law enforcement, including the theories of crime causation. (Prerequisites: Soc. 101.)

Just. 258 3 Credits Fall
Juveniles and the Law (3 + 0) s
The role of agencies under the law in regard to the juvenile, with special attention to the role of law enforcement. Both theoretical and practical aspects will be studied.

Just. 259 3 Credits Alternate Fall
(Same as P.S. 212)
Introduction to Public Administration (3 + 0) s
Theory, principles, and practices of public administration, especially as applied to municipal agencies. Study of planning and organization, decision making, and the formation and administration of public policy. (Next offered: 1983-84.)

Just. 310 3 Credits Spring
Principles of Corrections (3 + 0) s
An introduction to the basic concepts of probation and parole: the use of authority in corrective services, institutional treatment methods, and a study of popular and professional concepts in corrections. (Prerequisite: Just. 251 or permission of instructor.)

Just. 320 Variable Credit Spring
Practicum
A research oriented course directed at the resolution of a specific problem within an agency of the criminal justice system. (May be repeated to a maximum of 6 credits.)

Just. 330 3 Credits Spring
Justice and Society (3 + 0) s
The role and operation of justice institutions from the perspective of their utility to groups and societal interests. Justice institutions under stress such as during the Third Reich, McCarthy Era, Watergate, Vietnam War, Environmental Revolution, and War on Crime. Relationships between community and justice organizations.

Just. 352 3 Credits Fall
Criminal Law (3 + 0)
A study of the elements, purposes, and functions of the substantive criminal law with emphasis upon historical and philosophical concepts. (Prerequisite: Just. 110.)

Just. 354 3 Credits Spring
Procedural Law (3 + 0)
(Criminal Procedure)
Emphasis upon the legal limitations of the police and the right of the people to be secure from the government under the protections of the Constitution and the Rules of Evidence. (Prerequisite: Just. 110.)

Just. 451 3 Credits Fall
Research, Planning, and Policy Analysis (3 + 0)
Application of social science research methods and analytical tools to justice planning and policy problems, political and rational planning with such tools as modeling, sampling theory, queuing theory, Delphi, PERT/CPM, scenarios, and paradigms.

Just. 460 3 Credits Alternate Fall
Justice Processes (3 + 0) s
Study of processes and issues in police, court, and correctional agency operations. Definition of goals, organizational design and development, organizing and managing financial, personnel and management processes, budget, union, communication, record, community-based programs, inspection, and program assessment. Contemporary administrative process problems. (Prerequisite: Just. 110, Just. 251, or senior standing. Next offered: 1983-84.)

Library Science

L.S. 101 1 Credit Fall and Spring
Library Skills (0 + 0)
An independent study course in college library skills and some resources and facilities common to academic libraries in general and to the Rasmuson Library in particular. No class sessions are held; the student works at his individual rate and on his own time schedule.

L.S. 201 2 Credits Spring
General Bibliography (2 + 0)
Introduces elements and principles of information organization, finding and reporting in the humanities, sciences, and social sciences, including surveys of major reference sources in these disciplines. Requires preparation of an annotated bibliography, and should be taken in conjunction with a course requiring an upperdivision term paper.

Linguistics

Ling. 101 3 Credits Alternate Fall
Nature of Language (3 + 0) h
A beginning course in the study of language: systematic analysis of human language and description of its grammatical structure, distribution, and diversity. (Next offered: 1984-85.)

Ling. 216 3 Credits Alternate Fall
Languages of the World (3 + 0) h
A comprehensive survey of the world's languages — both past and present. Topics to be covered include genetic relationships among languages, linguistic change, language universals, language classification, and language families, as well as the interaction of culture and language. (Next offered: 1983-84.)

Ling. 318 3 Credits Alternate Spring
Phonetics and Phonemics (3 + 0)
An introduction to scientific study of human speech sounds, the mechanism of their production, and the sound systems of languages. (Prerequisites: Upper division standing or permission of instructor. Next offered: 1983-84.)

Ling. 432 3 Credits Alternate Spring
Intro. to Syntactic Theory (3 + 0) h
An introduction to the study of the principles and processes of sentence construction in language. (Prerequisites: Ling. 101 or its equivalent. Next offered: 1984-85.)

Marine Biology

MBI 610 3 Credits Alternate Spring
Marine Biology (3 + 0)
Introduction: definition of terms, pelagic and benthic systems, and major plant and animal groups of the sea. Physical, chemical, and geological factors affecting marine organisms. The role of bacteria in the sea. Diatoms of the water column and the benthos. Zoo-plankton — biology of selected species, adaptations. Nekton — fishes and marine mammals: basic biology and adaptations of selected species. The benthos: shore biota — general biology, special adaptation, trophic roles; estuaries — adaptations of biota, trophic roles; microfauna and meiofauna — general biology and importance; shallow and deep sea benthic animals — adaptation and general biology; marine algae, kelp beds, seagrasses: biology of selected species, adaptations, interactions; coral reefs — species composition, basic biology of selected species, species interactions. Marine birds — feeding and breeding biology, adaptations. Pelagic and benthic system: major physical — chemical — geological — biological interactions; feeding and metabolism, recruitment and competition, special adaptations, community dynamics. (Prerequisites: Degree in biology or permission of instructor. Highly recommended: Courses in invertebrate zoology, ichthyology, ornithology, vertebrate zoology. Next offered: 1983-84.)

Mathematics

No student will be permitted to enroll in a course having prerequisites if a grade lower than C is received in the prerequisite course.

Math. 103 3 Credits Fall
Concepts of Mathematics I (3 + 0)
This course is designed to acquaint students, having a limited mathematical background, with mathematical thought and history. It emphasizes mathematical reasoning rather than formal manipulation. Topics may be chosen from number theory, topology, set theory, geometry, algebra and analysis.

Math. 104 3 Credits Spring
Concepts of Mathematics II (3 + 0)
A study of mathematical thought and history, designed for students with a limited mathematical background emphasizing mathematical reasoning rather than formal manipulation. Topics may be chosen from number theory, topology, set theory, geometry, algebra, and analysis.

Math. 107 3 Credits Fall and Spring
Elementary Functions (3 + 0)
A study of algebraic, logarithmic, and exponential functions, together with selected topics from algebra. (Prerequisite: Two years of high school algebra and Math. 107 placement or higher.)

Math. 108 3 Credits Fall and Spring
Trigonometry (3 + 0)
A study of trigonometric functions with some coordinate geometry. (Prerequisites: Math. 107 or concurrent registration in Math. 107.)

Math. 109 3 Credits As Demand Warrants
Analytic Geometry (3 + 0)
Rectangular coordinate system, the straight line, conic sections, transcendental curves, polar coordinates, parametric equations, and solid analytic geometry.

Math. 110 3 Credits Fall and Spring
Mathematics of Finance (3 + 0)
Simple and compound interest, discount, annuities, amortization, sinking funds, depreciation, and capitalization. (Prerequisite: One year high school algebra or its equivalent.)

Math. 161 3 Credits Fall and Spring
Algebra for Business and Economics (3 + 0)
Functions of one and several variables studied with special attention given to linear, polynomial, rational, logarithmic, and exponential relationships. Geometric progressions as applied to compound interest and present value. Linear systems of equations and inequalities. All applications are from the fields of economics and business. (Prerequisites: Two years of high school algebra and Math. 161 placement or higher.)

Math. 162 4 Credits Fall and Spring
Calculus for Business and Economics (4 + 0)
Ordinary and partial derivatives. Maxima and minima problems, including the use of Lagrange multipliers. A brief introduction to the integral of a function of one variable. Applications include marginal cost, productivity, revenue, point elasticity of demand, competitive/complementary products, consumer's surplus, etc. (Prerequisites: Math. 161.)

Math. 171 3 Credits Fall
Mathematics for Life Sciences (3 + 0)
Algebraic, trigonometric, exponential, and logarithmic functions with applications to problems arising in the life sciences. (Prerequisite: Two years of high school algebra and Math. 171 placement or higher.)

Math. 200 4 Credits Fall and Spring
Math. 201 4 Credits Fall and Spring
Math. 202 4 Credits Fall and Spring
Calculus (4 + 0)
Techniques and application of differential and integral calculus, vector analysis, partial derivatives, multiple integrals, and infinite series. (Prerequisites: Math. 107-108.)

Math. 203 4 Credits Fall
Finite Math. (4 + 0)
A finite mathematics course designed for non-math majors. Topics covered include; symbolic logic, partitions, binomial and multi-nomial theorems, probability, finite stochastic processes, linear algebra, Markov chains, linear programming, and game theory. (Prerequisite: Math. 162, or 171, or 200.)

Math. 205 3 Credits Fall
Mathematics for Elementary School Teachers I (3 + 1)
Elementary set theory, numeration systems, and algorithms of arithmetic, divisors, multiples, integers, introduction to rational numbers. (Prerequisites: one year high school algebra or its equivalent.)

Math. 206 3 Credits Spring
Mathematics for Elementary School Teachers II (3 + 1)
A continuation of Math. 205. Real number systems and sub-systems, logic, informal geometry, metric system, probability, and statistics. (Prerequisite: Math. 205.)

Math. 210 1 Credit Fall and Spring
Calculus and the Computer (1 + 0)
Computer implementation of numerical methods of elementary calculus. Functions, limits, roots, differentiation, maxmin, integration, and differential equations. Emphasis is on problem analysis and interpretation of results. (Corequisite: Math. 200.)

Math. 211 1 Credit Spring and Fall
Linear Algebra and the Computer (1 + 0)
Computer implementation of numerical methods of elementary linear algebra. Solution of systems of linear equations, matrix inversion, determinants, characteristic roots, linear optimization, and iterative methods. (Prerequisite: Math. 210.)

Math. 272 3 Credits Spring
Calculus for Life Sciences (3 + 0)
Differentiation and integration with applications to the life sciences. (Prerequisites: Math. 171 or Math. 107 and Math. 108.)

Math. 273 3 Credits Fall
Calculus for Life Sciences (3 + 0)
Applications of integration. Differential and difference equations as models of real life processes. Partial differentiation. (Prerequisite: Math. 272.)

Math. 302 3 Credits Fall and Spring
Differential Equations (3 + 0)
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. (Prerequisite: Math. 202.)

Math. 305 3 Credits As Demand Warrants
Geometry (3 + 0)
Topics selected from such fields as Euclidean and non-Euclidean plane geometry, affine geometry, projective geometry, and topology. (Prerequisite: Math. 202 or permission of instructor.)

Math. 307 3 Credits Fall
Discrete Mathematical Structures (3 + 0)
A study of finite algebraic systems and their applications. Sets, graphs, finite state machines, semigroups, and groups. Boolean algebra. Additional topics may be chosen from combinatorics, language theory, coding, computability, lattices, rings, and fields. (Prerequisites: Math. 201 or 203, or permission of instructor.)

Math. 308 3 Credits Spring
Abstract Algebra (3 + 0)
Theory of groups, rings, and fields. (Prerequisites: Math. 307 or 314 or permission of instructor.)

Math. 310 3 Credits As Demand Warrants
Numerical Analysis (3 + 0)
Direct and iterative solutions of systems of equations, interpolation, numerical differentiation and integration, numerical solutions of ordinary differential equations, and error analysis. (Prerequisite: Math. 302 or permission of instructor. A knowledge of FORTRAN or BASIC is desirable.)

Math. 314 3 Credits Spring
Linear Algebra (3 + 0)
Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations, and characteristic values. Inner product spaces. (Prerequisite: Math. 201.)

Math. 371 3 Credits As Demand Warrants
Probability (3 + 0)
Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions, and characteristic functions. (Prerequisite: Math. 202.)

Math. 401 3 Credits Fall
Math. 402 3 Credits Spring
Advanced Calculus (3 + 0)
A rigorous treatment of one and several dimensional calculus. Includes the study of mappings from n-space and their continuity, differentiability and integrability properties as well as sequences and series. (Prerequisites: Math. 314 or 421 for Math. 401; Math. 401 for Math. 402.)

Math. 404 3 Credits As Demand Warrants
Topology (3 + 0)
Introduction to topology, set theory, open sets, compactness, connectedness, product spaces, metric spaces, and continua. (Prerequisite: Math. 202.)

Math. 408 3 Credits As Demand Warrants
Mathematical Statistics (3 + 0)
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. 371 and A.S. 301.)

Math. 421 4 Credits Fall
Applied Analysis I (4 + 0)
Vector calculus, including gradient, divergence, and curl in orthogonal curvilinear coordinates, ordinary and partial differential equations and boundary value problems, and Fourier series and integrals. (Prerequisites: Math. 302 or concurrent enrollment in Math. 302.)

Math. 422 4 Credits Spring
Applied Analysis II (4 + 0)
Topics in multi-variate calculus, including boundary value problems and partial differential equations of mathematical physics complex functions, including series, integrals, residues, conformal mapping, and potential theory. (Prerequisite: Math. 421.)

Math. 423 3 Credits As Demand Warrants
Applied Mathematics (3 + 0)
Topics to be determined at the time of registration to fit the needs of the students. (Prerequisite: Senior standing or permission of instructor.)

Math. 460 3 Credits Spring
Mathematical Modeling (3 + 0)
Analysis, construction, and interpretation of mathematical models. Applications to the physical, biological, and social sciences. Topics will be selected from combinatorics, probability, statistics, perturbation, numerical analysis, and differential equations. Students will develop a modeling project. (Prerequisites: A.S. 301, Math. 201, Math. 211.)

Math. 603 3 Credits Alternate Fall
Real and Complex Analysis I (3 + 0)
General theory of measure and integration for real and complex-valued functions, convergence theorems, product measures and Fubini's Theorem, and Radon Nikodym Theorem. Metric and Banach spaces and the Riesz Representation Theorem for the real line. (Prerequisites: Math 401-402 or permission of instructor. Next offered: 1983-84.)

Math. 604 3 Credits Alternate Spring
Real and Complex Analysis II (3 + 0)
Analytic functions, power series, Cauchy integral theory. Basic topology of the complex plane and structure of analytic functions. Applications to illustrate the interplay between real and complex analysis, e.g., the Poisson integral of complex Borel measures on the circle, analytic measures and the F. and M. Riesz Theorem. Applications and special topics to be selected on the basis of instructors' interests and students' interests and may vary each time course is offered. (Prerequisite: Math. 603. Next offered: 1983-84.)

Math. 608 3 Credits As Demand Warrants
Partial Differential Equations (3 + 0)
First and second order differential equations, boundary value problems, and existence and uniqueness theorems. Green's functions, and principal equations of mathematical physics. (Prerequisite: Math. 422 or permission of instructor.)

Math. 611 3 Credits Alternate Fall
Math. 612 3 Credits Alternate Spring
Mathematical Physics (3 + 0)
(Same as Phys. 611, 612)
Advanced consideration of such topics as transform methods, asymptotic methods, Green's function, Sturm-Liouville theory, conformal mapping, and calculus of variations with applications to problems arising in physics. (Prerequisite: Math. 422 or consent of instructor. Next offered: 1983-84.)

Math. 621 3 Credits Alternate Fall
Advanced Applied Analysis I (3 + 0)
Introduction to complex analysis and its applications. Series expansions, contour integration, generating functions, conformal mapping, and Fourier and related transform methods. Special functions. Asymptotic methods. (Prerequisites: Math 421-422 or Math. 401-402 or permission of instructor. Next offered: 1984-85.)

Math. 622 3 Credits Alternate Spring
Advanced Applied Analysis II (3 + 0)
Topics in applied analysis to be determined at the time of registration to fit the needs of the students. (Prerequisites: Math. 421-422 or Math. 401-402 or permission of instructor. Next offered: 1984-85.)

Math. 630 3 Credits Alternate Fall
Advanced Linear Algebra and Its Applications (3 + 0)
Selected topics from matrix theory and matrix inequalities, canonical forms, finite dimensional vector spaces, eigenvalue problems, non-negative matrices and quadratic forms. (Prerequisites: Math. 314 and graduate standing or permission of instructor. Next offered: 1983-84.)

Math. 631 3 Credits Alternate Spring
Theory of Modern Algebra (3 + 0)
The Sylow Theorems, normal series and other topics from group theory. The theory of rings and fields including polynomial rings, unique factorization domains and Galois Theory. (Prerequisites: Math. 308 and graduate standing or permission of instructor. Next offered: 1983-84.)

Mechanical Engineering

M.E. 150 1 Credit Fall
Aerodynamics for Pilots (1 + 1)
Nature of the atmosphere, elementary airfoil theory, drag and power requirements, performance computations, and introduction to stability. For those who desire a basic understanding of flight with minimum mathematical background. (Prerequisite: High school algebra and general science.)

M.E. 302 4 Credits Spring
Mechanical Design (3 + 3)
Kinematics and dynamics of mechanisms. Analysis and design of displacements, velocities, accelerations, and forces in linkages, cams, and gear systems by analytical, experimental, and computer methods. (Prerequisites: E.S. 208 and E.S. 201.)

M.E. 313 3 Credits Spring
Mechanical Engineering Thermodynamics (3 + 0)
Continuation of E.S. 346 including power and refrigeration cycles (Rankine, Brayton, Otto, and Diesel), compressible flow (isentropic, shock waves, and flow in ducts with friction), combustion and gas vapor mixtures. (Prerequisites: E.S. 341 and E.S. 346).

M.E. 321 3 Credits Fall
Industrial Processes (2 + 3)
Introductory course covering a wide spectrum of 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.

M.E. 403 4 Credits Fall
Mechanical Design II (3 + 2)
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: M.E. 302 and E.S. 331.)

M.E. 404 3 Credits Spring
Stress Analysis (3 + 0)
Analysis of the strength, stability and rigidity of machine components by analytical and computer methods. (Prerequisites: E.S. 331, Math. 302, E.S. 201.)

M.E. 408 3 Credits Spring
Dynamics of Systems (2 + 2)
Response of mechanical, fluid, and thermal systems to internal, external, and control forces. Free and forced vibration, random vibration, self-excited vibration, control systems, and stability criteria. Non-linear systems. (Prerequisites: E.S. 201 and E.S. 301.)

M.E. 409 3 Credits Spring
Controls (2 + 2)
Analysis and design of mechanical, electrical, and human control systems. (E.S. 201, E.S. 301.)

M.E. 414 3 Credits Fall
Thermal Systems Design (3 + 0)
Introduction to the design of power and space conditioning systems, energy conversion, heating, ventilating, air conditioning, total energy systems, and introduction to thermal system simulation and optimization. (Prerequisite: E.S. 346.)

M.E. 415 2 Credits Fall
Thermal Systems Laboratory (1 + 3)
Testing and evaluation of components and energy systems such as pumps, fans, engines, heat exchangers, refrigerators, and heating/power plants. (Prerequisites: E.S. 341 and M.E. 313.)

M.E. 416 3 Credits Fall
Design of Mechanical Equipment for the Petroleum Industry (3 + 0)
Design, selection, and operation of mechanical equipment used in the production and processing of crude oil and gas. Instrumentation and control systems used with the mechanical equipment. (Prerequisites: E.S. 341 and E.S. 346.)

M.E. 441 3 Credits Spring
Heat and Mass Transfer (3 + 0)
Fundamental concepts of heat and mass transfer including steady state and transient conduction, laminar and turbulent free and forced convection, evaporation, condensation, ice and frost formation, black body and real surface radiation, and heat exchangers. (Prerequisite: E.S. 346.)

M.E. 450 3 Credits As Demand Warrants
Theory of Flight (3 + 0)
Airfoil theory in subsonic and supersonic flow. Propulsion systems, stability and performance of aircraft. (Prerequisite: Consent of instructor.)

M.E. 487 3 Credits Spring
Design Project
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. (Prerequisite: Senior standing.)

M.E. 616 3 Credits As Demand Warrants
Space Conditioning (2 + 3)
Principles of heating, ventilating, air conditioning, and refrigeration with practical applications. (Prerequisite: M.E. 441.)

M.E. 617 4 Credits As Demand Warrants
Power Analysis (3 + 3)
Fundamentals of power generation including piping, pumps, fuels and combustion, steam generators, condensers, deareators, evaporators, feedwater treatment and heating, regeneration, fuel handling, heat balance, equipment, economics, and plant layout. (Prerequisite: M.E. 313.)

M.E. 685 3 Credits Alternate Spring
Arctic Heat and Mass Transfer (3 + 0)
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. (Prerequisite: C.E. 603. Next offered: 1983-84.)

M.E. 687 3 Credits Alternate Spring
Arctic Materials Engineering (3 + 0)
A study of engineering material performance at low temperatures. (Prerequisites: Senior or graduate standing in science or engineering and C.E. 603 or equivalent. Next offered 1983-84.)

Medical Science

Med.S. 201 3 Credits Fall
Factors in Health and Disease (3 + 0)
This course is offered to any interested student as an introduction to the phenomenon of human disease. Cases will be presented to demonstrate the manner by which the normal healthy state may be disrupted by either external or internal influences. The natural histories of major types of disease will be reviewed including bacterial, viral and parasitic infection, cancer, degenerative processes, mental illness, congenital disorders, and environmental health factors. There will be a review of the social mechanisms which have been developed to maintain health and to care for the ill.

Med.S. 510 1 Credit Fall
Medical Preceptorship (0 + 4)
Students will spend one morning each week with a preceptor (practicing physician). During the preceptorship, each student will become acquainted with the clinical application of basic science data, observe response of patients to disease and health care delivery system, experience some of the practical problems in medical practice and develop a rapport with practicing physicians and some of their patients. The objective of the preceptorship is to allow each student to gain insight into the role of the practicing physician, to further kindle his/her enthusiasm for medical practice and to provide him/her with information which will be helpful in making decisions relative to his/her future career in medicine. (Prerequisite: Medical student status or special graduate student with permission of course chairman.)

Med.S. 513 2 Credits Fall
Clinical Medicine (2 + 0)
This course is designed to teach general interviewing skills, point out common sources of error in verbal communication and inquiry as well as sources of bias peculiar to medical interviewing, and enable the student to take and record selected portions of the medical history. Weekly practice sessions are held at Fairbanks Memorial Hospital. (Prerequisite: Medical student status or special graduate student with permission of course chairman.)

Med.S. 515 2 Credits Fall
Ages of Man (2 + 0)
In presenting the progression of the individual from conception to senescence and death, this course provides a conceptual framework which relates many areas of medical study. Included are selected aspects of normal somatic and psychologic development, as well as review of the stress peculiar to each age group, and the clinical abnormalities most prevalent at each stage of development. Field trips to specific institutions and interviews with patients and families provide clinical correlations with classroom concepts. (Prerequisite: Medical student status or Biol. 210; non-medical student status may be admitted with permission by the instructor.)

Med.S. 519 1 Credit As Demand Warrants
Human Embryology (1 + 0)
Fertilization through parturition, with emphasis on development of systems pertaining to the understanding of gross anatomy and congenital malformations. Companion course to Med.S. 611. (Prerequisite: Medical school freshman status or concurrent enrollment in Med.S. 611 and consent of instructor.)

Med.S. 520 4 Credits Spring
Pathobiology (3 + 2)
Fundamental principles of pathobiology with special emphasis on pertinent clinical problems. Biochemistry, structural alterations, and pathophysiologic mechanisms will be interrelated with specific coverage of cell injury, inflammation, tissue repair, neoplasia, and immunopathology. Laboratory sessions will include microscopic and gross examination of normal and abnormal specimens as well as attendance at selected autopsy demonstrations. (Prerequisites: Medical student status or graduate student who has completed Med.S. 614, 616 or equivalent and with permission of course chairman.)

Med.S. 523 2 Credits Spring
Behavioral Systems (2 + 0)
Introductory course designed to familiarize freshman medical students with concepts and data derived from behavioral sciences which are relevant to the work of a general physician. Organic, intrapsychic, interpersonal, social, and cultural determinants of human behavior are discussed within the context of the life cycle. Through lectures, audio visual presentations, assigned readings, and clinical illustrations utilizing material from various areas of the behavioral sciences an attempt will be made to enhance the students' appreciation of human behavior as a multidimensional testing. (Prerequisite: Medical student status or graduate student with permission of course chairman.)

Med.S. 533 2 Credits Spring
Rural Health (1 + 3)
This course is designed to permit future medical practitioners to explore their potential for rural practice. The Alaskan situation is used to exemplify factors which affect health and the delivery of health services in rural areas. The structures of health care delivery systems in Alaska are described and the advantages and disadvantages or rural practice are explored. A field trip to rural areas of Alaska is the laboratory credit for the course. (Prerequisites: Medical student status or permission of course chairman.)

Med.S. 535 2 Credits Spring
Clinical Medicine (2 + 0)
Continuation of Med.S. 413, Clinical Medicine offered fall semester. Upon completion of this course, student should be able to conduct the complete medical historical interview, perform the general physical examination, and record this data in the form of the "problem oriented medical record." Course will use both classroom work and practical exercises at Fairbanks Memorial Hospital. Patients will be examined by individual students in this course. (Prerequisite: Med.S. 513.)

Med.S. 553 1 Credit Spring
Nutrition in Medicine (1 + 0)
Nutritional aspects of medicine are presented through consideration of basic foodstuffs, their sources and preparation, deficiency states and malnutrition, diets for prevention and control of diseases, fad diets, and food taboos. The physiology, physiologic chemistry and clinical aspects of nutrition will be stressed. (Prerequisite: Medical student status or Biol. 210; non-medical student status may be admitted with permission by the instructor.)

Med.S. 611 3 Credits Fall
Anatomy of the Trunk (2 + 2)
Gross anatomy and embryology of the thorax, abdomen, and pelvis, with special reference to commonly encountered anomalies, pathology, physical diagnosis, clinical correlation, and approach. Laboratories will involve dissection of human material, supplemented by prosection material and oral presentations by both faculty and students. (Prerequisite: Medical school freshman status or graduate student with consent of course chairman. Concurrent enrollment in Med.S. 612 and Med.S. 616 recommended because a knowledge of organ structure and function will be assumed.)

Med.S. 612 4 Credits Fall
Physiological Mechanisms (4 + 0)
Presentation of a number of physiologic mechanisms applicable to various organ systems: Excitability of membranes, muscle contraction, epithelial transport, the action of neurotransmitters, hormones, and drugs on target organs. The principles of homeostasis and control of these basic mechanisms are illustrated in the discussions of reflexes, temperature regulation, and gastrointestinal physiology. Pathophysiology of these mechanisms is presented to illustrate relevance to clinical medicine. This course presents concepts and examines mechanisms prerequisite to the detailed study of the physiology of various organ systems conducted in subsequent courses in the WAMI curriculum. It is not useful to students who would not be taking any of the subsequent courses (Med.S. 632 and 634). (Prerequisites: Medical student status or some undergraduate pre-medical courses plus permission of the instructor.)

Med.S. 614 5 Credits Fall
Medical Biochemistry (5 + 0)
The first part of this course is an in-depth consideration of that portion of biochemistry dealing with molecular structure, special chemistry and physiological function of various classes of biomolecules such as carbohydrates, proteins, lipids, nucleic acids, and vitamins. Enzymatic and hormonal control of metabolic pathways, coupling of oxidative metabolism to production of ATP and metabolism of specific tissues such as nerve and muscle is discussed. Certain diseases of man are included as examples of abnormal metabolic function.

In the final weeks of the course, fundamentals of nitrogen metabolism are presented and related to other metabolic pathways upon a framework of basic information on the four major classes of biomolecules: proteins, lipids, carbohydrates, and nucleic acids. Concepts describing replication and transcription and translation of genetic information are presented. The relation of these current ideas to cellular biology and the enzymatic control of metabolic pathways are emphasized throughout. (Prerequisites: Medical school freshman status; one year of organic chemistry or equivalent; permission of instructor.)

Med.S. 616 3 Credits Fall
Histology (2 + 3)
Light and electron microscopic structure and basic functional relationships of cells, tissues, and organs. Pathological alteration will be employed to emphasize the structural and functional properties of normal components. The course will fulfill the need for a descriptive histology course. Elementary pathologic processes will be referred to for emphasis of normal structures and to acquaint students with the fundamental aspects of cellular response to injury. (Prerequisite: Medical school freshman status or consent of instructor. Basic knowledge of biological chemistry is highly recommended. Consent of instructor required because the student will be expected to know or concurrently acquire more knowledge of organic molecules and their arrangement in cells and tissues.)

Med.S. 621 5 Credits Spring
Infectious Disease (5 + 0)
The biology of medically important organisms will be presented. Properties of viral, bacterial, fungal, Rickettsial, and protozoan and helminth agents of disease will be related to the characteristics, diagnosis, treatment and sequelae of the morbidity. Immunological principles will be elucidated. Prevention of infection and action of antimicrobial agents will be considered. (Prerequisite: Medical student status or graduate student with consent of course chairman, broad knowledge of biology and organic chemistry will be assumed.)

Med.S. 630 1 Credit Spring
Epidemiology (1 + 0)
The study of disease propagation through human populations is presented by first describing the language of classical epidemiology and then coupling that language to modern mathematical modeling. Emphasis is placed on the multi-factorial courses of disease and on the problem of critically evaluating not only these causes themselves, but scientific reports of same. (Prerequisite: Medical student status or consent of course chairman.)

Med.S. 631 3 Credits Fall
Anatomy of Head and Neck (2 + 3)
Anatomy and pathology of structures in the head and neck, excluding brain. Laboratories will include human dissection, study of sterioscopic atlases of anatomy and study of pathology slides. Clinical cases, problem solving and physical examinations will be presented to illustrate anatomic principles. (Prerequisite: Medical student status or graduate student permission of instructor. This course will be integrated with Med.S. 632, Neural Sciences, and is designed to complement it, but the latter is not a prerequisite. Knowledge of general anatomic terms is required.)

Med.S. 632 5 Credits May and June
Neural Sciences (4 + 2)
A multidisciplinary approach to the control of behavior by the central nervous system. Initial discussions present the embryologic development of the nervous system and the anatomical organization and physiological operation of the spinal cord. Supraspinal sensory and motor functions are approached as longitudinally organized systems which exert a hierarchical control over spinal mechanisms. Analyses of certain basic behaviors, such as the regulation of metabolism, sleep/wakefulness cycles, defense/attack behavior and reproduction, emphasize the integrated action of somatomotor, visceromotor, vicerosecretory, and endocrinologic mechanisms. Cortical lesions provide a basis for an understanding of such intellectural functions as learning, memory, and speech. All seminar topics and laboratory exercises encompass neurophysiological, neuropathological, and neurological material. Videotapes of patients offer an opportunity to solve relevant clinical problems which illustrate lesions pertinent to the course material. This course employs a seminar format, and therefore emphasizes student initiative and instructor-student interaction. This course is offered as a block, five hours per semester. (Prerequisite: Medical student status or graduate student with permission of course chairman.)

Med.S. 634 2 Credits Spring
Medical Endocrinology (2 + 0)
Endocrine physiology and pathology are presented with a clinical orientation. Discussions include descriptions of control, hormone effects, and effector elements of the major endocrine systems. The role of the endocrine systems in normal homeostasis, development, and selected disease states will be emphasized. (Prerequisites: Med.S. 612 and 614 or permission of course chairman.)

Military Science

Mils. 100, 200 1 Credit Fall and Spring
Outdoor Skills Laboratory (0 + 2)
Introduction to the fundamentals of various outdoor skills such as mountaineering, orienteering, marksmanship, arctic survival, skiing, and snowshoeing. Emphasis is on practical work. The same skills are not taught both semesters. May be repeated for a maximum of 2 credits at each level.

Mils. 111 2 Credits Fall
U.S. Army and Society I (2 + 1)
Survey and analysis of the origin, development, organization and function of the American military. Focus is on the structure and purpose of the U.S. Army and ROTC program and the civilian-military relationship. An introduction to chain of command and small unit organization is provided to include characteristics of officers and their relation to subordinate leaders and enlisted men and women. Laboratory consists of orientation to physical readiness, introduction to marksmanship, and weapons; drill and ceremonies and customs and traditions of the service.

Mils. 112 2 Credits Spring
U.S. Army and Society II (2 + 1)
Survey of human behavior and leadership in the organizational context of the army and military environment. The role of the soldier, military training, discipline, ethics, and professionalism are presented. Students are introduced to behavioral dimensions and management techniques used by successful officer-leaders. Laboratory consists of land navigation with map and compass, first aid and physical readiness.

Mils. 113 2 Credits Spring
Map Reading and Orienteering (2 + 1)
Introduction to military and civilian topographical maps and their related informational content, use of the lensatic compass and map as navigational instruments. Practical exercises in orienteering complement academic instruction. Practicum includes rifle marksmanship and spring field exercises.

Mils. 201 2 Credits Fall
U.S. Defense and World Affairs (2 + 1) s
A study of current world events and how they affect the military leader and defense structure. Historical as well as political events are studied to learn their relationships to the decision making processes. Geography is considered as an influential factor affecting the economic base of a nation, and both are considered in terms of socio-political influence on military thought. Current military strengths and weaknesses of power groups are discussed and analyzed. The course is team taught with the university faculty. Laboratory consists of practical leadership development.

Mils. 202 2 Credits Spring
Communications Arts for the Military Leader (2 + 1)
A study of the principles of public speaking and instructional techniques. Emphasis is upon the development of functional skills through rehearsed and unrehearsed presentations. Instructional techniques, to include the use of audio-visual aids, provides intensive practice in developing lesson plans and skill in presentation. Laboratory consists of practical leadership development.

Mils. 250 3 Credits Summer
Basic Camp
Six week practical field work to prepare students who did not take basic course for entrance into the advanced course. Camp prepares student in basic military skills and leadership experience. (Prerequisite: At least two years of schooling remaining upon completion of camp. Admission by arrangement with professor of military science.)

Mils. 300, 400 1 Credit Fall and Spring
Outdoor Skills Laboratory (0 + 2)
Advanced training in mountaineering, orienteering, marksmanship, arctic survival, skiing and snowshoeing. Students assist in giving instruction and in organizing and managing the lab. Emphasis is on practical work. May be repeated for a maximum of two credits at each level. (Prerequisite: Junior or senior standing in military science.)

Mils. 301 3 Credits Spring
Theory and Dynamics of Tactical Operations (3 + 1)
Detailed examination of the concepts, principles, and techniques applicable to the current doctrine of tactical operations. The course emphasizes the role of the small unit leader in planning, directing, and controlling the efforts of individuals and small units to accomplish offensive, defensive, and specialized combat operations. Practical application of performance objectives and the integration of support functions are emphasized. Laboratory consists of practical leadership development. (Prerequisites: Junior standing in Mils. or permission of instructor.)

Mils. 303 3 Credits Fall
Advanced Leadership (3 + 1) (Same as B.A. 303)
An interdisciplinary approach to the study of effective leadership in the contemporary environment. Analysis of individual skills, emphasizing a behavioral approach to effective decision making. For ROTC cadets, class and laboratory includes preparation for advanced camp (Mils. 350). (Prerequisites: Junior standing in Mils. or permission of instructor.)

Mils. 350 3 Credits Summer
Advanced Camp
Six week practical field work for students enrolled in the advanced course. Camp is structured as a leadership workshop allowing students to utilize leadership skills in a variety of situations in a military environment. (Prerequisite: Must be enrolled as an advanced course cadet and have completed MS III.)

Mils. 351 2 Credits Summer
Cadet Troop Leadership Training
Three week full-time leadership training and development. Serving in leadership positions with the Active Army. Applying leadership and management principles in real life junior officer situations/positions in a military environment. (Prerequisite: Must be enrolled as an advanced course cadet and completed MS III and Advanced Camp, Mils. 350.)

Mils. 401 3 Credits — Fall
Seminar on Tactical Operations (3 + 1) s
A study of the conduct of tactical operations from the time of Hannibal to the present. The course is designed to introduce the student to a wide variety of historical examples where application or violation of sound tactical principles, or various styles and types of leadership have produced success or failure. Laboratory consists of practical leadership roles and seminars. (Prerequisites: Senior standing in Mils. or permission of instructor.)

Mils. 402 3 Credits — Spring
Seminar in Leadership and Management (3 + 0)
A study and overview of management principles, management practices, and military justice. Emphasis is on the review of management principles and skills through advanced readings and case studies. Students will receive an orientation on the various administrative, training, logistical, and maintenance tools used in the military. Class includes preparation for commissioning. (Prerequisites: Senior standing in Mils. or permission of instructor.)

Mineral Preparation Engineering

M.Pr. 304 3 Credits — Alternate Fall
Introduction to Metallurgy (3 + 0)
Definitions and principles of basic science and engineering principles as applied to process and adaptive metallurgy. (Prerequisites: Chem. 211, Phys. 212. Next offered: 1983-84.)

M.Pr. 313 3 Credits — Fall
Introduction to Mineral Preparation (2 + 3)
Elementary theory and principles of unit processes of liberation, concentration, and solid-fluid separation as applied to mineral beneficiations. (Prerequisite: Junior standing or permission of the instructor.)

M.Pr. 314 3 Credits — Alternate Spring
Unit Preparation Processes (1 + 6)
Principles and practices involved in liberation and concentration by gravity, electro-magnetic, and electrostatic methods. Analysis of costs and economics of mill operation. Flowsheets for different ores developed in the laboratory on a pilot plant scale. (Prerequisite: M.Pr. 313. Next offered: 1984-85.)

M.Pr. 418 3 Credits — Spring
Emission Spectroscopy, X-Ray Spectroscopy, and Atomic Absorption (2 + 3)
Can be taken for any combination of parts A, B, C as demand warrants. (Admission by special arrangement.)

M.Pr. 418A — Theory and application of emission spectrography: two one-hour classes and one three-hour lab per week for five weeks. One credit.

M.Pr. 418B — Theory and application of x-ray spectography and diffractometer: two one-hour classes and one three-hour lab per week for five weeks. One credit.

M.Pr. 418C — Theory and application of atomic absorption spectrophotometry: two one-hour classes and one three-hour lab per week for five weeks. One credit.

M.Pr. 433 3 Credits — Alternate Fall
Coal Preparation (2 + 3)
Units operations, flowsheets, washability characteristics, and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. (Prerequisite: M.Pr. 313. Next offered: 1983-84.)

M.Pr. 601 3 Credits — Fall
Froth Flotation (2 + 3)
Theory and application of bulk and differential froth flotation to metallic minerals, non-metallic minerals, and coal. (Admission by arrangement.)

M.Pr. 606 3 Credits — Spring
Plant Design (1 + 6)
Selection, design and layout of equipment for erection and operation of mineral and coal beneficiation plants for specific custom and milling problems. (Admission by arrangement.)

M.Pr. 684 3 Credits — Fall and Spring
Mineral Preparation Research (1 + 6)
Familiarizes students with the concept of basic research and its needs in the field of mineral beneficiation, including such research subjects as magnetic susceptibility, dielectric constants, and electrical conductivity of minerals; chemical theory and mechanism of bubble contact in flotation, and the effect of ultrasonic vibration in unit processes. (Admission by arrangement.)

Mining Engineering

title change

Min. 101 3 Credits — Fall
Minerals and Man (3 + 0)
A general survey of the impact of the mineral industries on man's economic, political, and environmental systems.

Min. 102 1 Credit — Spring
Introduction to Minerals Industry (1 + 0)
Fundamentals of the mineral industry.

Min. 104 1 Credit — Fall
Mining Operations Laboratory (0 + 3)
Training in application of mining operations and safety concepts. This course does comply with Federal safety training regulations. Topics include: Operation of mining equipment, escape and evacuation plans, self-rescue devices, ground control and explosives.

Min. 202 3 Credits — Spring
Mine Surveying (2 + 3)
Surveying principles for surface and underground control of mining properties. Field and office procedures for preparation of maps and engineering data. (Prerequisites: Math. 107-108.)

Min. 300 3 Credits — Fall
Fundamentals of Mining (3 + 0)
A study of the theory and design of unit mining operations, namely: haulage, hoisting, drilling and blasting, ventilation, drainage and pumping, compressed air, and noise control. (Prerequisite: E.S. 208 and E.S. 341. E.S. 341 may be taken concurrently.)

Min. 320 0 Credits — Spring
Seminar and Senior Field Trip
Mining field trip. Mines and districts, selected for exemplifying and providing instruction in geological principles, mining methods, metallurgical practices, and industrial economics. Seminar discussions cover operations and industries visited and current mineral industry problems. (Prerequisites: Senior standing and permission of the instructor. Fee: field trip expenses to be paid by the student.)

Min. 333 2 Credits — delete — Alternate Fall
Mining and Mineral Leasing Law (2 + 0)
History of the development of mining law. The essentials of mining laws of the United States and Alaska. Discussions and interpretation of important court decisions in mining litigation. (Next offered: 1983-84.)

Min. 400 1 Credit — As Demand Warrants
Practical Engineering Report
Twelve weeks of practical work in some industry or project related to the students' option, or equivalent. Performed during one or more of the summer vacations prior to the fourth year.

Min. 403 3 Credits — delete — Fall
Operations Research in Mineral Industries (2 + 3)
The application of operations research techniques in mineral exploration, mineral economics, mine systems, and mineral preparation. (Prerequisite: Junior standing and A.S. 301 or equivalent.)

Min. 406 3 Credits — Spring
Mining Plant Engineering (3 + 0)
Principles of mine ventilation, haulage, hoisting, pumping, and energy transmission system. (Prerequisites: Min. 300, E.S. 331 and 341.)

Min. 407 2 Credits — Spring
Mineral Industry and the Environment (2 + 0)
Principles and practices with the origin and disposal of solid, liquid, and gaseous wastes generated in the production of mineral commodities and the impact of regulations designed for their reduction or elimination. (Prerequisite: Permission of instructor.)

Min. 408 3 **4 Credits** **Spring**
Mineral Valuation and Economics (3 + 3)
Theory of sampling techniques, deposit and reserve calculations, and analysis of mineral economic problems. (Prerequisite: Permission of the instructor.)

Min. 410 **3 Credits** title chg **Fall**
Surface Materials Handling Systems (2 + 3)
The techniques and design of systems to move ore, concentrates, and waste materials in mining and milling operation. (Prerequisite: Senior standing or permission of the instructor.)

Min. 621 **3 Credits** **Alternate Fall**
Advanced Mineral Economics (3 + 0)
Economics of mineral exploitation and utilization. International trade, state and federal policies; financial control, and research methods. (Admission by arrangement. Next offered: 1984-85.)

Min. 631 **3 Credits** **Fall**
Research Methods (3 + 0)
Course covers research methods including problem definition and statement, literature research, and other topics pertinent to formulating, organizing, collecting data, designing experiments, and interpreting data. (Prerequisites: Graduate standing or permission of instructor.)

Music

Music Ensembles And Class Lessons

Mus. 101 **1 Credit** **Fall and Spring**
Chorus (0 + 3) h

Mus. 151 **1 Credit** **Fall and Spring**
Class Lesson (0 + 3) h
Class instruction in piano, voice, orchestral instrument, or guitar. (Mus. 151 may be repeated for credit. Course may not be audited.)

Mus. 153 **1 Credit** **Fall and Spring**
Functional Piano (1 + 0) h
Piano laboratory: instruction designed to help music majors obtain the performance, sight-reading, and harmonization-transposition skills needed to pass the Piano Proficiency Examination. It also provides non-music majors with an opportunity to study basic piano skills on a space-available basis. (Prerequisites: Music majors — Mus. 131 or equivalent or concurrent enrollment in Mus. 131; non-music majors: permission of instructor. Course may not be audited.)

Mus. 203 **1 Credit** **Fall and Spring**
Orchestra (0 + 3) h
(Admission by audition.)

Mus. 205 **1 Credit** **Fall and Spring**
Concert Band (0 + 3) h
(Admission by audition.)

Mus. 211 **1 Credit** **Fall and Spring**
"Choir of the North" (0 + 3) h
(Admission by audition.)

Mus. 253 **0 Credit** **Fall and Spring**
Piano Proficiency (0 + 1)
Final phase of completion of piano proficiency examination. (Prerequisite: Mus. 153 and permission of instructor.)

Mus. 307 **1 Credit** **Fall and Spring**
Chamber Music (0 + 3) h
String, brass, or woodwind chamber music; piano chamber music and accompanying; stage band, and Madrigal singers. (Prerequisite: Permission of instructor.)

Mus. 313 **1, 2, 3 Credits** **Fall and Spring**
Opera Workshop (0 + 3, 6 or 9) h

Mus. 317 **1 Credit** **Fall and Spring**
Arctic Chamber Orchestra (0 + 3) h
Chamber Music. (Admission by audition.)

Applied Music

Mus. 161, 162 **2 or 4 Credits** **Fall and Spring**
Mus. 261, 262 **2 or 4 Credits** **Fall and Spring**
Mus. 361, 362 **2 or 4 Credits** **Fall and Spring**
Mus. 461, 462 **2 or 4 Credits** **Fall and Spring**
Private Lessons h
Private instruction in piano, voice, orchestral instruments, or guitar. Private instruction shall consist of one private lesson and one master class per week. Music performance majors may enroll for four credits. All others will normally enroll for two credits. (Prerequisite: Admission by audition. Course may not be audited.)

Mus. 190 **0 Credit** **Fall and Spring**
Recital Attendance (1 + 0)
Recital and concert attendance.

Mus. 661 **2 or 4 Credits** **Fall and Spring**
Advanced Private Lessons h
Private instruction in piano, voice, or orchestral instrument consisting of one private lesson and one master class per week. Repeatable for credit. (Prerequisites: Mus. 462 or equivalent and by audition.)

Music Theory, Music History, and Music Education

Mus. 103 **3 Credits** **Fall and Spring**
Music Fundamentals (3 + 0) h
An introductory study of the language of music. Includes basic notation, melodic and rhythmic writing, scales, bass and treble clefs, and basic harmony.

Mus. 123 **3 Credits** **Spring**
Appreciation of Music (3 + 0) h
A guide to the richer enjoyment of classical music through a study of the main periods, styles, and composers from the time of the Gregorian chant to the present.

Mus. 124 **3 Credits** **Fall**
Music in World Cultures (3 + 0) h
A survey of traditional and folk music around the world, with an emphasis on Oriental and African music. The course examines the different uses of music in various societies, and includes demonstration of ethnic musical instruments.

Mus. 131 **2 Credits** **Fall**
Mus. 132 **2 Credits** **Spring**
Basic Theory (1 + 2) h
First semester: Intensive training in fundamentals of music, pitch and rhythm notation, scales, modes, triads, and techniques of harmonization. Second semester: Concentration upon acquisition of skills in harmonization and techniques of formal and harmonic analysis.

Mus. 133 **2 Credits** **Fall**
Mus. 134 **2 Credits** **Spring**
Basic Ear Training (2 + 0) h
Intensive training in ear training skills including sight reading, sight singing, error detection, and dictation. Use will be made of programmed materials in a laboratory situation in addition to classroom instruction. Concurrent enrollment in Music 131 or 132 required unless exempted by music theory placement examination.

Mus. 221 **3 Credits** **Fall**
Mus. 222 **3 Credits** **Spring**
History of Music (3 + 0) h
Fall semester: Music before 1750. Spring semester: Music since 1750. (Prerequisite: Mus. 131-132 or permission of the instructor.)

Mus. 223 3 Credits Spring
Native Alaskan Music (3 + 0) h
A course to acquaint the student with the variety of Eskimo and Indian dance and song styles in Alaska. Emphasis on the sound, effect, and purpose unique to each. The course covers collection methods, analysis, and the development of a broad musical perspective.

Mus. 231 3 Credits Fall
Mus. 232 3 Credits Spring
Advanced Theory (2 + 3) h
Continued study, in depth, of harmony and musical form through analysis of representative works from the standard repertoire. The second semester will be devoted to study and synthesis of 20th century stylistic and harmonic idioms. (Prerequisites: Mus. 131, 132 or permission of instructor.)

Mus. 309 3 Credits Fall
Elementary School Music Methods (3 + 0)
(Same as Ed. 309)
Principles, procedures, and materials for teaching music to children at the elementary level. (Prerequisite: Ed. 314.)

Mus. 315 2 Credits Fall and Spring
Music Methods and Techniques (1 + 2)
Instruction in voice and the basic instruments of band and orchestra. Emphasis on teaching methods in these areas. This course number is repeatable for credit. See Music Department Handbook. (Prerequisite: Permission of instructor.)

Mus. 331 3 Credits Spring
Form and Analysis (3 + 0) h
A detailed survey of formal and stylistic musical elements in historical context with special application to problems of proper stylistic performance. (Prerequisite: Mus. 232 or permission of the instructor.)

Mus. 351 3 Credits Fall
Conducting (3 + 0) h
Principles of conducting and interpretation of vocal and instrumental ensembles. (Prerequisite: Mus. 232.)

Mus. 405 3 Credits Spring
Secondary School Music Methods (2 + 3)
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 the implementation of teaching plans in classroom and rehearsal settings. (Prerequisite: Permission of instructor. Should be taken prior to Ed. 453 — Secondary Student Teaching.)

Mus. 421 3 Credits Alternate Fall
Music before 1620 (3 + 0) h
Study of music from its origins in Greek antiquity through the Middle Ages and the Renaissance up to and including the emergence of opera at the turn of the seventeenth century. Includes study of prominent composers, early musical forms, original sources in translation, development of musical notation, and development of early musical instruments. (Prerequisites: Mus. 221 and 222 or permission of instructor. Next offered: 1984-85.)

Mus. 422 3 Credits Alternate Spring
Music in the Seventeenth and Eighteenth Centuries (3 + 0) h
Study of music from the turn of the seventeenth century through Beethoven. Examination of style and performance practices relating to opera, oratorio, cantata, sonata, and concerto, as well as chamber music. Development of keyboard instruments as well as other instrumental genres: strings, winds, and brasses. Intensive music listening as well as reading contemporary sources in translation. Style study of representative works from early Baroque composers through Bach, Handel, Bach's sons, Haydn, Mozart, Beethoven, and others. Musical developments in Italy, England, France, Germany, Austria, and cross-cultural influences. (Prerequisites: Mus. 221 and 222 or permission of instructor. Next offered: 1984-85.)

Mus. 423 3 Credits Alternate Fall
Music of the Nineteenth Century (3 + 0) h
Study of musical trends in the 19th century. Romanticism, Nationalism, Italian Opera, and Wagnerian Music Drama, as exemplified by representative works, chosen from the music of Weber, Berlioz, Mendelssohn, Schumann, Brahms, Wagner, Chopin, Tchaikowsky, and others. Related readings in other aspects of the Romantic movement. (Prerequisite: Mus. 221 or 222 or permission of the instructor. Next offered: 1983-84.)

Mus. 424 3 Credits Fall
Music in the Twentieth Century (3 + 0) h
Trends in music since 1900. Style studies of significant works from the modern repertoire. Hindemith, Bartok, Schoenberg, Stravinsky, the avant-garde, and others. (Prerequisite: Mus. 221 or 222 or permission of the instructor. Next offered: 1983-84.)

Mus. 431 3 Credits Alternate Spring
Counterpoint (3 + 0) h
Study of contrapuntal techniques by means of analysis and synthesis of pieces in contrapuntal idioms. (Next offered: 1984-85.)

Mus. 432 3 Credits Alternate Fall
Orchestration and Arranging (3 + 0) h
Principles and practices of instrumentation and arranging for vocal and instrumental ensembles. (Next offered: 1983-84.)

Mus. 433 2-3 Credits Alternate Fall
Seminar in Musical Composition (2 + 0, 3 + 0) h
Study of the development of compositional skills based upon the works of predominately twentieth-century composers. Repeatable for credit. (Prerequisites: Mus. 232 or equivalent and/or permission of instructor. Next offered: 1984-85.)

Mus. 441 3 Credits Alternate Fall
Alaska Native Music and Social Change (3 + 0) h
A consideration of cultural persistence and of differential change in musical form and function. (Prerequisites: Mus. 232 or equivalent and/or permission of instructor. Next offered: 1984-85.)

Mus. 601 2 Credits Summer
Introduction to Graduate Study (2 + 0)
Materials, techniques, and procedures for research in music. Examination of bibliographic sources. Required of all graduate students in Music. (Prerequisites: Provisional admission to graduate study and permission of instructor.)

Mus. 607 3 Credits As Demand Warrants
Seminar in Elementary and Secondary General Classroom Music (3 + 0)
Discussion of the theoretical bases for developing objectives for general and classroom music in the elementary and secondary schools. Evaluation of current curricula, methods, and materials with respect to stated objectives. Evaluative methods in music. (Prerequisite: Permission of instructor.)

Mus. 608 2 Credits As Demand Warrants
Administration and Supervision of Music in the Public Schools (2 + 0)
Current practices and trend in organization, administration, and supervision of music programs in elementary and secondary schools. (Prerequisite: Permission of instructor.)

Mus. 625 1-3 Credits As Demand Warrants
Topics in Music History (1-3 + 0)
Detailed study of selected topic in music history and/or literature. Specific topic and number of credits to be announced in advance of course offering.

Mus. 631 3 Credits Alternate Fall
Seminar in Music Theory: History and Pedagogy (3 + 0)
Study of 1) historical development of music theory, and 2) music theory pedagogy (current teaching practices, and survey of available teaching materials). (Prerequisite: Permission of instructor. Next offered: 1983-84.)

Mus. 641 3 Credits Alternate Fall
Methods of Ethnomusicological Research (3 + 0)
Bibliography and research methods in non-Western musics. New ethnomusicological research and approaches. (Prerequisites: Mus. 441 and/or permission of instructor. Next offered: 1983-84.)

Mus. 651 2-3 Credits As Demand Warrants
Advanced Conducting and Rehearsal Techniques (2-3 + 0)
Study of conducting style and techniques and their application to representative compositions for different instrumental and vocal mediums. Repeatable for credit. (Prerequisites: Mus. 351 or equivalent and/or permission of instructor.)

Mus. 655 **2 Credits** **As Demand Warrants**
Music Performance Literature (2 + 0)
Discussion and study of music performance literature for different instrumental and vocal areas. Literature of the different eras will be presented individually on a rotating basis in successive semester. Instructor may elect to restrict study to that of one particular genre: e.g., band literature, chamber music literature. Repeatable for credit. (Prerequisite: Permission of instructor.)

Mus. 671 **3 Credits** **As Demand Warrants**
Psychology of Music (3 + 0)
Study of the relationship of music to the human mind emphasizing such factors as musical perception, pattern recognition, psychoacoustics, and related topics. (Prerequisites: Mus. 232 or equivalent and/or permission of instructor.)

Oceanography

OCN 111 **3 Credits** **Spring**
The Oceans (3 + 0)
This course examines in an introductory way the classic disciplines of ocean science beginning with important definitions and a general history of oceanography. Emphasis is on descriptive biological, physical, chemical, and geological marine science. Additional topics of special interest including scuba, demonstrations of marine research instrumentation, and films of current oceanographic topics such as coastal upwelling and polar oceanography will supplement the lecture.

OCN 620 **4 Credits** **Fall**
Physical Oceanography (3 + 3)
Physical description of the sea, physical properties of sea water, methods and measurements, boundary processes, currents, tides and waves, and regional oceanography. (Prerequisite: Science or engineering degree, or permission of the instructor.)

OCN 625 **2 Credits** **Spring**
Shipboard Techniques (1 + 3)
A comprehensive introduction to modern oceanographic shipboard sampling and analysis techniques. (Prerequisites: Graduate standing and permission of instructor.)

OCN 630 **3 Credits** **Spring**
Geological Oceanography (3 + 0)
History of ocean exploration and development of methods and instrumentation for exploration of ocean floors. Sample retrieving and geophysical techniques. The topography of the ocean floor. The origin of ocean basins in relation to continental drift, plate tectonics, and polar wandering. Age of the ocean basins. Major subdivisions of the ocean basins: nearshore, shelf, slope, and deep basin. Definition and classification of shorelines and coasts. Beach characteristics and cycle. Continental Shelves: their topography and sediments. Shelf origin: history interrelation with coast and beach. Slope characteristics and its origin. Deep sea floor features: marine valleys, deep channels, canyons, trenches, mounts, hills, range, fractures, and faults. Deep ocean floors: the Atlantic, the Pacific, and the Indian Oceans. The inland seas: Mediterranean etc. Ocean sediments: their characteristics and distributions. The sources and the distribution of pelagic sediments. Formation and distribution of biogenic sediments including reefs. Major types of sediments in the oceans: characteristic properties and distributions. Sediment transport systems in the oceans: waves, currents, tsunamies, submarine earthquakes, and turbidity flows. (Prerequisite: Introductory college geology or permission of instructor.)

OCN 640 **3 Credits** **Alternate Spring**
Fisheries Oceanography (3 + 0)
A description of marine processes supporting commercially important higher trophic levels (fishes and shellfish) including details of food webs and rates of organic matter transfer, natural mortality and recruitment schedules, competition, and prey-predator relationships during early life history, and distribution and abundance related to specific physical, chemical, biological, geological, and meteorological conditions in the sea. Examples taken from many of the world's commercial fisheries. (Prerequisite: OCN 650 or permission of instructor. Next offered: 1984-85.)

OCN 650 **3 Credits** **Fall**
Biological Oceanography (3 + 0)
A 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, food webs, nutrient cycling, especially but not exclusively nitrogen, phosphorus and silicon, microbiological process relevant to nutrient cycling, and 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: Introductory college biology and chemistry.)

OCN 660 **3 Credits** **Alternate Spring**
Chemical Oceanography (3 + 0)
(Same as Chem 660)
Interface reactions and biological and non-biological reactions and how they combine with transport processes to influence the distribution of chemical variables in the ocean and the composition of seawater. Major elements, minor elements, stable and radioisotopes, and the carbon dioxide system are treated in the above context. (Prerequisites: Physical chemistry (Chem. 331) or permission of instructor. Next offered: 1983-84.)

OCN 680 **3 Credits** **Alternate Spring**
Physical-Chemical Limnology (3 + 0)
A comprehensive course in physical and chemical limnology covering the basic processes and cycles in freshwater systems, including a consideration of arctic and subarctic lakes. (Prerequisites: Graduate standing, calculus, quantitative analysis or permission of instructor. Next offered: 1983-84.)

OCN 692 **1 Credit** **Fall and Spring**
Marine Sciences and Ocean Engineering Seminar (1 + 0)
This seminar is a forum to present and discuss aspects of current research and related marine subjects in a timely manner outside the scope of the classroom lecture. Guest speakers, the faculty, and students participate in formal presentations followed by open discussions. Subjects are advertised weekly campus wide. (Prerequisite: Graduate standing or permission of instructor.)

Petroleum Engineering

Pet.E. 103 **3 Credits** **Fall**
Survey of the Energy Industries (3 + 0)
A comprehensive non-technical overview of global energy resources, current technology for development of energy resources, and the impact of world politics on resource distribution.

Pet.E. 205 **3 Credits** **Fall**
Petroleum Drilling Engineering (3 + 0)
Fundamental principles of rotary oilwell drilling; includes field trips to drilling sites in Alaska. (Prerequisite: Math. 200.)

Pet.E. 206 **3 Credits** **Spring**
Oil Well Production and Design (3 + 0)
Fundamental design considerations in oil and gas well completions, artificial lift equipment, surface gathering systems, workovers, and stimulation; problem well analysis, and field trips to production sites in Alaska. (Prerequisite: Pet.E. 205.)

Pet.E. 211 **1-2 Credits** **Spring**
Drilling Laboratory (0 + 3 or 6)
Measurement of physical properties of drilling mud; optional BOP certification and drilling rig operation experience during spring break. (Prerequisite: Pet.E. 205 or permission of instructor.)

Pet.E. 301 **4 Credits** **Fall**
Formation Evaluation (3 + 3)
Definition and measurement of fundamental formation properties by core analysis and well logging; laboratory assignments dealing with core analysis and multi-phase flow experiments. (Prerequisite: Junior standing in engineering or geoscience.)

Pet.E. 302 2 Credits Fall
Formation Well Logging (3 + 3)
Well log analysis, including description of the various well log devices, how the logs are recorded, and how the data is interpreted. Laboratory includes practical applications. Offered concurrently with Pet.E. 301 during the second half of the fall semester for seven weeks. Student may register in either Pet.E. 301 or 302, but not both. (Prerequisite: Junior standing in engineering or geoscience.)

Pet.E. 321 3 Credits Fall
Advanced Thermodynamics for Petroleum Engineers (3 + 0)
A thorough study of the thermodynamics involved in the transport of petroleum fluids from the formation to the surface with an emphasis on multi-phase, multi-component equilibrium processes. (Prerequisites: Math. 302, Chem. 321 and E.S. 346 and concurrent registration in E.S. 341.)

Pet.E. 331 3 Credits Spring
Petroleum Process Engineering (3 + 0)
A study of fundamental principles underlying the analysis, design, and engineering of petroleum production processes. (Prerequisite: Pet.E. 321.)

Pet.E. 400 1 Credit Fall
Practical Engineering Report (0 + 3)
Report on practical experience from petroleum engineering summer job. (Prerequisite: Senior standing in engineering or geoscience, or permission of instructor.)

Pet.E. 405 4 Credits Fall
Underground Fluids Behavior (3 + 3)
Chemical, physical, and thermodynamic properties of water, oil, and gas in petroleum formation; classification of petroleum reservoirs by fluid phase contents, and interpretation of PVT reports for reservoir fluid samples. (Prerequisites: Chem. 321 and Pet.E. 321.)

Pet.E. 476 4 Credits Spring
Petroleum Reservoir Engineering (4 + 0)
Quantitative study and prediction of the behavior of oil and gas reservoirs under primary, secondary, and tertiary recovery mechanisms. (Prerequisites: Math. 302, Geos. 314, Pet.E. 301 and Pet.E. 405.)

Pet.E. 489 3 Credits Spring
Reservoir Simulation (3 + 0)
The theory and use of computer reservoir simulation in petroleum reservoir and production engineering and incorporation detailed reservoir studies using the BOSS (Black Oil Simulation System) model from Scientific Software Corporation. (Prerequisites: Math. 302, Pet.E. 405, and concurrent registration in Pet.E. 476.)

Pet.E. 610 3 Credits Fall
Advanced Reservoir Engineering (3 + 0)
Advanced treatment of topics in reservoir engineering including derivation and solution of the diffusivity equation, the real gas pseudo potential, and applications of materials balance equations to water influx calculations. (Prerequisite: Pet.E. 476 or permission of instructor.)

Pet.E. 620 1 Credit Fall
Graduate Research Seminar (1 + 0)
Introduction to research methodology including topics on structuring research proposals, methods of experimental design, and technical report writing; will include lectures by faculty in petroleum engineering outlining their research interests. (Prerequisite: Graduate standing in petroleum engineering.)

Pet.E. 650 2 Credits Spring
Advanced Topics in Petroleum Engineering (2 + 0)
A series of lectures by the faculty and outside speakers covering "state of the art" technology in selected topics of interest to petroleum engineers. Among others, topics will include the subject matter of graduate courses not offered during the semester at hand. (Prerequisite: Graduate standing in petroleum engineering or permission of instructor.)

Pet.E. 661 3 Credits Spring
Advanced Well Testing (3 + 0)
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. (Prerequisite: Pet.E. 476 or Pet.E. 610.)

Pet.E. 662 3 Credits Every Third Semester
Enhanced Oil Recovery (3 + 0)
Secondary and tertiary oil recovery processes, including waterflooding and chemical and thermal recovery methods. (Prerequisite: Pet.E. 476 or Pet.E. 610. Next offered: Fall 1984.)

Pet.E. 663 3 Credits Every Third Semester
Advanced Reservoir Simulation (3 + 0)
Mathematical description of the reservoir, history matching, and prediction for several published case studies of reservoir simulations, class project application to simulation of an Alaskan reservoir. (Prerequisites: Advanced engineering mathematics elective and Pet.E. 610. Next offered: Fall 1983.)

Pet.E. 664 3 Credits Every Third Semester
Geothermal Reservoir Engineering (3 + 0)
Quantitative treatment of broad problems associated with development of a geothermal fluid reservoir system. (Prerequisite: Graduate standing in engineering discipline or approval of the instructor. Next offered: Fall 1983.)

Pet.E. 665 3 Credits Every Third Semester
Advanced Phase Behavior (3 + 0)
The application of molecular physics, and chemistry to the interpretation, correlation, and prediction of thermodynamic properties used in phase-equilibrium calculations. Theoretical and empirical approaches are used. (Prerequisite: Pet.E. 321 or permission of instructor. Next offered: Spring 1984.)

Pet.E. 666 3 Credits Every Third Semester
Arctic Drilling and Well Completions (3 + 0)
Offshore and onshore methods for drilling and completing oil and gas wells in the Arctic; problems of permafrost and ice flow, environmental considerations. (Prerequisite: Graduate standing in engineering discipline or permission of instructor. Next offered: Spring 1984.)

Philosophy

Phil. 201 3 Credits Fall and Spring
Introduction to Philosophy (3 + 0) h
Terms, concepts, and problems as reflected in writings of great philosophers. (Prerequisite: Sophomore standing or permission of the instructor.)

Phil. 202 3 Credits Spring
Introduction to Eastern Philosophy (3 + 0) h
Basic assumptions, problems and conclusions of the major philosophical traditions of the Far East. (Prerequisite: Phil. 201 or permission of the instructor.)

Phil. 204 3 Credits Fall and Spring
Introduction to Logic (3 + 0) h
Principles of deductive and inductive logic and application of these laws in science and other fields; brief introduction to symbolic logic and its application. (Prerequisite: Sophomore standing.)

Phil. 320 3 Credits Alternate Fall
Axiology (3 + 0) h
The nature of value theory, its history and its place in the contemporary world, the ideas and implications of subjectivity and objectivity in the sciences and humanities. (Prerequisite: Phil. 201 or permission of instructor. Next offered: 1983-84.)

Phil. 341 3 Credits Alternate Fall
Epistemology (3 + 0) h
The nature of knowledge, truth and certainty. (Prerequisite: Phil. 201. Next offered: 1984-85.)

Phil. 342 3 Credits Alternate Spring
Metaphysics (3 + 0) h
The nature of reality comprising both ontology and cosmology. (Prerequisite: Phil. 201. Next offered: 1984-85.)

Phil. 351 3 Credits Fall
History of Philosophy and Science (3 + 0) h
Ancient and medieval periods. (Prerequisite: Six credits in philosophy or social science.)

Phil. 352 3 Credits Spring
History of Philosophy and Science (3 + 0) h
Renaissance, modern, and recent periods. (Prerequisite: Six credits in philosophy or social science.)

Phil. 471 3 Credits Alternate Fall
Contemporary Philosophical Problems (3 + 0) h
Ideological issues facing the modern world. (Prerequisite: Nine credits philosophy or permission of the instructor. Next offered: 1984-85.)

Phil. 481 3 Credits Alternate Spring
Philosophy of Science (3 + 0) h
Comparison and discussion of various contemporary methodological positions. (Prerequisite: Junior standing. Next offered: 1984-85.)

Phil. 482 3 Credits Alternate Fall
Comparative Religion (3 + 0) h
Seven world faiths represent answers to questions of man's duty, his destiny and his nature. (Prerequisite: Permission of the instructor. Next offered: 1983-84.)

Phil. 483 3 Credits Alternate Spring
Philosophy of Social Science (3 + 0) h
Comparison and analysis of various contemporary methodological positions in the social sciences. (Prerequisite: Junior standing. Next offered: 1983-84.)

Phil. 484 3 Credits Alternate Spring
Philosophy of History (3 + 0) h
Critical examination of the nature of history and historical inquiry. (Prerequisite: Nine credits in philosophy or social science. Next offered: 1983-84.)

Physical Education

P.E. 100 1 Credit Fall and Spring
Physical Activities and Instruction (0 + 3)
Instruction, practice, and activity in a variety of physical activities, sports, and dance in separate sections.

P.E. 201 2 Credits Fall and Spring
Concepts and Activities in Physical Fitness (1 + 3)
Development of knowledge of the problems, methods of achievement, and maintenance of physical fitness in the modern world. Assessment of personal fitness status, participation in selected fitness activities, and acquisition of skills in basic physical fitness activity.

P.E. 208 1 Credit Fall
Advanced Life Saving (0 + 3)
American Red Cross course, successful completion leading to certification by A.R.C. in Advanced Life Saving. (Prerequisite: P.E. 100, Fundamentals of Swimming or American Red Cross Basic Rescue Certification.)

P.E. 210 2 Credits Alternate Fall
Fundamentals of Softball, Aquatics and Ice Sports (1 + 3)
An introduction to the fundamental skills, techniques, rules, strategies, safety practices, methods of class organization, drills, testing techniques, and skill analysis for softball, aquatics and snow sports. (Prerequisite: American Red Cross Basic Rescue Card. Next offered: 1984-85.)

P.E. 220 2 Credits Alternate Spring
Fundamentals of Wrestling, Basketball and Track & Field (1 + 3)
An introduction to the fundamental skills, techniques, rules, strategies, safety practices, methods of class organization, drills, testing techniques, and skill analysis for wrestling, basketball and track. (Next offered: 1984-85.)

P.E. 230 2 Credits Alternate Fall
Fundamentals of Soccer, Rhythms and Recreational Activities (1 + 3)
An introduction to the fundamental skills, techniques, rules, strategies, safety practices, methods of class organization, drills, testing techniques, and skill analysis for soccer, rhythms and recreational activities. (Next offered: 1983-84.)

P.E. 240 2 Credits Alternate Spring
Fundamentals of Gymnastics, Snow Sports and Volleyball (1 + 3)
An introduction to the fundamental skills, techniques, rules, strategies, safety practices, methods of class organization, drills, testing techniques, and skill analysis for gymnastics, ice sports and volleyball. (Next offered 1983-84.)

P.E. 246 3 Credits Fall and Spring
Advanced First Aid (3 + 0)
Knowledge and skills necessary to provide efficient aid and treatment in emergencies. Progresses through the Basic, Standard, and Advanced First Aid packages of the American Red Cross. Successful completion of requirements leads to certification by the American Red Cross in Advanced First Aid.

P.E. 300 1 Credit Alternate Fall
Advanced Theory and Techniques for Teaching Gymnastics (½ + 1½)
This class provides indepth study of advanced skills, strategies, and analysis in gymnastics. The course meets for 7 weeks, 4 hours per week. (Prerequisite: P.E. 240. Next offered: 1984-85)

P.E. 302 1 Credit Alternate Fall
Advanced Theory and Techniques for Teaching Basketball (½ + 1½)
This class provides indepth study of advanced skills, strategies, and analysis in basketball. The course meets for 7 weeks, 4 hours per week. (Prerequisite: P.E. 220 Next offered: 1983-84.)

P.E. 303 1 Credit Alternate Fall
Advanced Theory and Techniques for Teaching Ice Sports (½ + 1½)
This class provides indepth study of advanced skills, strategies, and analysis in teaching ice sports. The course meets for 7 weeks, 4 hours per week. (Prerequisite: P.E. 210. Next offered 1983-84.)

P.E. 304 1 Credit Alternate Spring
Advanced Theory and Techniques for Teaching Snow Sports (½ + 1½)
This class provides indepth study of advanced skills, strategies, and analysis in teaching snow sports. The course meets for 7 weeks, 4 hours per week. (Prerequisite: P.E. 240. Next offered 1984-85.)

P.E. 305 1 Credit Alternate Fall
Advanced Theory and Techniques for Teaching Volleyball (½ + 1½)
This class provides in-depth study of advanced skills, strategies, and analysis in volleyball. The course meets for 7 weeks, 4 hours per week. (Prerequisite: P.E. 240. Next offered: 1984-85.)

P.E. 306 1 Credit Alternate Fall
Techniques in Teaching Creative Dance (½ + 1½)
Designed to provide skill and practice in organizing creative dance experiences for all age groups. The emphasis is on learning techniques which will free people to create from their own movement vocabularies. There will be some emphasis on correct body alignment and techniques of moving. (Prerequisite: P.E. 230. Next offered: 1984-85.)

P.E. 307 1 Credit Alternate Spring
Techniques in Camping and Outdoor Recreation (½ + 1½)
This class provides in-depth study of advanced skills and organizational techniques in camping and outdoor recreation. The course meets for 7 weeks, 4 hours per week, and one weekend campout will be required. (Prerequisite: P.E. 230. Next offered: 1984-85.)

P.E. 308 1 Credit Alternate Fall
Techniques in Track and Field (½ + 1½)
This class provides in-depth study of advanced skills and analysis of track and field. The course meets for 7 weeks, 4 hours per week. (Prerequisite: P.E. 220. Next offered: 1983-84.)

P.E. 309 1 Credit Spring
Aquatic Instructor (½ + 1½)
Completion of course satisfies requirements for American Red Cross Certification in Basic Rescue and Water Safety, and certification as a Basic Swim Instructor (BSI) or Water Safety Instructor (WSI). (Prerequisites: Students must have Basic Swim Instructor, be over seventeen years of age and sophomore standing.)

P.E. 310 1 Credit **Alternate Spring**
Techniques in Teaching Rhythms and Dance (½ + 1½)
Techniques and practical application in organizing and teaching varying age and ability levels in folk and square dance. Dances will include partner and non-partner folk dances, some fad dances and traditional square dance, and some practice in cueing and calling will be provided. (Prerequisite: P.E. 230. Next offered: 1984-85.)

P.E. 318 3 Credits **Alternate Spring**
Motor Development and Learning (3 + 0)
Motor skill and behavior development from prenatal life, infancy, early childhood, later childhood, adolescence, adulthood, and through old age; issues, programs, applications, curricula, and evaluation of motor development. Differences in motor development and motor learning according to sex, body type, age, and other individual differences. Principles of motor skills learning processes related to performance and teaching models. Content intended for use by anyone involved in the care, growth, development, education, or recreation of children or adults. (Prerequisite: PSY 101 or permission of instructor. Next offered: 1983-84.)

P.E. 321 2 Credits **Fall/Spring**
Practicum in Physical Education (1 + 3)
Practicum course in which students will be assigned to apprentice a class at the university or with a competent supervisor within the community. The student will gradually assume increasing responsibility for organization, planning, and conducting activities under supervision. The course will be required of physical education majors in either their junior or senior year. (Prerequisites: Appropriate P.E. 210-240, junior standing or equivalent background.)

P.E. 327 2 Credits **Spring**
Movement Activities for Children (2 + 0)
A practical background of sports, games, and fundamental movement activities appropriate for the child in the environment of the home, playground, or elementary school classroom or gymnasium. For parents, teachers, or others who work with children up to age 12. Course includes progressions in activities and participation in selected activities. (Prerequisites: Psy. 101, sophomore standing.)

P.E. 400 2 Credits **Alternate Fall**
Judging and Coaching Gymnastics
Techniques for teaching, coaching, judging, and administering men's and women's gymnastics, including apparatus, tumbling, and floor exercise. (Prerequisite: Junior standing or previous gymnastic experience. Next offered: 1983-84.)

P.E. 401 2 Credits **Alternate Fall**
Theory of Basketball (2 + 0)
Techniques of playing and coaching men's and women's basketball, including theories of offense and defense, contest stragegies and psychology of individual and team play. (Prerequisites: P.E. 302 and junior standing. Next offered: 1984-85.)

P.E. 406 3 Credits **Alternate Fall**
Methods of Teaching Physical Education (2 + 3)
Philosophy, curriculum development, methods for facilitating learning and controlling behavior, measurement and evaluation, observations, and teaching laboratories in elementary and secondary school physical education. (Prerequisites: Psy. 101, Ed. 312, Ed. 314. Next offered: 1983-84.)

P.E. 408 2 Credits **Alternate Spring**
Aquatics Program Management (2 + 0)
Aquatic program planning and implementation, competitive swim team coaching and administration, and management of swimming pools. (Prerequisite: P.E. 109 or 309. Next offered: 1984-85.)

P.E. 411 3 Credits **Every Third Semester**
Sport and Physical Activity in American Society (3 + 0)
Role of sport and physical activity in society from ancient to contemporary times, development of school programs, overview of scientific bases for physical performance, vocational opportunities in related fields, and current issues in sport and physical education. (Prerequisite: junior standing. Next offered 1983-84.)

P.E. 412 3 Credits **Alternate Fall**
Principles and Problems in Athletic Coaching (3 + 0)
Philosophy and objectives of athletic competition at various age levels. The roles and responsibilities of the athletic coach. Problems of athletic coaching and management of athletes and their training. Content appropriate for those who plan to take leadership or coaching roles in any athletic programs, in schools, or in community recreation. (Prerequisite: Junior standing. Next offered: 1984-85.)

P.E. 421 3 Credits **Alternate Fall**
Physiology of Exercise (3 + 0)
Physiological adaptations of the human body to muscular activity in exercise and sports, practical applications of physiological principles to training programs for fitness, competitive sports, and physical education. (Prerequisite: Biol. 111-112. Next offered: 1984-85.)

P.E. 425 3 Credits **Alternate Fall**
Administration in Physical Education and Athletics (3 + 0)
Principles and problems of planning, organizing, directing, and evaluating school programs in physical education, intramural sports, and interschool athletics. (Prerequisite: Junior standing. Next offered: 1983-84.)

P.E. 432 3 Credits **Alternate Fall**
Biomechanics of Physical Performance (3 + 0)
Mechanical and muscular analysis of human movement patterns, especially in sport and physical education, anatomical concepts, and physical laws applied to joint and muscular action. (Prerequisites: Biol. 111-112, Math. 107. Next offered: 1983-84.)

P.E. 437 3 Credits **Alternate Spring**
Adapted Programs of Physical Activity (3 + 0)
Theory and practical guidelines for developing adapted movement activities and programs for persons who are impaired, disabled, or handicapped; "mainstreaming" such individuals in to regular programs in physical education and recreation. (Prerequisite: Psy. 101 or permission of instructor. Next offered: 1984-85.)

P.E. 440 3 Credits **Spring**
Care and Prevention of Athletic Injuries (3 + 0)
Scientific bases for the care and prevention of injuries, related to participation in sports and physical activity, rationale and strategies for taping and wrapping for injury prevention and rehabilitation, techniques in preactivity conditioning and post-injury reconditioning, and equipment safety. (Prerequisites: Biol. 111 and 112, P.E. 201 or permission of instructor.)

P.E. 442 3 Credits **Alternate Spring**
Measurements and Evaluation in Physical Education (3 + 0)
Theory and application of the evaluation process in Physical Education including basic statistics, formation of measureable behavorial objectives, written test construction, survey of fitness and skill tests, their selection, administration and interpretation of results, and the use of basic computer programs to calculate various statistical values. (Prerequisites: P.E. 210, 220, 230, 240, and junior standing. Next offered: 1984-85.)

Physics

Phys. 103 4 Credits **Fall**
Phys. 104 4 Credits **Spring**
College Physics (3 + 3) n
Unified classical and modern physics. (Prerequisite: High school algebra and geometry.)

Phys. 201 3 Credits **Fall**
Physical Science for Education Majors (3 + 0) n
Preparation of education majors for teaching physical science concepts and the use of science materials (primarily grades one through six) that are presently being introduced in the Alaskan school systems. Subjects covered are astronomy, chemistry, and physics.

Phys. 211 4 Credits **Fall and Spring**
Phys. 212 4 Credits **Fall and Spring**
General Physics (3 + 3) n
Classical physics using calculus and requiring at least concurrent registration in Math. 201. Intended for majors in mathematics, physical sciences, and engineering.

Phys. 213 3 Credits Spring
Elementary Modern Physics (3 + 0) n
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: Phys. 211 and 212 or the equivalent.)

Phys. 275 3 Credits Alternate Fall
Phys. 276 3 Credits Alternate Spring
Astronomy (3 + 0) n
Science elective for the general student. Fall semester: The solar system, laws of motion, nature of radiation, astronomical instruments, the earth, the moon, planets, comets and meteors, and cosmogony. Spring semester: Stellar astronomy, physical properties and distribution of stars, interstellar matter, evolution of stars, galactic structure, and cosmology. Evening demonstrations both semesters. (Prerequisites: Sophomore standing, high school algebra and trigonometry, Physics 275 for Physics 276 or permission of instructor. Next offered: 1983-84.)

Phys. 311 4 Credits Alternate Fall
Mechanics I (4 + 0) n
Newtonian mechanics, motion of systems of particles, rigid body statics and dynamics, moving and accelerated coordinate systems, and introduction to Lagrangian mechanics. (Prerequisite: Phys. 211 or permission of instructor. Next offered: 1983-84.)

Phys. 312 4 Credits Alternate Spring
Mechanics II (4 + 0) n
Mechanics of deformable media, wave motion, acoustics, introduction to tensors, rigid body dynamics, and theory of small vibrations. (Prerequisite: Phys. 311 or permission of instructor. Next offered: 1983-84.)

Phys. 313 4 Credits Alternate Fall
Thermodynamics and Statistical Physics (4 + 0) n
Thermodynamic systems, equations of state, the laws of thermodynamics, changes of phase, thermodynamics of reactions, kinetic theory, and introduction to statistical mechanics. (Prerequisite: Phys. 212 or permission of instructor. Next offered: 1984-85.)

Phys. 331 3 Credits Fall
Phys. 332 3 Credits Spring
Electricity and Magnetism (3 + 0) n
Electrostatics, dielectrics, magnetostatics, magnetic materials, and electromagnetism. Maxwell's equations, electromagnetic waves, radiation, physical optics, and selected topics from electronics. (Prerequisites: Phys. 212 and Math. 202.)

Phys. 381 2 Credits Alternate Fall
Phys. 382 2 Credits Alternate Spring
Physics Laboratory (0 + 6) n
Laboratory experiments in classical and modern physics. (Prerequisite: Phys. 213 or permission of instructor. Next offered: 1984-85.)

Phys. 411 4 Credits Alternate Fall
Phys. 412 4 Credits Alternate Spring
Modern Physics (4 + 0) n
Relativity, elementary particles, quantum theory, atomic and molecular physics, x-rays, and nuclear physics. (Prerequisites: Phys. 213, Math. 302 and Math. 314, or permission of instructor. Next offered: 1983-84.)

Phys. 445 3 Credits Alternate Spring
Solid State Physics and Physical Electronics (3 + 0) n
Theory of matter in the solid state and the interaction of matter with particles and waves. (Prerequisites: Phys. 213, Math. 302 and Math 314, or permission of the instructor. Next offered: 1984-85.)

Phys. 462 4 Credits Alternate Fall
Geometrical and Physical Optics (3 + 3) n
Geometrical optics, interference and diffraction theory, non-linear optics, Fourier optics, and coherent wave theory. (Prerequisites: Phys. 104 or Phys. 212, Math. 202 and at least concurrent registration in Math. 302. Next offered: 1984-85.)

Phys. 611 3 Credits Alternate Fall
Phys. 612 3 Credits Alternate Spring
Mathematical Physics (3 + 0)
(Same as Math. 611-612)
Advanced consideration of such topics as transform methods, asymptotic methods, Green's function, Sturm-Liouville Theory, conformal mapping, and calculus of variations with applications to problems arising in physics. (Prerequisites: Math. 422 and permission of the instructor. Next offered: 1983-84.)

Phys. 621 3 Credits Alternate Fall
Classical Mechanics (3 + 0)
Lagrange's equations, two-body problem, rigid body motion, special relativity, canonical equations, transformation theory, and Hamilton-Jacobi method. (Admission by arrangement. Next offered: 1984-85.)

Phys. 622 3 Credits Alternate Spring
Statistical Mechanics (3 + 0)
Classical and quantum statistics of independent particles, ensemble theory, and applications. (Admission by arrangement. Next offered: 1984-85.)

Phys. 631 3 Credits Alternate Fall
Phys. 632 3 Credits Alternate Spring
Electromagnetic Theory (3 + 0)
Electrostatics, magnetostatics, Maxwell's equations, and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation, tensor formulations, and non-Maxwellian electrodynamics. (Admission by arrangement. Next offered: 1984-85.)

Phys. 651 3 Credits Alternate Fall
Phys. 652 3 Credits Alternate Spring
Quantum Mechanics (3 + 0)
Schrodinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantumstatistical mechanics and applications of quantum mechanics to collision problems, radiation, and spectroscopy. (Admission by arrangement. Next offered: 1984-85.)

Phys. 677 Credits Arr. As Demand Warrants
Phys. 678 Credits Arr. As Demand Warrants
Atomic and Molecular Processes
Selected topics in collision theory, radiation theory, atomic and molecular structure and reactions, and experimental techniques of atomic and molecular physics. (Admission by arrangement.)

Political Science

P.S. 101 3 Credits Fall and Spring
Introduction to American Government and Politics (3 + 0) s
A survey of the principles, institutions, and practices of American national government. The Constitution and federalism, interest groups, parties, public opinion, and elections; the powers and functions of the three branches of national government.

P.S. 102 3 Credits Fall and Spring
Introduction to American Government and Politics (3 + 0) s
A survey of outstanding problems confronting government in areas of defense, energy, economic policy, civil rights, technology, social welfare, business regulation, pollution, and education. Analysis of how policy is made and implemented by government agencies.

P.S. 201 3 Credits Fall
Comparative Politics: Methods of Political Analysis (3 + 0) s
Modern methods of analyzing political behavior and processes on a cross-national basis; emphasis is placed on the roles of executive, legislative and judicial systems, political parties, and pressure groups, and current concepts of political development. Specific topics to be covered in different semesters include: A) Liberal democratic regimes of Western Europe and North America, including discussion of the preconditions for liberal societies. B) Authoritarian regimes of Europe, Latin America, and the Middle East, including totalitarianism and autocracy. C) The politics of development and the theories of development, modernization and dependency, with focus on the countries of the Third World. (This course may be repeated for a maximum of 6 credits.)

P.S. 202 3 Credits Spring
Comparative Politics: Contemporary Doctrines and Structures (3 + 0) s
Analysis of conflicting approaches to the solution of social and political problems with emphasis on nations employing various forms of ideological systems, including socialism, fascism, and controlled or tutelary democracy. Specific topics to be covered in different semesters include: A) Authoritarian regimes of Europe, Latin America, and Africa, including military and civilian dictatorships and tyrannies. B) Totalitarian regimes including Eastern Europe under communism and fascism, the U.S.S.R., Nazi Germany, and revolutionary systems. C) Less developed countries of the Third World and the ideological underpinnings of modernization, mobilization, and development. (This course may be repeated for a maximum of 6 credits.)

P.S. 210 3 Credits Spring
Alaska Government and Politics (3 + 0) s
A comprehensive introduction to government and politics in Alaska. Topics include: Alaska's political history as a territory and state, the Alaska Constitution, Alaska political parties, interest groups, elections, public opinion, the Governor, Legislature, Judiciary and state administration; local government in Alaska, and Alaska public policy issues.

P.S. 211 3 Credits Alternate Spring
State and Local Government (3 + 0) s
Organization, functions, and policies of state and local governments in the United States; Federalism and intergovernmental relations, and comparative analysis of the politics of the 50 states. (Next offered: 1983-84.)

P.S. 212 3 Credits Alternate Fall
Introduction to Public Administration (3 + 0) s
(Same as Just. 259)
Theory, principles, and practices of public administration, especially as applied to municipal agencies. Study of planning and organization: decision making and the formation and administration of public policy. (Next offered: 1983-84.)

P.S. 263 3 Credits Fall and Spring
Alaska Native Politics (3 + 0) s
An introduction to the political development, organization, interests and activities of Alaska Natives; treatment of the history of white-Native contact, the evolution of Native leadership, village and regional government, and the role of Native brotherhoods culminating in the Alaska Federation of Natives.

P.S. 301 3 Credits Alternate Fall
American Presidency (3 + 0) s
A study of the institution of the presidency: the gradual growth of formal and informal means of presidential power, the influence that different presidents have brought to the office, the significance of presidential style and character, presidential elections, and suggestions to reform the institution of the presidency. (Prerequisite: P.S. 101 or consent of instructor. Next offered: 1984-85.)

P.S. 302 3 Credits Alternate Spring
Congress and Public Policy (3 + 0) s
A study of the American Congress with attention given to the historical setting of the institution: the process of decision-making election and training of Congressmen, influences on legislative policymaking by other branches and interest groups, and monitoring by Congress of national policies. (Prerequisite: P.S. 101. Next offered: 1983-84.)

P.S. 310 3 Credits Alternate Fall
The Politics of Post-Industrial States (3 + 0) s
Comparative study of the political systems of societies which have completed their industrial revolutions. Topics include: The problem of the welfare state, the no-growth society, the end of ideology, the loss of the work ethic, identity in homogeneous societies, war and peace in an industrialized context, etc. Countries included: The U.S., Great Britain, Soviet Union, Germany, Japan. (Prerequisite: P.S. 101 or 102 or consent of instructor. P.S. 201 strongly recommended. Next offered: 1983-84.)

P.S. 315 3 Credits Alternate Spring
American Political Thought (3 + 0) s
Political ideas and major political movements in the United States from the 17th century to the present: Puritanism, revolutionary thought, Constitutionalism, nature of the Union, utopianism, the Progressive movement, pragmatism, socialism, and conservatism. (Prerequisite: P.S. 101 or consent of instructor. Hist. 131 and 132 strongly recommended. Next offered: 1984-85.)

P.S. 321 3 Credits Fall
International Politics (3 + 0) s
Introduction to the international political system; evolution, process, concepts, dynamics, problems, and techniques for resolving conflicts. A survey of international political theory, including classical, geopolitical and behavioral approaches. (Prerequisites: P.S. 101 and 102 or permission of instructor.)

P.S. 322 3 Credits Spring
International Relations (3 + 0) s
A study of the structure, theory and approaches to international relations involving cooperation, contacts, and conflicts among nation states and non-state actors in the global community. Introduction to international law, international and regional organizations, international political integration, and arms control and disarmament. (Prerequisites: P.S. 101 and 102 or permission of instructor.)

P.S. 400 3 Credits Alternate Fall
Political Science Research Methods (3 + 0) s
A survey of the methods, techniques, applications, and concerns important in political science and policy research. Focus on research design, and planning; sampling, survey research methods, content analysis, observation, and field research, aggregate data analysis, and description of data. (Prerequisites: P.S. 101, 102 or permission of instructor. Next offered: 1983-84.)

P.S. 401 3 Credits Alternate Fall
Political Behavior: Organizations (3 + 0) s
The behavior of organizations and groups in the American political process, focusing on political parties, labor unions, business, and ethnic associations. Development and change, characteristics, and policies of non-governmental organizations. Class research project on the impact of organizations in modern political life. (Prerequisites: P.S. 101 and 102 or permission of instructor; P.S. 400 strongly recommended. Next offered: 1984-85.)

P.S. 402 3 Credits Alternate Spring
Political Behavior: Individuals (3 + 0) s
An examination of attitudes and behavior patterns relevant to politics and the nature of political activity in the electorate. Topics include the learning and transmission of political attitudes, beliefs and values, public opinion in the U.S., the dynamics of the decision whether, and for whom to vote. Class research project on the impact of political opinions, attitudes, beliefs, and values in modern political life. (Prerequisites: P.S. 101 and 102 or permission of instructor; P.S. 400 strongly recommended. Next offered: 1984-85.)

P.S. 411 3 Credits Alternate Fall
Classical Political Theory (3 + 0) h
Political ideas from ancient Greece, Rome, and the Judaeo-Christian tradition, focusing on the role of the individual and the state, political ideals, and actual forms of government, religious ideas, and movements as they bear on political thought. Analysis of the theories of Plato, Aristotle, Cicero, Augustine, and Thomas Aquinas. (Prerequisites: P.S. 101 and 102 or consent of instructor. Next offered: 1983-84.)

P.S. 412 3 Credits Alternate Spring
Modern Political Theory (3 + 0) s
Political ideas from Machiavelli to Marx and Lenin. Analysis of the problems of the development and change of the modern nation state system through the writings of the following theorists: Machiavelli, Hobbes, Locke, Rousseau, Burke, J. S. Mill, Marx, and Lenin. (Prerequisites: P.S. 101 and 102 or consent of instructor; P.S. 411 strongly recommended. Next offered: 1983-84.)

P.S. 415 3 Credits Alternate Fall
Contemporary Political Theory (3 + 0) s
Major political ideas from Lenin to the present. Analysis of the topics power and authority, liberty and equality, obligation and dissent, justice, and revolution in the writings of significant twentieth century political thinkers. (Prerequisites: P.S. 101 and 102 or consent of instructor; P.S. 412 strongly recommended. Next offered: 1983-84.)

P.S. 435 3 Credits Alternate Fall
The Supreme Court and the American Legal System (3 + 0) s
The role of the Supreme Court in the development of American law with particular emphasis on the social, political, and economic factors which influence the behavior of courts. Focus on the evolution of the federal system over time. Some use of case analysis in a limited introduction to Constitutional law. (Prerequisites: P.S. 101 and 102 or permission of instructor. Next offered: 1984-85.)

P.S. 436 3 Credits Alternate Spring
The Courts and Civil Liberties (3 + 0) s
Origin and development of civil and political liberties; responsibility of the branches of government and the people for their maintenance. Cases and literature bearing on protection of constitutionally guaranteed rights with particular reference to the period since 1868. (Prerequisite: P.S. 101. Next offered: 1984-85.)

P.S. 437 3 Credits Alternate Fall
American Foreign Policy and National Security (3 + 0) s
A study of the formulation, implementation, and coordination of American foreign policy in light of major contemporary events. Reappraisal with suggestions for reform. Reexamination of military instruments and the resort to force in a nuclear age. (Prerequisites: P.S. 101 and 102 or consent of instructor. Next offered: 1983-84.)

P.S. 475 3 Credits Fall and Spring
Internship in Public Affairs (3 + 0)
Designed to give carefully selected undergraduates and/or graduates the opportunity to do practical and meaningful work with governmental agencies or civic action groups. Admission by permission of the instructor.

P.S. 480 1-3 Credits Fall and Spring
The United Nations, Model United Nations and International Administration (1-3 + 0) s
The history, organization, function, and procedures of the United Nations. An introduction to the UN through research on member country's behavior, simulation, and training in the policies and procedures of international administration. Can be taken for any combination of parts A, B, C. The assignment of credits can be variable, from one to three, dependent on requirements undertaken by the student. This assignment is to be made at the time of registration for the course.

P.S. 480A Fall
Introduction to United Nations organization and procedures; background research on a member nation of the UN. 1 credit (may be repeated for a maximum of 2 credits).

P.S. 480B Spring
Introduction to simulation in international policymaking and administration, application of simulation exercises, focusing on a UN member nation — development of policy positions, training in committee rules, procedures, and formulation of strategy. 1 credit (may be repeated for a maximum of 2 credits).

P.S. 480C Spring
Participation in the annual session of the Model United Nations of the Far West. 1 credit (may be repeated for a maximum of 2 credits). (Prerequisite: P.S. 321 or permission of instructor.)

P.S. 481 3 Credits As Demand Warrants
Geopolitics and the International Environment (3 + 0) s
A study of the environment and the influences of geopolitics in the global system. An assessment of topography, demography, natural resources, technology, economic development, and their impact on the international environment. An evaluation of cooperative efforts, needs for reform, with an outlook for the future. (Prerequisites: P.S. 101 and 102 or permission of instructor; P.S. 321 strongly recommended.)

Psychology

Psy. 101 3 Credits Fall and Spring
Introduction to Psychology (3 + 0) s
Fundamentals and basic principles of general psychology emphasizing both the natural science orientation and the social science orientation including the environment, heredity, and psychological basis for integrated behavior, visual perception and its sensory basis, audition and the other senses, motivation and emotion, basic processes in learning, problem solving, and thinking; personality, psychological disorders, and the prevention, treatment, and therapeutic strategies.

Psy. 102 3 Credits delete **Spring**
Advanced General Psychology (3 + 0) s
The theory and methods of psychology including the scope and limitations of the science. Major emphasis in the areas of experimental, statistical, physiological, clinical, and social analysis of behavior. (Prerequisite: Psy. 101.)

Psy. 240 3 Credits Alternate Fall
Developmental Psychology (3 + 0) s
An intradisciplinary approach to the study of the psychology of development in the human species from birth to death. Emphasis will focus on critical stages of development particularly those stages which involve the greatest change biologically and psychologically especially where related to the greatest psychological impact. (Prerequisite: Psy. 101. Next offered: 1984-85.)

Psy. 250 3 Credits Spring
Introductory Statistics for Behavioral Sciences (3 + 0) (Same as Soc. 251)
Introduction to the purposes and procedures of statistics: calculating methods for the description of groups (data reduction) and for simple inferences about groups and differences between group means. (Prerequisite: Psy. 101.)

Psy. 260 3 Credits Spring
Experimental Psychology (2 + 3) s
Introduction to the field of experimental psychology. Emphasis will be placed upon research methods and techniques which are important in experimental psychology. Students will conduct experiments involving human and animal subjects. (Prerequisites: Psy. 101 and Psy. 250. Psy. 250 and Psy. 260 may be taken concurrently.)

Psy. 320 3 Credits delete **Alternate Fall**
History and Systems of Psychology (3 + 0) s
An introduction to the history of psychology, followed by a survey of recent approaches to psychology from psychoanalysis to behaviorism and ethology. The theoretical and historical relationships among the various approaches will be explored. (Prerequisite: Psy. 101. Next offered: 1983-84.)

Psy. 330 3 Credits Alternate Spring
Social Psychology (Same as Soc. 302) s
An analysis of inter-group relationships in terms of process and value orientation, their influences on the personality, and the various aspects of collective behavior on group and person. (Prerequisite: Psy. 101 or Soc. 101 or junior standing. Next offered: 1983-84.)

Soc. 340
Psy. 340 3 Credits Fall
Abnormal Psychology (3 + 0) s → Deviant Behavior
A study of people who, by their behavior or feelings, are set apart in some way. The concept of abnormal behavior is examined along with treatment and outcomes of major maladaptive patterns of behavior. Some of the topics covered include schizophrenia, suicide, sexual deviations, depression, and behavior problems of children. (Prerequisite: Psy. 101.)

Psy. 350 3 Credits Spring
Comparative Psychology (3 + 0) s
An integrated multidisciplinary behavioral approach to the study of comparative psychology emphasizing the basic premises, causal factors, functional consequences and interrelationships, and synthesis of animal behavior and ethology in the development and maintenance of behavioral patterns extant within both individual organisms and social groups. (Prerequisites: Biol. 105-106, Psy. 101, or permission of instructor.)

Psy. 360 3 Credits Alternate Fall
Psychological Tests and Measurements (3 + 0) s
Standardized psychological tests in various applied areas: administration, scoring, and interpretation of established tests. (Prerequisites: Psy. 101, 250. Next offered: 1984-85.)

Psy. 370 3 Credits Alternate Fall
Drugs and Drug Dependence (3 + 0) s
(Same as Soc. 370.)
A multidisciplinary approach to the study of drugs and drug abuse emphasizing acute and chronic alcoholism, commonly abused drugs, law enforcement and legal aspects of drug abuse, medical uses of drugs, physiological aspects of drug abuse, psychological and sociological causes and manifestations of drug abuse, recommended drug education alternatives and plans, and the treatment and rehabilitation of acute and chronic drug users. (Prerequisite: Psy. 101 or Soc. 101 or permission of instructor. Next offered: 1983-84.)

Psy. 380 3 Credits Alternate Fall
Human Behavior in the Arctic (3 + 0) s
A study of human behavior as it relates to cold climates. Emphasis will be placed on living systems in Alaska and behavioral characteristics that have to do with stress and isolation. Material will include structural design as related to behavioral research. (Prerequisite: Psy. 101. Next offered: 1984-85.)

Psy. 410 3 Credits Alternate Spring
Theories of Personality (3 + 0) s
Current psychological theories with a critical examination of the different approaches used in theory construction. (Prerequisite: Psy. 101. Next offered: 1984-85.)

Psy. 420 3 Credits Alternate Fall
Motivation (3 + 0) s
Survey of theory and research on reinforcement, punishment, frustration, preference, instinctual mechanisms, and other factors "controlling" the performance of organisms. (Prerequisite: Psy. 101. Next offered: 1984-85.)

Psy. 430 3 Credits Spring
Clinical Psychology (3 + 0) s
A course in methods of clinical psychology with consideration of assessment and treatment of abnormal behaviors. Models of abnormal psychology are examined along with clinical intervention methods. Some topics include intellectual and personality testing, behavioral assessment, types of therapies, and professional issues in the mental health field. (Prerequisite: Psy. 101.)

Psy. 440 3 Credits Alternate Spring
Learning (3 + 0) s
Survey of theory and research on the fundamentals of learning. Topics to be covered include: animal learning, classical conditioning, instrumental learning, discrimination learning, biological constraints on learning, and memory. (Prerequisite: Psy. 101. Next offered: 1983-84.)

Psy. 450 3 Credits Alternate Spring
Human Memory and Language (3 + 0) s
Survey of theory and research in the general areas of human memory and the psychology of language. Topics to be covered include: human learning, memory, cognitive processes, verbal learning, psycholinguistics, and language learning. (Prerequisite: Psy. 101. Next offered: 1983-84.)

Psy. 460 4 Credits Alternate Fall
Physiological Psychology (3 + 3) s
An integrated multidisciplinary approach to the study of physiological psychology — neuroanatomy and neurophysiology — emphasizing the basic principles, cortical and subcortical organization, functional mechanisms, and the physical-chemical foundations extant in the physiological bases of behavior with special reference to such disciplines as neuroanatomy, neurochemistry, and electrophysiological measures employed in the study of behavior and brain activity; research methods and techniques, and extensive exploration into areas of current research interest, including brain dynamics, the neural bases of learning, the neural substrates of emotion and motivation, states of consciousness, and stress and psychosomatic relationships. (Prerequisite: Psy. 101, or permission of instructor. Next offered: 1983-84.)

Psy. 470 3 Credits Alternate Fall
Sensation and Perception (3 + 0) s
An integrated psychophysiological inquiry into the study of sensation and perception emphasizing the essential principles, functions and organization, fundamental mechanisms, and the structural complexity extant in the sensory physiology of the special sensory processes — audition, gustation, kinethesis, olfaction, proprioception, somesthesis, and vision — as well as an examination of the theoretical models and systems of perception with special reference to the biological, developmental, hereditary, physiological, psychological, and social effects on the interpretation of perceptual and sensory phenomena. (Prerequisite: Psy. 101, or permission of instructor. Next offered: 1984-85.)

Psy. 480 3 Credits Alternate Spring
Clinical Neurology (3 + 0) s
A multidisciplinary survey approach to the study of clinical neurology, with emphasis on clinical diagnosis, pathogenesis, and particularly, treatment of the myriad neurological disorders which comprise about 60% of the complaints of patients visiting the physician's office. An evaluation of treatments. (Prerequisite: Psy. 101, or permission of instructor; Psy. 460 is recommended, but not required. Next offered: 1983-84.)

Russian

Russ. 101 5 Credits Fall
Russ. 102 5 Credits Spring
Elementary Russian I and II (5 + 0) h
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 750 words, exploration of the cultural dimension, implicitly through language, and explicitly through texts and audio-visual materials; use of Foreign Language Learning Center.

Russ. 201 4 Credits Fall
Russ. 202 4 Credits Spring
Intermediate Russian I and II (4 + 0) h
Continuation of Russ. 102. Increasing emphasis on reading ability and cultural materials. Conducted in Russian. (Prerequisite: Russ. 102 or two years of high school Russian.)

Russ. 288 2 Credits Alternate Spring
Individual Study: Reading Russian h
Emphasis on expanding passive vocabulary and recognizing basic grammatical structures; modern Soviet texts. (Prerequisites: Russ. 201, equivalent training or permission of instructor. Recommended to be taken concurrently with Russ. 202. Next offered: 1983-84.)

Russ. 301 3 Credits Alternate Fall
Russ. 302 3 Credits Alternate Spring
Advanced Russian (3 + 0) h
Discussions and essays on more difficult subjects or texts: translations, stylistic exercises, and special grammatical problems. Conducted in Russian. (Prerequisite: Russ. 202 or instructor's permission. Next offered: 1984-85.)

Russ. 322 3 or 4 Credits Alternate Fall and Spring
Studies in Russian Literature in English Translation (3 + 0 or 3 + 0 + 1) h
Choice of authors, genres, or periods of Russian literature for intensive study. Conducted in English. For interested students with a knowledge of Russian, an extra unit of credit will be offered; students will be required to read works in Russian. Weekly meetings will be scheduled to discuss (in Russian) the linguistic and stylistic aspects of the works covered in the lectures. Courses may be repeated for credit when topic varies. (Prerequisite: Permission of instructor. Next offered: 1983-84.)

Russ. 387 **2 Credits** **Alternate Fall**
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of word formation, derivation, composition, etc. (Prerequisite: Two years of Russian or permission of instructor. Next offered: 1983-84.)

Sociology

Soc. 101 **3 Credits** **Fall and Spring**
Soc. 102 **3 Credits** **Fall and Spring**
Introduction to Sociology (3 + 0) s
An introduction to the science of man as a social animal, emphasizing the social processes which give rise to and shape man's language, experiences, perception, meaning, and behavior. An attempt is made to construct an interaction framework to be used in understanding and predicting human behavior. (Prerequisite: Soc. 101 for Soc. 102.)

Soc. 103 **3 Credits** SWK-103 **Fall**
Introduction to Social Work (3 + 0) s
Introduction to the profession of social work and the social service delivery system. Examines the historical development of social work with emphasis on the knowledge, values, and skills utilized by the social worker. Designed to help the student test social work as a possible career choice. (Prerequisites: Psy. 101 and Soc. 101.)

Soc. 201 **3 Credits** **Fall**
Social Problems (3 + 0) s
Problems of contemporary society; analysis of factors giving rise to them.

Soc. 242 **3 Credits** **Spring**
The Family (3 + 0) s
A study of the contemporary patterns of marriage and family relationships in the U.S.A. Social psychological approach to factors associated with the life cycle of the family, including mate selection, marital interaction and adjustment, parent-child relationships, and the later years of married life.

Soc 250
Soc. 251 **3 Credits** **Spring**
Introductory Statistics for Behavioral Sciences (3 + 0)
(Same as Psy. 250.)
Introduction to the purposes and procedures of statistics; calculating methods for the description of groups (data reduction) and for simple inferences about groups and differences between group means. (Prerequisite: Soc. 101.)

Soc. 302 **3 Credits** **Spring**
Social Psychology (3 + 0) s
(Same as Psy. 330.)
An analysis of inter-group relationships in terms of process and value orientation, their influences on the personality, and the various aspects of collective behavior on group and person. (Prerequisites: Soc. 101, 102.)

Psy 304
Soc. 304 **3 Credits** **Fall**
Culture and Personality (3 + 0) s
An examination of cultural value systems and social institutions as they bear on the formation of personality. Types of behavior patterns relevant to personality formation. (Prerequisites: Soc. 101, 102.)

Soc. 305 **3 Credits** **Fall**
Social Welfare (3 + 0) s
The how and why of the emergence of social welfare as a basic institution in contemporary society, the roots and current dynamics of poverty, inequality, and insecurity in America. Analysis of the structure and functioning of social welfare policies and programs. (Prerequisite: Soc. 103 or consent of instructor.)

Soc. 306 **3 Credits** SWK-306 **Spring**
Social Welfare: Policies and Issues (3 + 0) s
Social policies and how they effect the delivery of social services. Factors that have influenced the development of the current social service system and its place in the total social structure. Analysis of the dilemmas which develop in a welfare system attempting to deal with rapid social change. Exploration of alternative approaches to the solution of social problems and possible future developments in the social service system. (Prerequisite: Soc. 305.)

Soc. 307 **3 Credits** **Spring**
Population Problems (3 + 0) s
The demographic structure of population and its implications, with a section on Alaska population dynamics.

Soc. 309 **3 Credits** **Alternate Fall**
Urban Sociology (3 + 0) s
Growth and development of urban communities with reference to migration patterns, differentiation of functions, ecological patterns of land use, social control, and secondary group associations of metropolitan magnitude. (Prerequisites: Soc. 101, 102. Next offered: 1984-85.)

Soc. 310 **3 Credits** **Alternate Spring**
Sociology of Later Life (3 + 0) s
A comparative analysis of the social status and role of the aging in various societies with emphasis on problems of aging in contemporary U.S. (Prerequisites: Soc. 101 and 102. Next offered: 1984-85.)

Soc. 342 **3 Credits** SWK-342 **Fall**
Human Behavior in the Social Environment (3 + 0) s
This course presents theoretical frameworks considered useful for organizing knowledge about the understanding of personality development and social behavior of individuals. The course will encompass the study of the life cycle, including the processes that shape individual differences. (Prerequisites: Soc. 103 and 305 or instructor's consent.)

Soc 340/Psy 340
Soc. 343 **3 Credits** **Fall**
Sociology of Deviant Behavior (3 + 0) s
A study of the social etiology of deviant behavior, both criminal and noncriminal, with an emphasis on the nature of group interaction, and an examination of the institutions involved. (Prerequisites: Soc. 101, 102.)

Soc. 347 **3 Credits** **Alternate Fall**
Sociology of Religion (3 + 0) s
The study of the historical development and functional significance of religion, values; norms of institutions, groups and reform movements and their influence on social organization. (Prerequisites: Soc. 101, 102. Next offered: 1983-84.)

Soc. 361 **6 Credits** **Spring**
Intermediate Social Work Methods and Practice I
Knowledge and skills previously learned applied to student's own practice within the agency setting. Focus on worker's tasks in assessing the problems, negotiating contracts, planning, and implementing interventions; evaluating effects and terminating efforts. Beginning application of knowledge gained about individual and group behavior, including his own and his colleagues in the agency. Student attends seminar class three hours weekly and completes 80 clock hours of direct practice in an approved agency under the supervision of a field instructor appointed by the university. (Prerequisites: Soc. 103, 305, 306.)

Soc. 362 **6 Credits** **Spring**
Intermediate Social Work Methods and Practice II
Continuation of Soc. 361 with more extensive application of the knowledge and skills of the social work method. The seminar will emphasize the analysis and evaluation of a case example of one step in the problem-solving process which the student presents from his/her field agency practice. Student attends seminar class three hours per week and completes 80 clock hours of direct practice in an approved agency under the supervision of a field instructor appointed by the university. (Prerequisite: Soc. 361 or consent of instructor.)

Soc. 363 **3 Credits** **Fall**
Social Stratification (3 + 0) s
The study of the differential distribution of social power, privilege, and life chances in class and caste as the basis for social organization. Emphasis on occupational, educational, and other correlates which determine social structure. Also includes a comparative study of class and caste in India and the United States. (Prerequisites: Soc. 101, 102.)

Soc. 370 3 Credits Alternate Fall
Drugs and Drug Dependence (3 + 0) s
(Same as Psy. 370)
A multidisciplinary approach to the study of drugs and drug abuse emphasizing acute and chronic alcoholism, commonly abused drugs, law enforcement and legal aspects of drug abuse, medical uses of drugs, physiological aspects of drug abuse, psychological and sociological causes and manifestations of drug abuse, recommended drug education alternatives and plans, and the treatment and rehabilitation of acute and chronic drug users. (Prerequisite: Psy. 101 or Soc. 101 or permission of instructor. Next offered: 1983-84.)

Soc. 402 3 Credits Spring
Theories of Sociology (3 + 0) s
Major sociological theories and theorists of Western civilization. Review of important contributions and approaches of various "national schools" with emphasis on current American and European trends. (Prerequisite: Permission of instructor.)

Soc. 405 3 Credits Alternate Spring
Social Change (3 + 0) s
Social change in long-time perspective, with emphasis on social movements, and the influence of technology. (Prerequisites: Soc. 101, 102. Next offered: 1983-84.)

Soc. 406 3 Credits Alternate Spring
Human Ecology (3 + 0) s
Modern industrial and centralized society; institutional structure of community life — political, economic, religious — with reference to internal structure and external sources of control and domination, with some emphasis on the nature of ruralism. (Prerequisite: Permission of instructor. Next offered: 1984-85.)

Soc. 407 3 Credits Alternate Spring
Formal Organization (3 + 0) s
Theory and analysis of large-scale, complex, modern organizations, their coordination, role and status interrelationships, and their publics. (Prerequisite: Soc. 101. Next offered: 1984-85.)

Soc. 408 3 Credits Alternate Spring
American Minority Groups (3 + 0) s
Present status of ethnic, religious and national minorities and their changing sociological, economic, and political status. (Next offered: 1983-84.)

Soc. 461 6 Credits Spring
Advanced Social Work Methods and Practice I
Advanced social work methods, continuation of 362. Focus here is on the student's mastery of the knowledge and skills needed for successful intervention in one particular social problem over a period of time to accomplish fulfillment of client-worker contract. Student presents in class for analysis and evaluation a case example of a completed client-worker contract. Student attends seminar class three hours weekly and completes 80 clock hours of direct practice in an approved agency under the supervision of a field instructor appointed by the university. (Prerequisite: Soc. 362 or consent of instructor.)

Soc. 462 6 Credits Spring
Advanced Social Work Methods and Practice: Administration
Seminar in current issues in social work practice. An examination of an integrated approach to major systems of social service delivery and their effect on individual consumers. Student presents in class for analysis and evaluation a case example of an agency attempting to design its structure, services, and intervention methods for the alleviation of specific social dysfunctions. Student attends seminar class three hours weekly and completes 80 clock hours of direct practice in an approved agency under the supervision of a field instructor appointed by the university. (Prerequisite: Soc. 461 or consent of instructor.)

Soc. 463 6 Credits Spring
Advanced Social Work Methods and Practice: Community Organization (3 + 7)
An advanced course focusing on methods and practice of community organization and development. The course explores an array of techniques, skills, and methods for use in community organizational practice. Students are concurrently placed in selected social service agencies and accept social service assignments under the supervision of competent agency personnel. (Prerequisite: Soc. 461.)

Soc. 473 3 Credits Fall
Social Science Research Methods (3 + 0) s
Techniques of social research: sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments, and attitude scaling. (Prerequisite: Psy. 250 or Soc. 251.)

Soc. 492 2 Credits As Demand Warrants
Seminar in Human Behavior (2 + 0) s
Integrated behavioral approach emphasizing the major sociological and psychological theories with special attention to current literature. (Prerequisite: Senior standing in psychology or sociology.)

Spanish

(For studying in Mexico, see p. 52)

Span. 101 5 Credits Fall
Span. 102 5 Credits Spring
Elementary Spanish I and II (5 + 0) h
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 1000 words, exploration of the cultural dimension, implicitly through language and explicitly through texts and audio-visual materials; use of Foreign Language Learning Center.

Span. 201 3 Credits Fall
Span. 202 3 Credits Spring
Intermediate Spanish I and II (3 + 0) h
Continuation of Span. 102. Increasing emphasis on reading ability and culture material. Conducted in Spanish. (Prerequisite: Span. 102 or equivalent.)

Span. 288 2 Credits Spring
Individual Study: Reading Spanish h
Emphasis on rapid expansion of passive vocabulary and immediate recognition of frequent idiomatic expressions and grammatical structures, development of true reading skill, and modern literary and/or non-literary texts. (Prerequisites: Span. 201, equivalent training or permission of instructor. Recommended to be taken concurrently with Span. 202.)

Span. 301 3 Credits Alternate Fall
Span. 303 3 Credits Alternate Fall
Advanced Spanish (3 + 0) h
Discussions and essays on more difficult subjects or texts, translations, stylistic exercises, and special gramatical problems. Conducted in Spanish. (Prerequisite: Span. 202 or equivalent. Span. 301 next offered: 1983-84; Span. 303: 1984-85.)

Span. 387 2 Credits Alternate Fall
Individual Study: Semantics h
Systematic expansion of passive and active vocabulary through analysis of word fields, series of synonyms and antonyms, principles of word formation, derivation, composition, etc. (Prerequisite: Span. 202 or permission of instructor. Next offered: 1983-84.)

Span. 432 3 Credits Spring
Studies in Hispanic Literature and Culture (3 + 0) h
Intensive study of authors, literary movements, periods, and/or genres. Analysis of cultural material other than texts. Conducted in Spanish. Student may repeat course for credit when topics vary. (Prerequisite: Span. 301 or 303 or permission of instructor.)

Span. 487 2 Credits Alternate Fall
Individual Study: Translation of Texts
Expansion of vocabulary and grammatical knowledge; emphasis on understanding precise shades of meaning, stylistics, artistic expression and cultural values in language, and literary and non-literary texts. Student may repeat course for credit if materials vary. (Prerequisite: Span. 301 or 303 or equivalent and permission of instructor. Next offered: 1984-85.)

Span. 488 **3 Credits** **As Demand Warrants**
Individual Study: Senior Project h
Designed to permit the student to demonstrate ability to work with the language and the culture through the 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 6th week of the semester preceding the semester of graduation. Offered normally in the semester preceding the student's graduation. (Prerequisite: At least 10 credits in upper division Spanish or permission of instructor.)

Space Physics and Atmospheric Sciences

SPAS 103 **3 or 4 Credits** **Spring**
Introduction to Space Science (3 + 0 or 3 + 3) n
An exploration in non-mathematical terms of the discoveries of the space age for the general student. Topics include solar-terrestrial relations, the earth's upper atmosphere and magnetosphere (including the aurora), stratosphere, troposphere, and space communications, with emphasis on fundamental physical processes. Laboratory provides participation in a variety of space science activities unique to the Fairbanks campus.

SPAS 465 **3 Credits** **As Demand Warrants**
Meteorology (3 + 0) n
Instruments and observations. Introduction to mechanics and thermodynamics of the atmosphere. Weather analysis and forecasting. (Prerequisites: Phys. 104 or 212; Math. 202.)

SPAS 625 **3 Credits** **As Demand Warrants**
Aeronomy of Molecular and Particulate Pollutants (3 + 0)
Physics and chemistry of O_3, H_2O, NO, CO_2, and CH_4 and particulate matter in the atmosphere. Quantitative aeronomy of natural and anthropogenic pollutants in the lower atmosphere. (Prerequisite: Graduate standing in geosciences or permission of instructor.)

SPAS 626 **3 Credits** **Alternate Fall**
Plasma Physics I (3 + 0)
Fundamental equations of magnetohydrodynamics and magnetohydrodynamic waves. Invariants of the motion of a charged particle in a magnetic field. Dynamics of a plasma and plasma waves. (Admission by arrangement. Next offered: 1983-84.)

SPAS 627 **3 Credits** **Alternate Spring**
Plasma Physics II (3 + 0)
Wave propagation in hot, homogeneous plasmas, loss cone instabilities, advanced particle orbit theory, wave phenomena and instabilities in inhomogeneous plasmas with complex geometries including drift and flute modes, quafi-linear theory, and plasma disturbance. (Admission by arrangement. Next offered: 1983-84.)

SPAS 628 **3 Credits** **Alternate Fall**
Digital Time Series Analysis (3 + 0)
The use of methods of time series analysis, including correlation, convolution, filtering, and multivariate techniques. Material is of general application to disciplines that obtain multiparameter date suites as part of their research, such as seismology, oceanography, meteorology, geomagnetism, and space physics. Lectures will develop basic techniques and guide the student in designing working algorithms. The student will apply algorithms to various data suites from geophysics, using the Geophysical Institute's VAX 11/780 computer. (Prerequisites: Math 401 and 402, familiarity with FORTRAN or consent of instructor. Next offered: 1983-84.)

SPAS 636 **3 Credits** **Alternate Fall**
Physics of the Lower Atmosphere (3 + 0)
Small-scale physical and chemical processes in the lower atmosphere, including micrometeorology, radiative transfer and cloud physics. Subjects to be covered include the transfer of solar and thermal radiation through the atmosphere, the radiation budget at the surface of the earth, the resulting energy, momentum, and mass fluxes near the ground, water vapor and its phase changes, and the nucleation and growth of cloud droplets and precipitation particles. (Prerequisite: Graduate standing in geosciences or permission of instructor. Next offered: 1984-85.)

SPAS 640 **3 Credits** **Alternate Spring**
Auroral Physics (3 + 0)
The physical and chemical processes that underlie the formation of the aurora. The interaction of energetic particles with the atmosphere in producing various aurorally associated phenomena, optical emissions, ionization, x-rays, and chemical-ionic changes. Effects of aurora on the thermoshere, mesosphere, and stratosphere. Effects of electric fields. The auroral energy budget. (Prerequisite: Graduate standing in geosciences or permission of instructor. Next offered: 1984-85.)

SPAS 646 **3 Credits** **Alternate Spring**
Atmospheric Dynamics (3 + 0)
The response of the earth's atmosphere to mechanical forces and thermal energy sources, the governing equations and the appropriate boundary conditions. Mean zonal and meridional motion and general circulation in the lower atmosphere and the thermosphere. Oscillations and waves. High latitude energy and momentum sources and their effects. The atmosphere-ocean system. (Prerequisite: Graduate standing in geosciences or permission of instructor. Next offered: 1984-85.)

SPAS 650 **3 Credits** **Alternate Fall**
Aeronomy (3 + 0)
The physical and chemical processes that govern the response of planetary atmospheres to solar radiation, surface phenomena, and anthropogenic influence. Composition of the neutral and ionized gases. Chemical and ionic reactions in the thermosphere, mesosphere, and stratosphere. Dynamical processes and upper air winds. The airglow. Electrodynamic processes and ionospheric currents. (Prerequisite: Graduate standing in geosciences or permission of instructor. Next offered: 1984-85.)

SPAS 656 **3 Credits** **Alternate Spring**
Atmospheric Circulation, Weather, and Climate (3 + 0)
The circulation of the atmosphere and the weather and climate produced by that circulation. The general circulation of the atmosphere, weather systems, air-sea and air-snow interactions, circulation types and climatic anomalies, and climatic change. (Prerequisite: Graduate standing in geosciences or permission of instructor. Next offered: 1983-84.)

SPAS 672 **3 Credits** **Alternate Fall**
Space Physics (3 + 0)
A comprehensive review of the present understanding of the origin and evolution of stars, the solar system and the earth. Interactions between a magnetized celestial body and a magnetized plasma. The magnetosphere of the earth, Mercury, and Jupiter. (Prerequisite: Graduate standing in geosciences or permission of instructor. Next offered: 1983-84.)

SPAS 673 **3 Credits** **Alternate Spring**
Space Physics (3 + 0)
A comprehensive review of relationships between solar disturbances and the resulting interplanetary disturbances and magnetospheric disturbances. Solar storms (solar flares), high speed solar streams, magnetospheric substorms, magnetospheric storms, and origin of auroral particles. (Prerequisite: Graduate standing in geosciences or permission of instructor. Next offered: 1983-84.)

SPAS 674 **3 Credits** **As Demand Warrants**
Environmental Hydrodynamics (3 + 0)
Mechanics of fluids on a rotating earth. Navier Stoke's equations, boundary layer phenomena, turbulent flow, and applications of hydrodynamics to motion of stratified fluids such as the atmosphere and ocean. (Prerequisite: Graduate standing in geosciences or permission of instructor.)

Speech Communication

Spc 121 – Interpersonal Emphasis

Sp.C. ~~111~~ **3 Credits** **Fall and Spring**
Fundamentals of Oral Communication (3 + 0)
An introduction to the processes of interpersonal communication, focusing on increased understanding of and effective performance in common two-person communication situations. Attention to elements of interpersonal communication present in group and public communication contexts.

Sp.C. 211 3 Credits Fall
Voice and Diction (2 + 2)
Development of fluency and clearness in the voice, study and practice to improve speech and eliminate faults of articulation and pronunciation, phrasing, inflection, and emphasis, including individual analysis and tape recording. (Prerequisite: Sp.C. 111 or admission by arrangement.)

Sp.C. 235 3 Credits Fall and Spring
Discussion and Small Group Process (3 + 0)
An approach to understanding the process of the small group: emphasizing self-evaluation, the role of conflict, the observation and diagnoses of group behavior, and the value of T-group training and the encounter group as an approach to learning.

Sp.C. 241 3 Credits Fall and Spring
Public Speaking (3 + 0)
Theory and practice of exposition in platform speaking situations. The student is required to prepare and present three speeches: informative, demonstrative and persuasive.

Sp.C. 311 3 Credits As Demand Warrants
Introductory Phonetics (3 + 0) h
Use of International Phonetic Alphabet; broad transcription use in acting, teaching, speech improvement. (Prerequisite: Any lower division speech communication course or permission of instructor.)

Sp.C. 320 3 Credits Alternate Years
~~General Semantics~~ (3 + 0) h
An examination of the role of language and meaning in human communication. (Prerequisite: Any lower division speech communication course or permission of instructor. Next offered: 1983-84.)

Sp.C. 321 3 Credits Alternate Years
Nonverbal Communication (3 + 0) s
An examination of the role of non-lexical behavior on human interaction with a special emphasis on human social behavior. Includes a treatment of the roles of space and the environment, physical appearance and dress, physical non-lexical behavior (Kinesics and phonemics), affect displays, and cultural behavioral differences in human communication. (Prereqsuite: Any lower division speech communication course or permission of instructor. Next offered: 1983-84.)

Sp.C. 330 3 Credits Alternate Years
Intercultural Communication (3 + 0) s
Deals with both culture and communication as integrated systems of human behavior. The course addresses itself to gaining an understanding of sources of static in communication when peoples of different cultures interact. Topics covered will include social time, the management of space, non-verbal aspects of human interaction, and the ways verbal language are used, as they relate to human communication. Students will be expected to participate in field work projects examining aspects of intercultural communication in Alaska. (Prerequisite: Any lower division speech communication course or permission of instructor. Next offered: 1984-85.)

Sp.C. 335 3 Credits Alternate Years
Communication in Organizations (3 + 0) s
The study of human communication in social organizations: family, school, business, and government. (Prerequisite: Any lower division speech communication course or permission of instructor. Next offered: 1984-85.)

Sp.C. 341 3 Credits Alternate Years
Persuasion (3 + 0) h
Theory of the persuasive process, focusing on the nature of attitude change, aspects of the source, the receiver, and the persuasive message. Exploration of ethical questions, and of applied persuasion in contemporary society. (Prerequisite: Any lower division speech communication course or permission of instructor. Next offered: 1983-84.)

Sp.C. 342 3 Credits Every Third Year
Advanced Public Speaking (3 + 0) h
The course includes sophisticated methods of argumentation and organization, public speaking in special settings, and with opinionated audiences. (Prerequisite: Sp.C. 241 or consent of instructor. Next offered: 1984-85.)

Sp.C. 351 3 Credits Alternate Years
Argumentation and Debate (3 + 0) h
Theory of argumentation and debate applied to contemporary issues. Practice in briefing and presenting arguments, testing evidence, and detecting fallacies. (Prerequisite: Sp.C. 241 or Sp.C. 341 or permission of instructor. Next offered: 1984-85.)

Sp.C. 361 3 Credits Alternate Years
Oral Interpretation (2 + 2) h
Interpretative reading based on textual analysis of literary forms and careful study of principles of effective reading. (Prerequisite: Any lower division speech communication course, or Thr. 221, or permission of instructor. Next offered: 1983-84.)

Sp.C. 375 3 Credits Alternate Years
Speech Methods for the Secondary Classroom Teacher (3 + 0) h
Theory and preparation for the secondary speech classroom. Speech curriculum for the high school, lesson plans, lecture preparation, and classroom exercises and presentations are included in the material covered. (Prerequisite: Junior standing and Sp.C. 241, or permission of instructor. Next offered: 1984-85.)

Sp.C. 425 3 Credits Alternate Years
Communication Theory (3 + 0) s
Study of human communication as a system of behavior, and as interaction within specific contexts. Focus is on the philosophical bases of communication theory, acquisition of communicative skills, intrapersonal processing, interaction, social influence and communication, and communication as culture. (Prerequisite: One speech communication course at the 300 level or permission of instructor. Next offered: 1983-84.)

Sp.C. 443 3 Credits Alternate Years
Rhetorical Communication (3 + 0) h
An examination of a number of approaches to human communication with an emphasis on developing an understanding of purposeful human communication behavior. (Prerequisites: Sp.C. 241 and one speech communication course at the 300 level or permission of instructor. Next offered: 1983-84.)

Theater

Thr. 101, 201
Thr. 301, 401 1-3 Credits Fall and Spring
Theater Practicum (0 + Var.) h
Participation in Drama Workshop or lab production as performer or technical staff member. Graded pass/fail only. (Credit in this course may not be applied to a major program in theater.)

Thr. 211 3 Credits Fall
Introduction to the Theater (3 + 0) h
Understanding and appreciation of both the distinctive and collaborative contributions of playwright, actor, director and designer to the total work of dramatic art. Study of plays and theater forms from the major periods of theater.

Thr. 221 3 Credits Fall
Acting I (1 + 4) h
Principles of acting developed through pantomime, improvisation, and sense-memory.

Thr. 241 3 Credits Fall
Basic Stagecraft (1 + 4) h
Materials of scene construction and painting and their use.

Thr. 321 3 Credits Alternate Spring
Acting II (1 + 4) h
Building a character; role study and performance of small scenes. (Prerequisite: Thr. 221, or admission by arrangement. Next offered: 1984-85.)

Thr. 325 3 Credits Alternate Fall
Theater Speech (2 + 2) h
Vocal techniques for actors. Standard stage diction and foreign dialects. (Prerequisite: Thr. 221 or permission of instructor. Next offered: 1983-84.)

Thr. 331 3 Credits Alternate Fall
Directing (1 + 4) h
Direction of short plays for drama lab productions. (Prerequisite: Thr. 221 or admission by arrangement. Next offered: 1984-85.)

Thr. 341 3 Credits Alternate Years
Intermediate Stagecraft (1 + 4) h
An examination of the less common scenic materials with methods and techniques for their use. Particular attention will be given to the use of dye in painting backgrounds, projection slides, vacuum formed plastics, molded polyurethane foam, etc. (Students will spend approximately $40 for materials.) (Prerequisite: Thr. 241 or permission of instructor. Next offered: 1984-85.)

Thr. 343 3 Credits Alternate Fall
Scene Design (3 + 0) h
Principles and techniques of theatrical scene design. The student will design projects directed at solving particular scenic problems or working in a specific scenic style with specific physical limitations. (Prerequisite: Thr. 241 or permission of the instructor. Students will spend approximately $40 for materials. Next offered: 1984-85.)

Thr. 347 3 Credits Alternate Spring
Lighting Design (3 + 0) h
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. (Prerequisite: Thr. 343 or permission of the instructor. May be taken concurrently with Thr. 343. Students will spend approximately $40 for materials. Next offered: 1984-85.)

Thr. 351 3 Credits Spring
Makeup for Theater (1 + 4) h
Theatrical makeup for actors, teachers, directors, and other theater workers; makeup materials and use, straight and character makeup, illusory and plastic relief, national types, and influence of lighting. (Students will spend approximately $85 for materials.) (Prerequisite: Any lower division theater course or permission of the instructor.)

Thr. 354 3 Credits Fall
Costume Construction and Design (3 + 0) h
An examination of the processes of research, design, and construction of period and modern clothing for the stage. The student will research and design projects representative of specific periods of dress, as well as be given practical experience in the areas of pattern drafting, theatrical construction methods, and drawing and rendering techniques. (Prerequisite: Thr. 211 or permission of the instructor.)

Thr. 355 3 Credits Alternate Spring
History of Stage Costume (3 + 0) h
Stage costume and contemporary dress of the major theatrical periods. Emphasis will be placed on the process of selection of costumes for representative plays of each period. (Prerequisite: Thr. 211 or permission of instructor. The student is expected to have basic knowledge of theater practice and the interpretation of dramatic literature. Next offered: 1984-85.)

Thr. 411 3 Credits Alternate Years
Theater History I (3 + 0) h
An intensive examination of theatrical form and practice from its origins in storytelling and ritual through the French Neo-classic Theater. (Prerequisites: Junior standing and Thr. 211 or permission of instructor. Next offered: 1984-85.)

Thr. 412 3 Credits Alternate Years
Theater History II (3 + 0) h
An intensive examination of theatrical form and practice from the English Restoration through the present. (Prerequisites: Junior standing and Thr. 211 or permission of instructor. Next offered: 1983-84.)

Thr. 421 3 Credits Alternate Spring
Period Styles of Acting (2 + 2) h
The acting techniques required for the performance of period plays ranging from Greek Drama through Absurdist Theater. (Prerequisites: Acting I plus Acting II or permission of instructor. Next offered: 1983-84.)

Thr. 435 3 Credits As Demand Warrants
Directing (3 + 0) h
Directorial analysis of a major dramatic work for public presentation. (Prerequisite: Senior majors with 3.00 G.P.A. in Theater.)

Wildlife and Fisheries

W.F. 301 3 Credits Spring
Principles of Animal Population Dynamics and Management (2 + 2)
History of wildlife and fisheries laws and regulations, role and wildlife management philosophies of state and federal wildlife management agencies, and population management of single species of fish and wildlife. Population growth potential, determination of survival, birth and death rates, life table construction, and determining levels of exploitation based on age and sex structure, previous harvest rates, habitat alteration, and predator manipulation. (Prerequisites: Biol. 271 and A.L.R. 101.)

W.F. 302 2 Credits Alternate Spring
Fish and Wildlife Ecology and Management (1 + 3)
History of attitudes, laws, and regulations affecting fish and wildlife, the role and management philosophies of state and federal wildlife and fisheries agencies, the components of breeding potential of populations, and the factors affecting populations (food, cover, water, diseases, predators and other.) Identification, life history and management of Alaskan birds, mammals, and commercial and sport caught fish and shellfish species. (Prerequisites: A.L.R. 101 or Biol. 104, 105, or 106 or permission of instructor. Next offered: 1984-85.)

W.F. 333 2 Credits Fall
Literature of Ecology and Resource Management (1 + 2)
Standard and modern approaches to utilization of biological literature and introduction to information retrieval problems and techniques. Thorough acquaintance developed with periodical and other literature in student's special interest field.

W.F. 382 2 Credits As Demand Warrants
Biology of the Freshwater Fish of Alaska (2 + 0)
Life histories of the freshwater fish of Alaska with emphasis on species sought by sport, commercial, and subsistence fishermen. Information on reproduction, age, growth, migration, food, inter and intra species relationships, stock sizes and habitat requirements will be presented. (Prerequisite: Biol. 106 or permission of instructor.)

W.F. 401 3 Credits Fall
Wildlife Management Techniques (2 + 3)
Methods of collecting, analyzing and disseminating data, either for a research project or for implementing wildlife management plans. A brief discussion of the usefulness of a technique will precede its description or application. Techniques for determining sex, age, food habits, movements, distributions, reproductive history, physical condition, population size, and habitat status, for collecting, organizing and analyzing field observations, and for public information and education will be considered. (Prerequisites: W.F. 301 and A.S. 301.)

W.F. 402 3 Credits Spring
Advanced Wildlife Biology and Management (2 + 3)
Extends the single-species emphasis of W.F. 301 to more complex management situations dealing with two or more sympatric species. Examines the management of predator-prey groups and groups of competing or otherwise interrelated species. Provides extensive discussion of habitat and ecosystem management in situations ranging from small sanctuaries to large federal areas or areas of regional scale largely in private ownership. (Prerequisites: W.F. 301, A.S. 301. Biol. 472 desirable.)

W.F. 411 Credits Arr. As Demand Warrants
Fisheries Field Trip
A trip to acquaint students with some of the principal fisheries of the state and problems involved in their management. (Prerequisite: major in fisheries biology or admission by arrangement.)

W.F. 417 2 Credits Alternate Spring
Wildlife Management — Forest and Tundra (2+0)
Description of tundra and northern forest ecosystems with emphasis on interactions of climate, vegetation, and wildlife populations. Effect on wildlife populations of land use practices including: development of petroleum resources, creation of transportation networks, mining, timber cutting, damming, and prevention of fire. Major emphasis on research and management of wildlife populations under private, state, and federal administration. Field trip to coastal southcentral Alaska. (Prerequisites: Biol. 425 and Biol. 426 or permission of the instructor. Next offered: 1984-85.)

W.F. 419 2 Credits Alternate Fall
Wildlife Management — Wetlands (2+0)
Description, administration, and management of wildlife populations in arctic coastal habitats, subarctic tundra and forest habitats, north temperate coastal habitat, prairie potholes, artificial ponds, and reservoirs; swamps, and both freshwater and salt ponds, marshes, and lakes. Habitat management techniques including: pothole blasting, water level manipulation, diking, ditching, planting, fencing, and burning. Population management of furbearers, of waterfowl on species and flyway basis, of shorebirds, and of marine birds. Field trips to Interior Alaska, and one to coastal southcentral Alaska. (Prerequisite: Biol. 426 or permission of the instructor. Next offered: 1984-85.)

W.F. 423 3 Credits Fall
Limnology (2+3)
Physical, chemical, and biological characteristics of fresh water, emphasizing ecological aspects important to fish and other organisms. (Prerequisites: Chem. 106 and Biol. 271, or permission of the instructor.)

W.F. 424 2 Credits Alternate Spring
Aquatic Entomology (1+3)
The ecology, taxonomy, anatomy, physiology, and evolution of aquatic insects. Laboratories will emphasize identification and field/laboratory techniques. (Prerequisites: Biol. 105-106, Biol. 271 and W.F. 423 recommended or permission of instructor. Next offered: 1983-84.)

W.F. 429 3 Credits Fall
Introduction to Fisheries Science (2+3)
The general biology of fishes in relation to their management. Methods of collecting, analyzing, and interpreting field and laboratory data. (Prerequisites: Biol. 271, 423 and A.S. 301.)

W.F. 430 3 Credits Spring
Fisheries Management (3+0)
The principles, concepts and techniques of fisheries management are reviewed in terms of their biological, economic, social, and political aspects. Topics covered are: stocking and introductions, habitat manipulation, sustainable yield, regulations, management organizations, and their responsibilities. To clarify concepts and practices, examples of several fisheries are used. (Prerequisites: Biol. 271 and 423.)

W.F. 435 3 Credits Alternate Fall
Water Pollution Biology (3+0)
Effects of man-caused environmental stresses on the composition and dynamics of aquatic communities. Changes in diversity and matter and energy transfer. Biological indices. Water quality, standards, and use classifications. (Prerequisites: Biol. 271; W.F. 423 or permission of the instructor. Next offered: 1983-84.)

W.F. 436 3 Credits Alternate Spring
Introduction to Aquaculture (3+0)
An overview of the rapidly developing field of aquaculture including salmon, trout, and catfish hatcheries, and oyster and other shellfish farming. This will include the theory as well as some practice, and discussions of biological and economic problems. (Prerequisite: W.F. 429. Next offered: 1983-84.)

W.F. 603 2 Credits Spring
Problems in Wildlife Management (2+0)
Graduate students, through literature searches and interviews with knowledgeable individuals in resource agencies and private groups, will obtain information, by design from the perspective of a specific interest group, on the various facets of several current Alaskan wildlife management controversies. That information will be presented orally to the class and serve as the basis for class discussion. When the information for all interest groups has been presented, specific courses of action leading to resolution of the problems will be presented and critically examined. (Prerequisites: Equivalent of W.F. 301 and 402.)

W.F. 611 Credits Arr. As Demand Warrants
W.F. 612 Credits Arr.
Wildlife Field Trip
Trips to wildlife areas to acquaint students with principal animals of the state and problems involved in their management. (Admission by arrangement.)

W.F. 614 2 Credits Alternate Spring
Grazing Ecology (2+0)
(Same as Biol. 614)
A study of plant-animal interactions, emphasizing the grazing process, including mechanisms of feeding, feeding behavior, habitat and plant selection, and physiological influences on feeding. Other topics include the evolution and development of grazing systems, including plant and community level responses, anti-herbivore defenses of plants, and the role of grazing in ecosystem function; management and other human influences on grazing systems, including habitat alternation and loss, domestication, pollutants, and management alternatives. (Prerequisites: graduate standing or approval of instructor. Next offered: 1984-85.)

W.F. 621 3 Credits Spring
Vertebrate Population Dynamics (2+3)
Assessing, describing, and interpreting the characteristics and dynamics of wild populations. Estimates of survival, mortality, and recruitment rates, and of population size, and assessment of population trends and welfare using data from sources such as hunter-kill samples, composition counts, marking and recapturing, predation, and various types of surveys. Students will proceed from simplified artificial data sets to complex real ones. Both analytic and simulation techniques will be used. (Prerequisites: Admission by arrangement: minimal preparation, equivalent to Biol. 271, Math. 200 and A.S. 301.)

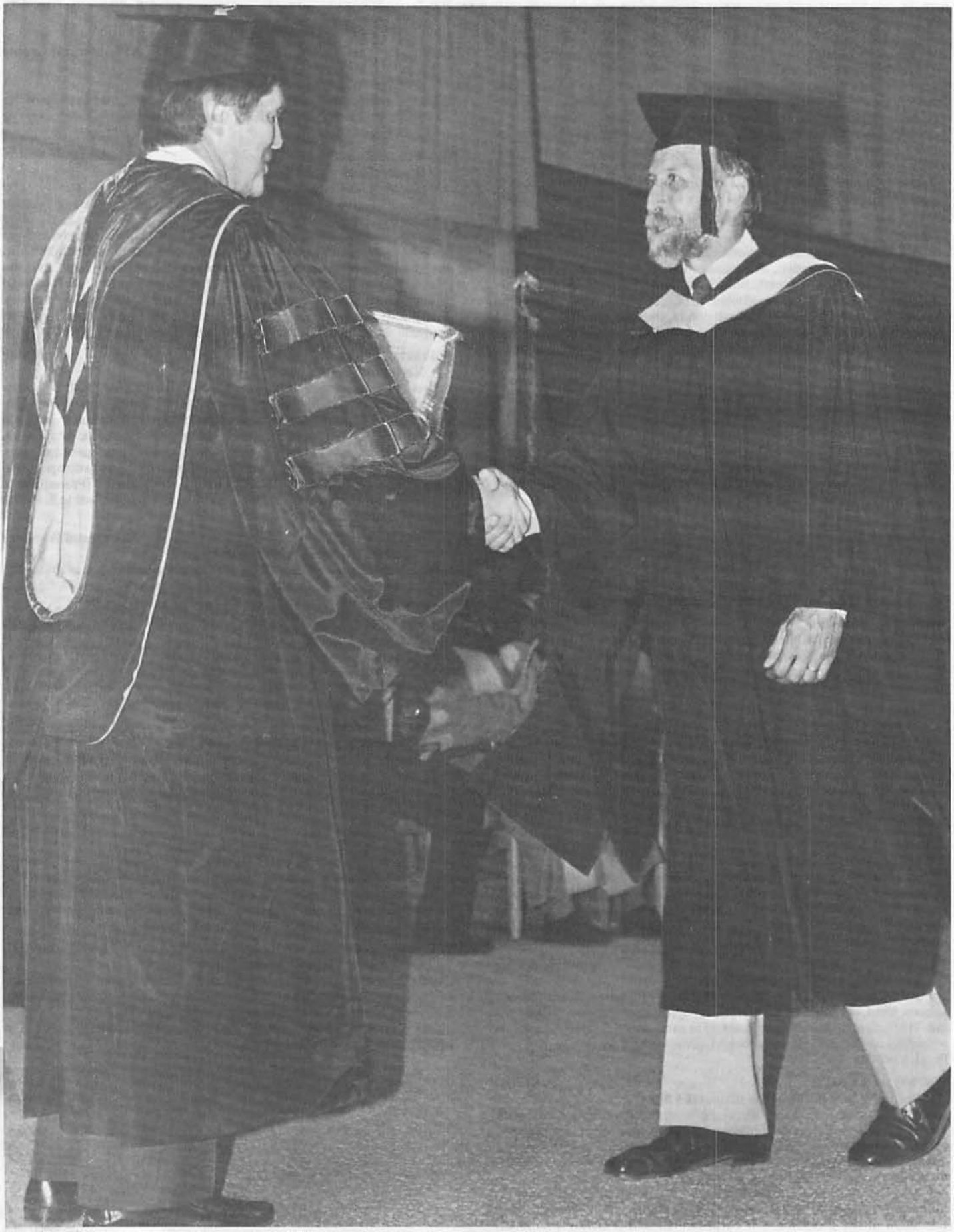
W.F. 624 2 Credits As Demand Warrants
Problems in Fisheries Management
Selected readings and discussions relating to major fisheries of the world, their problems, and the methods of attack on these problems. (Admission by arrangement.)

W.F. 625 3 Credits Alternate Fall
Fish Ecology (2+3)
The dynamics of aquatic systems, emphasizing community structure, energy flow, trophic relationships, and secondary and tertiary production. Applications to fish and invertebrate fisheries management. (Prerequisites: W.F. 423, and W.F. 429. Next offered: 1983-84.)

W.F. 627 3 Credits As Demand Warrants
Invertebrate Fisheries Biology (2+3)
The taxonomy, structure, physiology, and life histories of some commercially important marine shellfishes. Larval development, behavior, reproductive, and feeding biology. Interrelationships of marine animals. (Prerequisite: Biol. 305.)

W.F. 629 2 Credits Alternate Fall
Sampling in the Marine Environment (1+3)
An evaluation of classical and current methods for sampling some biological and biologically related parameters (physical, chemical, geological) or marine systems. Demonstration and use of field and laboratory techniques. Problems in calibration and interpretation of data. (Prerequisite: permission of the instructor. Next offered: 1984-85.)

W.F. 630 3 Credits Alternate Fall
Quantitative Fishery Science (3+0)
Quantitative analysis and modeling of exploited fish populations. Emphasis is placed on estimates of abundance, recruitment, growth, mortality, and yield. Method and theory are presented in relation to management needs. (Prerequisites: A.S. 301 and W.F. 429 or equivalents or permission of instructor. Next offered: 1984-85.)



Register

BOARD OF REGENTS

Donald B. Abel, Jr. (1975-1981) (1981-1989)
1800 Brandt, Juneau 99801 789-7639

Herbert C. Lang (1979-1985)
SRA Box 1737, Anchorage 99507 274-5691

Hugh B. Fate, Jr., D.M.D. (1969-1977) (1977-1985)
P.O. Box 1111, Fairbanks 99701 456-5600
(Past President)

Sara T. Hannan (1982-1984)
107 Bunnell Building, UAF, Fairbanks 99701 474-7908

Thomas J. Miklautsch (1979-1987)
P.O. Box 1, Fairbanks 99707 456-8679

Edward B. Rasmuson (1975-1981) (1981-89)
P.O. Box 600, Anchorage 99510 265-2927
(Past President)

John Shively (1979-1987)
c/o NANA, 4706 Harding Drive, Anchorage 99503 248-3030

Roy Huhndorf (1983-1991)
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Anchorage 99508 274-8638

Ann Parrish (1983-1991)
c/o Arthur Young & Associates, 730 "I" Street
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Ruth Burnett (1983-1991)
c/o Polaris Investments, 427 First Ave.
Fairbanks, 99701 452-5571

Gordon Evans (1983-1991)
318 4th St., Juneau 99801 586-3210

Emeriti

Jimmy Bedford, Professor of Journalism and Head, Department of Journalism and Broadcasting, Emeritus. University of Missouri '50, A.M.; '51, B.J.; '52, M.A.

Charles M. Behlke, Dean, School of Engineering, Professor of Civil Engineering, Emeritus. Washington State University '48 B.S.; '50, M.S. Stanford University '57, Ph.D.; P.E.

Earl H. Beistline, Dean, School of Mineral Industry, Professor of Mining Engineering, Emeritus. University of Alaska '39, B.Min. Engr.; '47, E.M.; '69, LL.D. (Hon.); P.E.

William R. Cashen, Professor of Mathematics and Marshal of the University, Emeritus. University of Alaska '37, B.S.; University of Washington '48, M.A. (1942-1974) Deceased

Bettie H. Clark, Head, Alumni Services and Career Planning and Placement, Emeritus, University of Alaska '35, B.S. (1962-1972)

Vena A. Clark, Associate Professor of Home Economics, Emeritus. Cotner College '25, A.B.; Iowa State University '33, M.S. (1953-1967)

Donald Cook, Professor of Mineral Beneficiation, Emeritus. University of Alaska '47, B.S.; '52, E.M.; Pennsylvania State University '58, M.S.; '60, Ph.D.; P.E.

Don M. Dafoe, Executive Vice President, Emeritus. Valley City State College '37, B.A.; University of Idaho '48, M.S.; Stanford University '61, Ed.D. (1966-1976)

Frank Darnell, Director, Center for Northern Educational Research and Professor of Education, Emeritus. Colorado State University '51, B.S.; University of Alaska '62, M.Ed.; Wayne State University '70, Ed.D. (1966-1978)

Charles W. Davis, Professor of Music, Emeritus. State University of Iowa '37, B.A.; '48, M.A.

Neil T. Davis, Professor of Geophysics, Emeritus. University of Alaska '55, B.S.; California Institute of Technology '57, M.S.; University of Alaska '61, Ph.D.

Lydia Fohn-Hansen, Associate Director of Cooperative Extension, Emeritus. Iowa State College '19, B.S.; '22, M.S.; University of Alaska '59, D.Hum. (1925-1936, 1940-1959)

Robert B. Forbes, Professor of Geology, Geophysical Institute, and Department of Geology, Emeritus. University of Washington '50, B.S.; '59, Ph.D. (1959-1977)

Bruce R. Gordon, Head, Department of Linguistics and Foreign Languages, and Professor of French and Spanish, Emeritus. Brown University '37, A.B.; New York State College for Teachers '42, M.A.; Syracuse University '50, Ph.D. (1963-1977)

Arnold Griese, Professor of Education, Emeritus. Georgetown University '48, B.A.; University of Miami '57, M.Ed.; University of Arizona '60, Ph.D. (1960-19??)

Victor P. Hessler, Professor of Geophysics, Emeritus. Oregon State University '26, B.S.; Iowa State University '27, M.S.; '34, Ph.D. (1955-1968, 1968-)

Donald W. Hood, Professor of Marine Science, Institute of Marine Science, Emeritus. Pennsylvania State University '40, B.S.; Oklahoma State University '42, M.S.; Texas A&M University '50, Ph.D. (1965-1978)

Laurence Irving, Professor of Zoophysiology, Emeritus. Bowdoin College '16, A.B.; '59, D.Sc. (Hon.); Harvard University '17, A.M.; Stanford University '24, Ph.D.; University of Oslo '56, M.D. (Hon.); University of Alaska '68, D.Sc. (Hon.) (1962-1975) Deceased

Laura Jones, Director of Admissions and Registrar, Emeritus. University of Denver '41, B.A. (1956-1971) Deceased.

Charles J. Keim, Professor of Journalism and English, Emeritus. University of Washington '48, B.A.; '50, M.A. (1954-1977)

William K. Keller, Professor of Education, Emeritus. State College of Washington '21, A.B. and M.A.; '41, Ed.D.; University of Alaska '61, LL.D. (1952-1961)

James R. Leakley, Senior Scientist in Charge, Petersburg Fur Farm, Emeritus. Oregon State University '38, B.S. (1941-1972)

Charles E. Logsdon, Associate Director and Professor of Plant Pathology, Agricultural Experiment Station (Palmer Research Center), Emeritus. University of Kansas City '42, B.A.; University of Minnesota '54, Ph.D. (1953-1978)

Orlando W. Miller, Professor of History, Emeritus. Muhlenberg College '47, B.A.; Columbia University '48, M.A.; '66, Ph.D. (1957-1978)

Terris Moore, President Emeritus and Professor of the University. Williams College '29, A.B.; Harvard '33, M.B.A.; '37, D.C.S.; University of Alaska '67, LL.D.; (President 1949-1953, Prof. 1953-)

Peter R. Morrison, Professor of Zoophysiology, Emeritus. Swarthmore College '40, A.B.; Harvard University '47, Ph.D.

James E. Morrow, Head, Department of Biological Sciences and Professor of Zoology and Museum Research Associate, Emeritus. Middlebury College '40, A.B.; '42, M.S.; Yale University '44, M.S.; '49, Ph.D. (1960-1977)

Dorothy H. Novatney, Professor of English, Emeritus. Pomona College '28, B.A.; Claremont College '30, M.A.; Teachers College '38, Ed.D. (1943-1945, 1956-1963)

Kenneth M. Rae, Vice President for Research and Professor of Marine Science, Emeritus. University College, London '35, B.Sc.; '58, Ph.D. (1961-1976)

Louis L. Renner, Professor of German, Emeritus. Gonzaga University '50, A.B.; '51, M.A.; University of Santa Clara '58, M.S.T.; University of Munich '65, Ph.D.

Elbert F. Rice, Professor of Civil Engineering, Emeritus. University of Idaho '48, B.S.; Oregon State College '49, M.S.; '55, Ph.D., P.E. (1952-1982) Deceased

L. J. Rowinski, Director of University of Alaska Museum and Associate Professor of Museum Science, Emeritus. Cornell University '51, B.S.; University of Alaska '58, M.S. (1957-1980)

H. Theodore Ryberg, Director of Libraries, Emeritus. Gettysburg College '55, A.B.; Western Reserve University '57, M.S.

Charles Sargent, Dean, College of Mathematics, Physical Sciences and Engineering, Emeritus. University of Idaho '48, B.S.C.E.; Stanford University '58, M.S. (Professor 1953-1961, Dean 1961-1967)

Herman E. Slotnick, Professor of History, Emeritus. University of Idaho '39, B.A.; University of Washington '58, Ph.D. (1955-1978)

Agnes S. Sunnell, Associate Professor of Extension, Emeritus. University of Washington '31, B.S.; Washington State University '44, M.S. (1960-1970)

Lola Cremeans Tilly, Professor of Home Economics, Emeritus. University of Illinois '20, A.B.; '21 M.S.; University of Alaska '63, D.Hum. (1929-1937, 1942-1963)

Minnie Wells, Professor of English, Emeritus. University of Missouri '25, B.S.; New York University '38, Ph.D. (1945-1971)

William S. Wilson, Head, Department of General Science, and Professor of Chemistry and General Science, Emeritus. Brown University '31, B.Sc.; '34, M.Sc.; Yale University '36, Ph.D. (1947-1972) Deceased

William R. Wood, President Emeritus. Illinois College '27, A.B.; '60, LL.D. (Hon.); University of Iowa '36, M.A.; '39, Ph.D. (1960-1973)

Faculty and Staff

The date following each name designates the time of original appointment to the University faculty or staff. (Dates of resignations and reappointments are not indicated.)

A second date in parentheses follows each member's present rank and indicates the beginning of service in that rank.

Abrahams, Sherry Lynn — 1984 — Associate Professor of Library Science (1975). Bowling Green State University '58, B.A.; University of Illinois '59, M.S.L.S.

Adam, Eugene A. — 1981 — Assistant Professor of Education and Field Coordinator for the Cross-Cultural Education Development Program (1981). Columbia College '60, A.B.; Pennsylvania State University '62, M.A.; University of California, Davis '75, Ph.D.

Ahern, Michael B. — 1982 — Head, Department of Military Science and Professor of Military Science (1982). University of Wyoming '64, B.A.; Niagara University '72, M.S.

Aigner, Jean S. — 1978 — Professor of Anthropology (1978). University of Wisconsin '64, B.A.; University of Wisconsin, '66, M.A.; University of Wisconsin '69, Ph.D.

Akasofu, Syun-Ichi — 1958 — Professor of Geophysics (1964). Geophysical Institute. Tohoku University '53, B.S.; '57, M.S.; University of Alaska '61, Ph.D.

Albrecht, C. Earl — 1979 — Affiliate Professor of Medical Science (1979). Moravian College, Pennsylvania '26, B.A.; Moravian Theological Seminary '28, B.D.; Jefferson Medical College '32, M.D.

Alexander, Barbara — 1977 — Assistant Professor of Art History and Humanities (1977) and Head, Department of Philosophy and Humanities. Gymnasium Oldenburg '65, B.A.; University of Zurich '74, M.A.; '75, Ph.D.

Alexander, Caroline — 1981 — Assistant Program Manager, KUAC-TV (1981).

Alexander, Vera — 1962 — Director, Division of Marine Sciences (1979); Professor of Marine Science (1974), Institute of Marine Science; Dean, College of Environmental Sciences (1982). University of Wisconsin '55, B.A.; '62, M.S.; University of Alaska '65, Ph.D.

Al-Khafaji, Ali — 1982 — Assistant Professor of Petroleum Engineering (1982). Baghdad University '65, B.Sc.; University of California, Berkeley, '75, M.S.; Stanford University, '82, Ph.D.

Allen, Lee D. — 1956 — Associate Agricultural Engineer (1972), Agricultural Experiment Station (Palmer Research Center). University of Idaho '57, B.S.; '72, M.S.

Allison, Carol Wagner — 1970 — Associate Professor of Paleontology (1979), Curator, Museum, Paleontological and Geological Collections (1970). University of California, Berkeley '53, B.A.; '63, M.S.; '70, Ph.D.

Allison, Richard C. — 1968 — Professor of Geology (1975), and Head, Geology/Geophysics Program (1981). University of Washington '57, B.S.; '59, M.S.; University of California '67, Ph.D.

Ammu, Lynne — 1978 — Instructor of Education and Field Coordinator of Cross-Cultural Education Development Program, School of Education (1978). University of Wyoming '67, B.A.; '73, M.A.

Anderson, James H. — 1970 — Research Associate in Plant Ecology (1976), Institute of Arctic Biology. University of Washington '63, B.S.; Michigan State University '70, Ph.D.

Andresen, Patricia A. — 1967 — Associate Professor of Mathematics (1977). University of Illinois '55, B.S.; University of Missouri '58, M.A.; University of California at Santa Barbara '76, Ph.D.

Angaiak, Andrew P. — 1978 — Head, Student Orientation Services (1978). Washington State University '76, B.A.; University of Washington '78, M.S.W.

Armstrong, Robert — 1981 — Associate Professor of Fisheries (1981). University of Washington '61, B.S.; '64, M.S.

Artman, Brenda S. — 1979 — Instructor of Library Science (1979). Shippensburg State College '76, B.S.; Western Michigan University '78, M.S.L.

Arundale, Robert — 1979 — Assistant Professor of Speech Communications (1979). Rensselaer Polytechnic Institute '63, B.S.; Michigan State University '64, M.S.; '71, Ph.D.

Aspnes, John D. — 1978 — Associate Professor Electrical Engineering (1978). University of Wisconsin '65, M.S.; University of Montana '76, Ph.D.; P.E.

Atamian, Sarkis — 1962 — Professor of Sociology Psychology (1974). University of Rhode Island '50, B.S.; Brown University '54, M.A.

Axelrod, Melissa — 1980 — Research Aide, Alaska Native Language Center (Community Colleges, Rural Education and Extension), State University of New York at Stony Brook '74, B.A.; University of Colorado '78, M.A.

Badger, Mark O. — 1982 — Videographer, KUAC-TV (1982).

Bailey, Ira S. — 1982 — Master, R/V ALPHA HELIX, Institute of Marine Science.

Bailey, Ray P. — 1976 — Associate Professor of Medical Science (1976). University of California '66, B.A.; California State '69, M.A.; Johns Hopkins '73, Ph.D.

Baldridge, James N. — 1976 — Senior Programmer Analyst (1976).

Ball, John L. — 1977 — Safety Specialist, Marine Advisory Program (1977). University of Hawaii '66, B.S.; '68, M.S.

Bandopadhyay, Sukumar — 1982 — Assistant Professor of Mining Engineering. Banaras Hindu University, India, '70, B.Sc.; '75, M. Tech.; Pennsylvania State University '79, M.S.; '81, Ph.D.

Barber, Willard E. — 1976 — Assistant Professor of Fisheries (1976), Fisheries and Institute of Marine Science. Arizona State University '65, B.A.; '68, M.S.; Michigan State University '70, Ph.D.

Barnhardt, Raymond J. — 1970 — Director of the Center for Cross-Cultural Studies (1978), and Acting Dean, College of Human and Rural Development (1982). Professor of Education (1980). North Dakota State University '65, B.S.; Johns Hopkins University '67, M.Ed.; University of Oregon '70, Ph.D.

Baron, Mary K. — 1978 — Associate Professor of English (1979). Brandeis University '69, A.B.; University of Michigan '71, A.M.; University of Illinois '73, Ph.D.

Barsdate, Robert J. — 1962 — Professor of Marine Science (1972), Institute of Marine Science. Allegheny College '59, B.S.; University of Pittsburgh '64, Ph.D.

Bartlett, Thomas E. — 1974 — Associate Professor of Accounting (1979), Southwestern at Memphis '67, B.A.; Emory University '69, M.B.A.; State of Georgia '73, C.P.A.; State of Alaska '78, C.P.A.

Barton, Jay — 1979 — Statewide President, University of Alaska (1979). University of Missouri '47, A.B.; '48, M.A.; '51, Ph.D.

Bayse, Edmund L. — 1967 — Budget Analyst (1980). University of Washington '49, B.A.; '52, C.P.A.

Behrisch, Hans W. — 1969 — Professor of Zoochemistry (1982), Institutes of Arctic Biology and Marine Science. University of British Columbia '64, B.S.; Oregon State University '66, M.A.; University of British Columbia '69, Ph.D.

Belon, Albert E. — 1952 — Associate Director for Operations (1977) and Professor of Physics (1969), Geophysical Institute. University of Alaska '52, B.S.; University of California, Los Angeles '54, M.A.

Benesch, Walter J. — 1963 — Professor of Philosophy (1973); University of Denver '55, B.A.; University of Montana '56, M.A.; Leopold Franzens Universitat, Innsbruck '63, Ph.D.

Benevento, John — 1979 — Supervisor, Electronic Shop, Geophysical Institute (1979).

Bennett, F. Lawrence — 1968 — Professor of Engineering Management (1974) and Head, Engineering and Science Management (1983). Rensselaer Polytechnic Institute '61, B.C.E.; Cornell University '63, M.S.; '66, Ph.D.; P.E.

Benson, Carl S. — 1960 — Professor of Geophysics and Geology (1969). University of Minnesota '50, B.A.; '56, M.S.; California Institute of Technology '60, Ph.D.

Benson, Ruth G. — 1972 — University Nurse (1972). Northwestern University '55, B.S. in Nursing; Evanston Hospital School of Nursing '55, Diploma. Advanced Nurse Practitioner '81.

Berman, Gerald S. — 1980 — Associate Professor of Sociology and Social Work (1980). University of Michigan '56, B.A.; Case Western Reserve University '63, M.S.W.; '70, Ph.D.

Bernet, John W. — 1959 — Professor of English (1975). State University of Iowa '51, B.A.; University of North Dakota '57, M.A.; Stanford University '69, M.A.; '69, Ph.D.

Best, Barry F. — 1980 — Affirmative Action Officer (1980).

Biesiot, Peter G. — 1980 — Professor of Business Administration (1980). University of Washington '42, B.A.; University of Nebraska '51, M.S.; Cornell University '58, M.B.A.; University of Southern California '66, D.B.A.

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Brody, Arthur W. — 1967 — Associate Professor of Art (1979). Harvey Mudd College '65, B.S.; Claremont Graduate School '67, M.F.A.

Brogan, Judith S. — 1974 — Editor and Production Coordinator (1976), AEIDC. University of Alaska '73, B.A.

Brooks, Daniel L. — 1977 — Logistics Coordinator, OCS Arctic Project Office (1979). Rollins College, Florida '70, B.A.

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Brown, Neal — 1966 — Range Supervisor (1971), and Assistant Professor of Geophysics (1969), Geophysical Institute. Washington State University '61, B.S.; University of Alaska '66, M.S.

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Burnham, James T. — 1982 — Assistant Professor of Mathematics (1982). San Diego State University '67, A.B.; '70, M.S.; University of Iowa, '72, Ph.D.

Burrell, David Colin — 1965 — Professor of Marine Science (1975), Institute of Marine Science. Nottingham University '61, B.Sc.; '64, Ph.D.

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Cole, James W. — 1973 — Director, Center for Health and Counseling (1976), and Assistant Professor of Education. Chico State College '64, B.A.; Oregon State University '67, M.Ed.; University of North Colorado '71, Ed.D., Licensed Psychologist, '79.

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Egan, Robert H. — 1967 — Head, Career Planning and Placement (1974) and Assistant Professor of Psychology (1976). University of Montana '60, B.A.; California State College at Long Beach '65, M.A.

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Florian, Dale A. — 1979 — Director of Security (1979). Santa Rosa Junior College '72, A.A.; F.B.I. National Academy '74; University of Nevada, Las Vegas '79, B.A.

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Fox, John D. — 1973 — Assistant Professor of Land Resources (1973). Trinity College '68, B.S.; University of Washington '70, M.S.; University of Washington '76, Ph.D.

Fox, John F. — 1977 — Assistant Professor of Biometrics (1977). Johns Hopkins University '67, A.B.; University of Chicago '70, M.S.; '74, Ph.D.

Fox, Patricia J. M. — 1974 — Statistical Analyst (1974). University of Washington '73, B.S.

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Guthrie, R. Dale — 1963 — Professor of Zoology (1970). University of Illinois '58, B.S.; '59, M.S.; University of Chicago '63, Ph.D.

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Hollerbach, Wolf — 1965 — Professor of French and Spanish (1973) and Head, Department of Linguistics and Foreign Languages. Universite de Rennes '61, Doctorat d'Universite, University of Bonn '62, Wissenschaftliches Staatsexamen.

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Jacobson, William C. — 1971 — Proposal Coordinator (1979). University of Alaska '58, B.B.A.

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Johnson, Lynn R. — 1979 — Instructor of Education and Field Coordinator for the Cross-Cultural Education Development Program (1979). Western Michigan University '71, B.S.; '74, M.S.

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Johnson, Walter R. — 1981 — Assistant Professor of Marine Science (1981), Institute of Marine Science. University of Miami '72, B.S.; '75, M.S.; University of Delaware '81, Ph.D.

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Jones, Eliza P. — 1974 — Lecturer in Koyukon Athabaskan (1974); Koyukon Language Specialist, Alaska Native Language Center, (Community Colleges, Rural Education and Extension) (1975).

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Malosh, James B. — 1981 — Associate Professor of Mechanical Engineering (1981). Wayne State University '66, B.S.; Michigan Technological University '69, M.S.; '80, Ph.D.

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McBeath, Gerald A. — 1976 — Professor of Political Science (1982), and Head, Department of Political Science (1980). University of Chicago '63, B.A.; '64, M.A.; University of California, Berkeley '70, Ph.D.

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McCarthy, Paul H. — 1964 — Professor of Library Science (1977). St. John Fisher College '62, B.A.; Syracuse University '64, M.L.S.

McConnell, Charles W. — 1981 — Program Manager, KUAC-TV (1981). American University '69, B.A.

McConnell, Douglas G. — 1980 — Senior Research Analyst in Science Communications (1980). M.A.

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McHenry, Susan I. — 1972 — Head Counselor, Student Orientation Services (1973). University of Alaska '70, B.A.; '76, M.Ed.

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McLaughlin, Laurel — 1976 — Assistant Director of Personnel Services (1976). Towson State College '55, B.S.; Johns Hopkins University '59, M.Ed.

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Mendenhall, William W. — 1955 — Professor of Civil Engineering (1967). Cornell University '49, B.C.E.; '60, M.S.; P.E.; L.S.

Merritt, Robert P. — 1955 — Professor of Electrical Engineering and Geophysics (1972). Oregon State College '49, B.S.; Alaska '59, P.E.; Stanford University '68, M.S.

Metz, Paul A. — 1975 — Instructor in School of Mineral Industry (1979). Michigan Tech University '68, B.S.; University of Alaska '72, M.B.A.; '75, M.S.

Metzner, Ronald C. — 1970 — Design Engineer (Project Support Group Geophysical Institute) (1976). Trinity University '69, B.A.; '70, B.S.; University of Alaska '75, M.S.

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Possenti, Richard G. — 1966 — Associate Professor of Psychology (1973). St. Joseph College '51, B.S.; University of Alabama '55, M.A.

Powers, W. Roger — 1971 — Associate Professor of Anthropology and Program Head (1976). Idaho State University '64, B.A.; University of Wisconsin '68, M.S.; '73, Ph.D.

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Reed, Eugene E. — 1970 — Asst. to the Dean, College of Arts and Sciences (1971). Purdue University '67, B.A.; '70, M.A.

Reed, Irene E. — 1969 — Director, Alaska Native Language Center, (Community Colleges, Rural Education and Extension) (1976). University of Washington '61, B.A.; University of Alaska '72, M.A.

Rees, Manfred H. — 1958 — Professor of Geophysics (1975). West Virginia University '48, B.S.E.E.; University of Colorado '56, M.S.; '58, Ph.D.

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Reynolds, James B. — 1978 — Associate Professor and Unit Leader, Alaska Cooperative Fishery Research Unit (1978). Utah State University '61, B.S.; Iowa State University '63, M.S.; '66, Ph.D.

Richmond, Allen P. — 1980 — Research Associate, School of Agriculture and Land Resources Management (1980). Virginia Polytechnic Institute and State University '72, B.S.

Rider, C. Douglas — 1979 — Associate Professor of Education (1979). California State College, Long Beach '69, B.A.; University of Oregon '74, Ph.D.

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Roberts, Thomas D. — 1966 — Professor of Physics and Electrical Engineering (1974). University of Alabama '59, B.S.; Oregon State University '65, Ph.D., P.E.

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Roederer, Juan G. — 1977 — Professor of Physics and Director of the Geophysical Institute. University of Buenos Aires '52, Ph.D.

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Rothman, Norman C. — 1981 — Assistant Professor of Education and Field Coordinator for the Cross-Cultural Education Development Program (1981). Dickinson College '66, B.A.; Northwestern University '69, M.A.; '69, C.A.S.; '72, Ph.D.; Georgia State University '81, Ph.D.

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Royer, Susan B. — 1970 — Assistant Professor of Mathematics (1975). Salem State College '61, B.S.; Texas A&M University '66, M.S.; '69, M.S.

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Sanders, Robert B. — 1980 — Affiliate Associate Professor of Palynology (1980). Dartmouth College '60, B.A.; State University of Iowa '62, M.S.; University of Oklahoma '67, Ph.D.

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Schafer, Richard A. — 1980 — Instructor of Physical Education (1980). University of Notre Dame '74, B.A.; '80, M.S.

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Shapiro, Lewis H. — 1971 — Associate Professor of Geology (1971), Geophysical Institute. South Dakota School of Mines and Technology '62, B.S.; University of Minnesota '71, Ph.D.

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Shaw, David G. — 1973 — Professor of Marine Science (1982), Institute of Marine Science. University of California, Los Angeles '67, B.S.; Harvard University '69, A.M.; '71, Ph.D.

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Shields, Gerald F. — 1975 — Associate Professor of Zoology (1975). Carroll College '66, B.A.; Central Washington State College '70, M.S.; University of Toronto '74, Ph.D.

Shinkwin, Anne D. — 1971 — Associate Professor of Anthropology (1977). University of Connecticut '60, B.A.; George Washington University '64, M.A.; University of Wisconsin '75, Ph.D.

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Simpson, Glen C. — 1969 — Associate Professor of Art (1976). Rochester Institute of Technology '68, B.F.A.; '69, M.F.A.

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Smith, David D. — 1980 — Assistant Professor of Speech Communications (1980). California State Polytechnic University '71, B.S.; California State University '72, M.A.; Wayne State University '75, Ph.D.

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Smith, R. London — 1965 — Professor of Political Science (1974). College of St. Joseph '54, B.A.; University of Oklahoma '55, M.A.; American University '64, Ph.D.

Smith, Ronald L. — 1968 — Associate Professor of Zoology (1974), Biological Sciences and Institute of Marine Science. Occidental College '64, B.A.; University of Miami '67, M.S.; '68, Ph.D.

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Smith, William H. — 1964 — Associate Professor of Library Science (1969). Iowa State College '58, B.S.; Simmons College '60, M.S.I.S.

Smith, William Leonard — 1967 — Assistant Professor of Physical Education (1967). Western State College '54, B.A.; '58, M.A.

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Socher, Charles F. — 1979 — Assistant Professor, Economics (1979). Xavier University '74, A.B.; West Virginia University '76, M.A.; '79, Ph.D.

Solie, Richard J. — 1970 — Professor of Economics (1970). Wisconsin State University '55, B.S.; University of Tennessee '65, Ph.D.

Sokolov, Barbara J. — 1977 — Librarian, AEIDC (1977). University of Washington '57, B.A.; Rosary College '73, M.L.A.S.; University of Connecticut '76, M.B.A.

Sommer, Frank H. — 1978 — Manager of Data Processing (1981), Institute of Marine Science. College of Wooster '70, B.A.

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Spell, B. David — 1978 — Digital Systems Design Engineer, Geophysical Institute (1978), Affiliate Professor, School of Engineering (1980). University of Washington '74, B.S.; University of Washington '82, M.S.E.E., P.E.

Spencer, David L. — 1976 — Wildlife Biologist (1976), AEIDC. Pennsylvania State University '37, B.S.; University of Michigan '40, M.F.

Spooner, Marlene W. — 1956 — Assistant Director of Admissions and Records (1974). University of Alaska '74, B.A.

Stamnes, Knut H. — 1978 — Research Associate in Geophysics (1980). University of Oslo '69, Cand. Mag; '72, Cand. Real; University of Colorado '76, Ph.D.

Stark, David A. — 1971 — Associate Professor of English (1975). University of California, Los Angeles '65, B.A.; University of California, Irvine '69, M.F.A.

Stech, David A. — 1972 — Associate Professor of Music (1982). University of Minnesota '67, B.S.; The Ohio State University '69, M.A.; Michigan State University '76, Ph.D.

Stenard, Richard A. — 1976 — Assistant Dean of Students and Assistant Professor of Education (1976). State University of New York, Albany '65, B.S.; '66, M.S.; Florida State University '75, Ph.D.

Stephens, Dennis J. — 1978 — Assistant Professor of Library Science (1978). Portland State University '69, B.A.; University of Denver '75, M.A.

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Stinson, Lillian Powers — 1972 — Associate Professor of Education (1974). University of Illinois '58, B.S.; '64, M.Ed.; '70, Ed.D.

Stockholm, Kendall R. — 1974 — Assistant Professor and Director, Justice Program (1974). Lamar University '71, B.S.; Sam Houston State University '72, M.A.

Stoker, Samuel W. — 1975 — Research Associate (1977). University of Oklahoma '61, B.A.; University of Alaska '73, M.S.; '77, Ph.D.

Stolzberg, Richard J. — 1978 — Associate Professor of Chemistry (1982). Tufts University '69, B.S.; Massachusetts Institute of Technology '73, Ph.D.

Stone, David B. — 1966 — Professor of Geophysics (1977). Geophysical Institute. University of Keele '56, B.A.; University of Newcastle Upon Tyne '63, Ph.D.

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Stricks, James L. — 1972 — Coordinator, Resource Center, College of Human and Rural Development (1982). Cornell University '71, B.A.; University of Alaska '74, M.A.T.

Stringer, William J. — 1965 — Associate Professor of Applied Science (1982). New Mexico State University '62, B.S.; University of Alaska '71, Ph.D.

Strohmaier, Judith A. — 1970 — Head, Department of Conferences and Institutes (1978), and Assistant Professor (1970). University of Wisconsin '57, B.A.; University of Alaska '75, M.A.

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Svenningson, Allen R. — 1967 — Associate Professor of Physical Education (1967). Winona State College '58, B.S.; Colorado State College '61, M.S.

Swanson, Samuel E. — 1979 — Assistant Professor of Geology (1979). University of California, Davis '68, B.S.; '70, M.S.; Stanford University '74, Ph.D.

Swartz, L. Gerard — 1958 — Professor of Zoology (1968). University of Illinois '53, B.S.; '54, M.S.; '58, Ph.D.

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Tabbert, Russell — 1972 — Associate Professor of English (1975). University of Iowa '63, B.A.; '69, Ph.D.

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Taylor, Roscoe L. — 1951 — SEA Location Leader, Research Agromomist, U.S.D.A. Agricultural Experiment Station (Palmer) (1968). South Dakota State University '48, B.S.; Iowa State University '51, M.S.

Taylor, Sally R. — 1966 — Admissions Counselor (1976). Marshall University '59, B.A.; California State College at Long Beach '63, M.A.

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Thorson, Robert M. — 1980 — Assistant Professor in Glacial and Pleistocene Geology (1980). Bemidji State University '73, B.S.; University of Alaska '75, M.S.; University of Washington '79, Ph.D.

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Van Veldhuizen, Philip A. — 1963 — Professor of Mathematics (1974). Central College '52, B.A.; State University of Iowa '60, M.S.

Vincente, Susan F. — 1974 — University Nurse (1974). Ft. Lewis College '69, B.S.; Miami Valley Hospital School of Nursing '71, Diploma. Advanced Nurse Practitioner, '81.

Walker, Cynthia L. — 1977 — Associate Professor, English (1982). Denison University '70, B.A.; Purdue University '72, M.A.; '74, Ph.D.

Wallace, Charles H. — 1972 — Superintendent, Preventive Maintenance and Custodial Services (1972). Texas Technological College '58, B.S.

Walls, Larry W. — 1977 — Chief Pilot, Naval Arctic Research Laboratory (1976). Central Texas College '73, A.A.

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Watkins, Brenton J. — 1980 — Assistant Professor of Geophysics (1980), Geophysical Institute. University of Adelaide '68, B.S.; La Trobe University '72, M.S.; University of Alaska '74, Ph.D.

Weaver, Gerald — 1979 — Assistant Professor of Broadcasting and Journalism (1979). University of the Pacific '60, B.A.; University of Mississippi '77, M.A.

Weber, Florence — 1959 — Distinguished Lecturer in Geology (1964). University of Chicago '43, B.S.; '48, M.S.

Weeden, Robert B. — 1967 — Professor of Resource Management (1976). University of Massachusetts '53, B.S.; University of Maine '55, M.S.; University of British Columbia '59, Ph.D.

Weller, Gunter E. — 1966 — Associate Director for Planning (1977) and Professor of Geophysics (1973), Geophysical Institute. University of Melbourne '62, B.S.; '64, M.S.; '67, Ph.D.

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Wescott, Eugene — 1958 — Professor of Geophysics (1974). Geophysical Institute. University of California, Los Angeles '55, B.A.; University of Alaska '60, M.S.; '64, Ph.D.

West, George C. — 1963 — Vice President for Academic Affairs (1981) and Professor of Zoophysiology (1968), Institute of Arctic Biology. Middlebury College '53, A.B.; University of Illinois '56, M.S.; '58, Ph.D.

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Wiese, Craig S. — 1977 — Assistant Professor of Marine Science (1979), Alaska Sea Grant Program. Oregon State University '66, B.S.; '74, M.S.; '76, M.B.A.

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Wilson, William J. — 1974 — Fisheries and Wildlife Biologist (1974), AEIDC. Gonzaga University '69, B.S.; Oregon State University '73, M.S.

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Wolf, Aron S. — 1975 — Adjunct Associate Professor of Medical Science (1976). Dartmouth College '59, B.A.; University of Maryland Medical School '63, M.D.

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Young, Merle B. — 1980 — Athletic Trainer (1980). Montana State University '63, B.S.; Mayo Clinic, School of Physical Therapy '65, Certified Physical Therapist.

Youtcheff, John S., Jr. — 1982 — Assistant Professor of Coal Conversion (1982). Pennsylvania State University, '77, B.S., '82, Ph.D.

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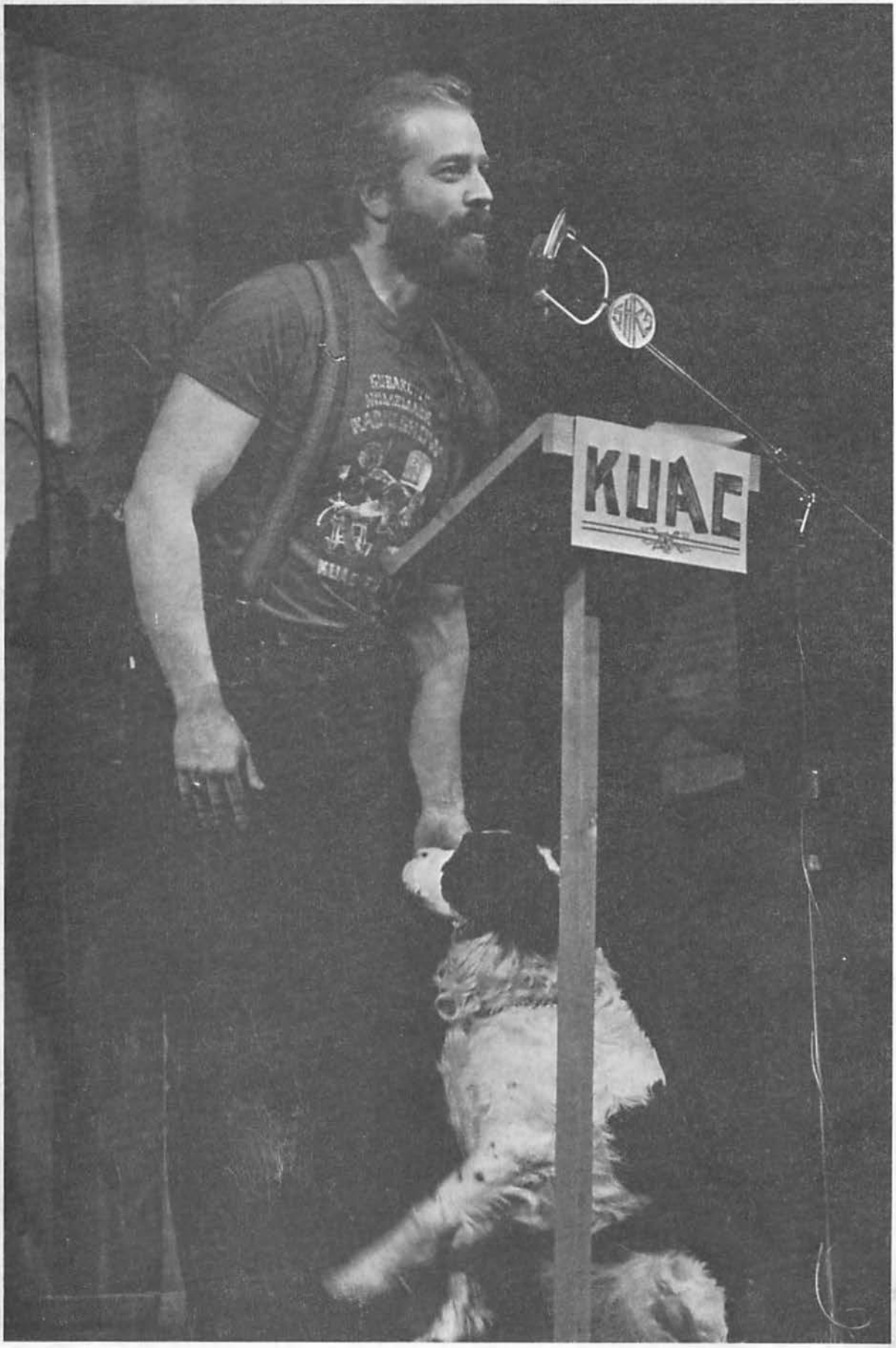
Zarling, John P. — 1976 — Head, Department of Mechanical Engineering and Professor of Mechanical Engineering (1976), Michigan Technological University '64, B.S.M.E.; '66 M.S.E.M.; '71 Ph.D.E.M., P.E.

Zielinski, L. Stanley — 1966 — Professor of Art (1974). Alfred University '55, B.F.A.; '62, M.F.A.

Zuelsdorf, Catherine — 1979 — Assistant Professor of Art (1979). Stephens College '77, B.F.A.; Columbia University '79, M.F.A.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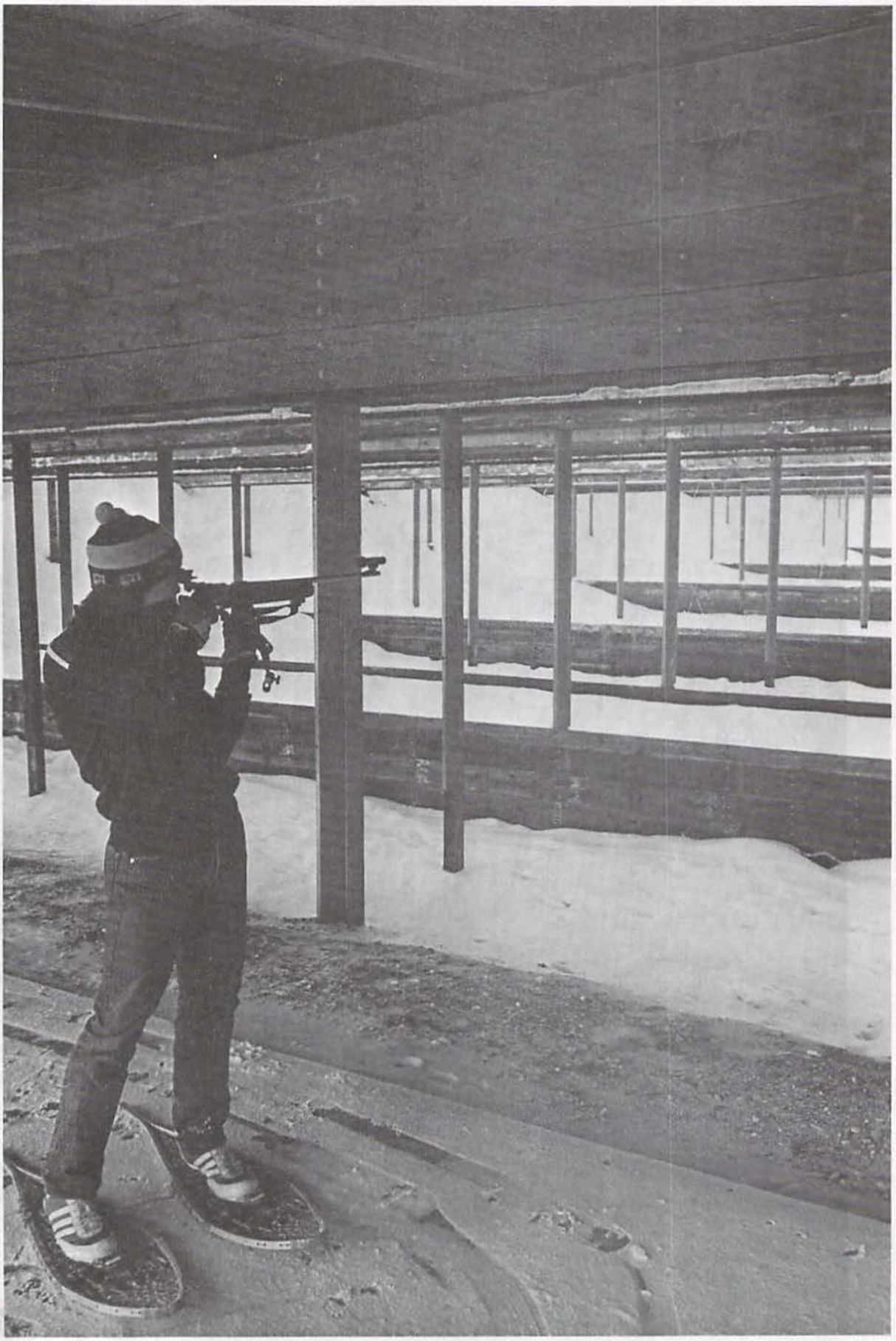

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Cover

Front, upper: Aerial of the UAF campus

lower: Graduate students in the marine science program at sea on board the Institute of Marine Science Research Vessel the **Alpha Helix**

Back, upper: Scene from the UAF Drama Workshop 1982 spring production of **Tartuffe** with (clockwise from left) Lori Roland, Shelly Reed, Greg Gustafson and Abbie Johnson. Costume designed by Jayna Orchard.

lower: View of the "West Ridge," the site of most UAF research institutes.