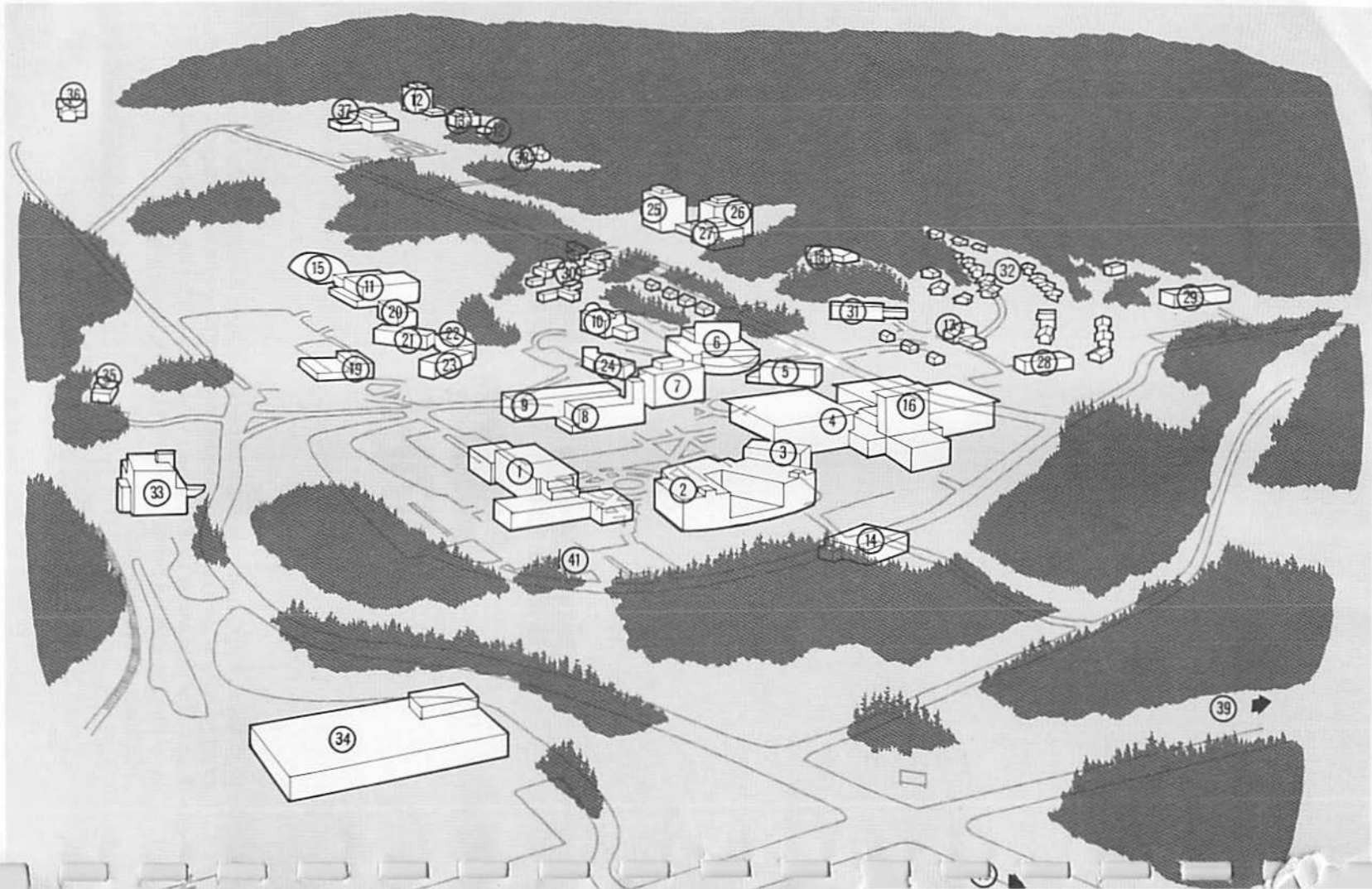
University of Alaska / Catalog / 1970-71

University of Alaska Catalog 1970-71

COVER: Autumnal colors enhance the natural beauty of the main campus of the University of Alaska, a 2,250-acre site at College, four miles northwest of Fairbanks in Alaska's interior. The aerial view photograph was given to the university by Grumman Aerospace Corporation.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KEY TO LOCATIONS

(1) BUNNELL BUILDING — General administrative offices, classrooms, SCHAIBLE LECTURE HALL, Cooperative Extension Service
(2) DUCKERING BUILDING — Classrooms; laboratories; College of Mathematics, Physical Sciences, and Engineering; College of Business, Economics, and Government; Institute of Marine Science; Institute of Arctic Environmental Engineering; Institute of Water Resources; Computer Center; State Highway Testing Laboratory.
(3) BROOKS BUILDING — Classrooms, laboratories, College of Earth Sciences, and Mineral Industry, Mineral Industry Research Laboratory.
(4) LIBRARY
(5) CONSTITUTION HALL — (Student Union Building or SUB) — Visitor Information Center, Student Activities Office, Associated Students of the University of Alaska Office, snack bar and recreational facilities, bookstore, Alumni Services and Graduate Placement Office.
(6) CAMPUS ACTIVITY CENTER — Under construction (see No. 5).
(7) GENERAL CLASSROOM AND OFFICE BUILDING — Under construction.
(8) UNIVERSITY MUSEUM — Northern Native Peoples, natural history, and Alaskan history, research collections and exhibits. Open to the public.
(9) EIELSON BUILDING — Classrooms, laboratories, College of Behavioral Sciences and Education, Department of Evening Classes and Correspondence Study, Office of Summer Sessions.
(10) CHAPMAN BUILDING — Science facilities.
(11) PATTY BUILDING — Department of Health, Physical Education, and Recreation facilities and offices, including gym, pool, and rifle range; Reserve Officers Training Corps (ROTC).
(12) ELVEY BUILDING — Geophysical Institute.
(13) BIO SCIENCES BUILDING — Classrooms, laboratories, College of Biological Sciences and Renewable Resources, Institute of Arctic Biology, Alaska Cooperative Wildlife Research Unit.
(14) FOREST SCIENCES LABORATORY — Institute of Northern Forestry of the U.S. Forest Service.
(15) BELUGA (Dome) — Ice skating and hockey facilities.
(16) FINE ARTS AND HUMANITIES COMPLEX — College of Arts and Letters, theater, recital hall, rehearsal hall, art studios and gallery, Arts and Crafts Center, music facilities, KUAC-FM, and television studios.
(17) FIRE STATION
(18) PRESIDENT'S RESIDENCE
(19) UNIVERSITY COMMONS — Dining facility for residence hall students, (additional facility will be constructed near no. 26).
(20) LATHROP HALL — Residence Hall.
(21) STEVENS HALL — Residence Hall.
(22) NERLAND HALL — Residence Hall.
(23) MCINTOSH HALL — Residence Hall.
(24) WICKERSHAM HALL — Residence Hall.
(25) MOORE HALL — Residence Hall.
(26) BARTLETT HALL — Residence Hall.
(27) SKARLAND HALL — Residence Hall.
(28) WALSH HALL — Residence Hall.
(29) HARWOOD HALL — Married-student apartments.
(30) MODULAR STUDENT HOUSING
(31) STUART HALL — Faculty apartments.
(32) FACULTY HOUSING
(33) ATKINSON BUILDING — Power Plant.
(34) SERVICES BUILDING — Maintenance facilities, State Division of Mines and Geology.
(35) ALASKA RURAL SCHOOL PROJECT
(36) COLLEGE FARM
(37) ARCTIC WATER LABORATORY (U.S. Department of the Interior) and ARCTIC HEALTH RESEARCH CENTER (U.S. Department of Health, Education and Welfare).
(38) U.S. COAST AND GEODETIC SURVEY — Observatory houses seismograph installation.
(39) MUSK OX FARM — Station for musk ox domestication project, with viewing platform along Yankovich Road for visitors.
(40) COLLEGE INN BUILDING — Institute of Social, Economic, and Government Research (second floor).
(41) TOTEM POLE
(42) GREENHOUSE

Matchless Alaskan scenery highlights the campus all year round.

1970-71
University Calendar

1970 Summer Session

Short Session	June 8-26
Regular Session	June 29-Aug. 7
Post-Session	Aug. 10-14
Special Eight Week Session	June 15-Aug. 7

1970 Fall Semester

Residence Halls Open	Sun., Aug. 30
Orientation and Guidance Testing for New Students	Mon., Aug. 31
General Faculty Convocation	9:30 a.m., Tues., Sept. 1
Faculty Meetings (Academic Colleges)	11 a.m., Tues., Sept. 1
Faculty Meetings (Departmental)	1:30 p.m., Tues., Sept. 1
Orientation and Counseling of Students by Advisors	3 p.m., Tues., Sept. 1
Orientation and Counseling of Students by Advisors	Wed., Sept. 2
Registration	Thurs., Sept. 3
Instruction Begins	Fri., Sept. 4
Labor Day Holiday	Mon., Sept. 7
Late Registration Closes	Fri., Sept. 18
Last Day to Withdraw without Grades	Fri., Sept. 18
Last Day to Make Up Incompletes	Fri., Oct. 16
Six Weeks Grade Reports	Fri., Oct. 16
Last Day for Student Initiated Withdrawals	Tues., Nov. 24
Thanksgiving Holiday	Thurs., Nov. 26
Examination Study Day (No Classes)	Wed., Dec. 16
Semester Examinations	8 a.m., Thurs., Dec. 17—Noon, Wed., Dec. 23
Final Grades on File with Registrar	Noon, Thurs., Dec. 24
End of Fall Semester	Thurs., Dec. 24

1971 Spring Semester

Residence Halls Open	Sun., Jan. 10
Orientation and Guidance Testing for New Students	Mon., Jan. 11
Orientation and Counseling of Students by Advisors	10 a.m., Tues., Jan. 12
Registration	Wed., Jan. 13
Instruction Begins	Thurs., Jan. 14
Late Registration Closes	Thurs., Jan. 28
Last Day to Withdraw without Grades	Thurs., Jan. 28
Last Day to Make Up Incompletes	Thurs., Feb. 25
Six Weeks Grade Reports	Thurs., Feb. 25
Spring Recess	Noon, Sat., Mar. 13—8 a.m., Mon., Mar. 22
Last Day for Student Initiated Withdrawals	Tues., April 13
Last Day to Submit Graduate Thesis	Thurs., April 22
All Campus Day	Fri., April 23
Governor's Day	Sat., May 1
Examination Study Day (No Classes)	Wed., May 5
Semester Examinations	8 a.m., Thurs., May 6—6 p.m., Wed., May 12
Final Senior Grades on File with Registrar	9 a.m., Thurs., May 13
Final Grades on File with Registrar	5 p.m., Thurs., May 13
End of Spring Semester	Thurs., May 13
Baccalaureate	Sun., May 16
Commencement	Mon., May 17

1971 Summer Session

Short Session	June 7-25
Regular Session	June 28-Aug. 6
Post-Session	Aug. 9-13
Special Eight-Week Session	June 14-Aug. 6

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Sources of Information

MAIN CAMPUS

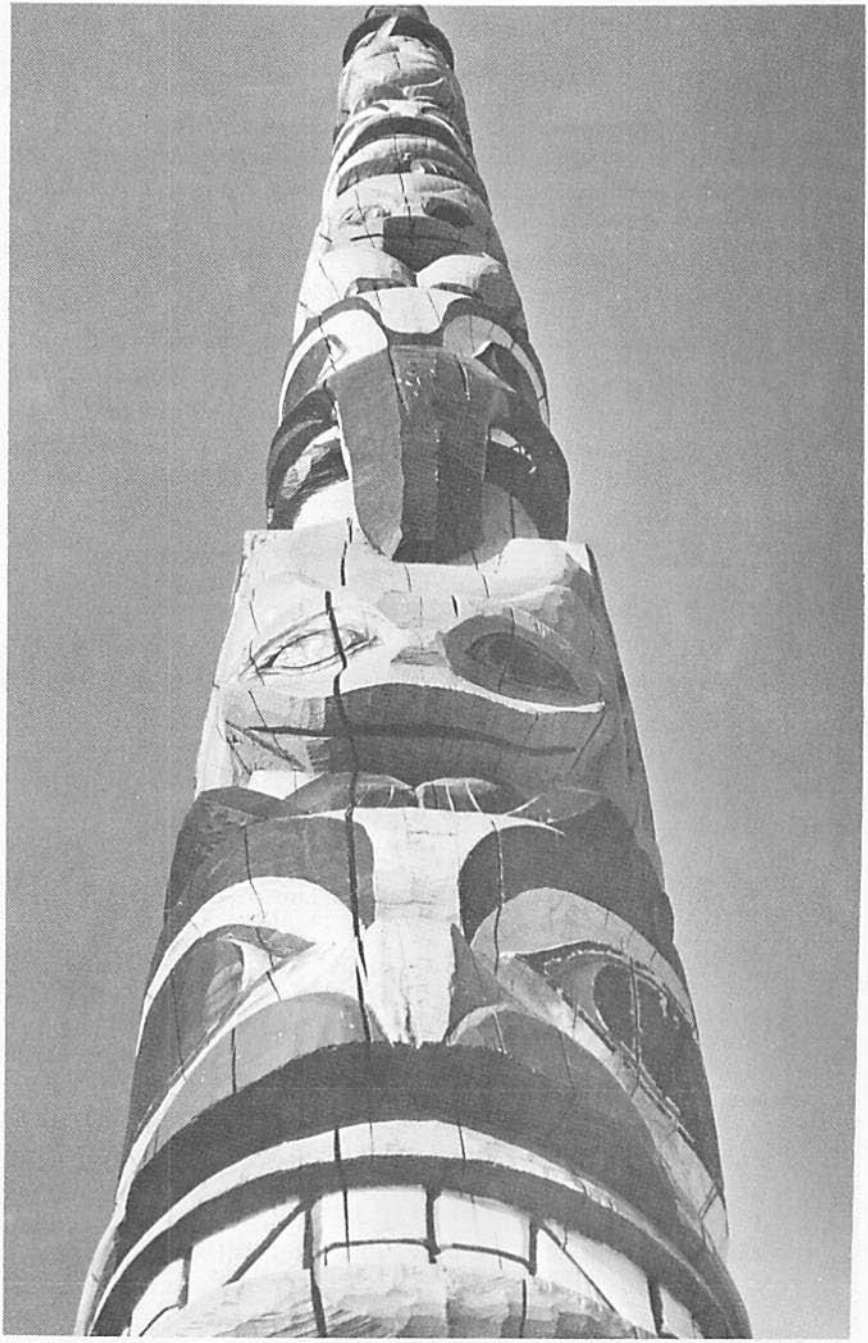
Main Campus Mailing Address	University of Alaska College, Alaska 99701
Public Relations, News Service	Director, University Relations
Admissions and Residence Hall Applications	Director of Admissions and Registrar
Scholarships, Loans, Part-Time Employment	Head, Financial Aids
Extra Curricular Activities	Head, Student Activities
Student Housing	Head, Student Housing
Graduate Study	Vice President for Research and Advanced Study
Summer Sessions, Evening Classes, Correspondence Study	Dean, Division of Statewide Services.
Short Courses, Conferences	Director, Division of Statewide Services
Alumni Association	Head, Alumni Services and Graduate Placement
Agriculture	Director, Cooperative Extension Service
Mining	Dean, College of Earth Sciences and Mineral Industry
Wildlife Management	Leader, Alaska Cooperative Wildlife Research Unit; or Head, Wildlife Management Department

SOUTHCENTRAL REGIONAL CENTER

Southcentral Regional Center Mailing Address	Provost 1820 W. Northern Lights Blvd. Anchorage, Alaska 99503
Anchorage Community College	Dean 2533 Providence Dr. Anchorage, Alaska 99504
Elmendorf-Fort Richardson Unit	Program Director 1820 W. Northern Lights Blvd. Anchorage, Alaska 99503
Kenai Peninsula Community College	Resident Director Box 539 Kenai, Alaska 99611
Kodiak Community College	Resident Director Box 954 Kodiak, Alaska 99615
Matanuska-Susitna Community College	Resident Director Box 86 Palmer, Alaska 99645

OFFICE OF PUBLIC SERVICE

Office of Public Service Mailing Address	Vice President for Public Service University of Alaska College, Alaska 99701
Juneau-Douglas Community College	Resident Director Box 135 Auke Bay, Alaska 99821
Ketchikan Community College	Resident Director Box 358 Ketchikan, Alaska 99901
Sitka Community College	Resident Director Box 179 Sitka, Alaska 99835



A 40-foot totem pole stands sentinel on a bluff overlooking the southeastern approach to the University of Alaska campus. Carved by a Tlingit Indian, the totem pole was presented to the university by its alumni.

General Information

HISTORY

The university dates from July 4, 1915, when the Hon. James Wickersham, delegate to Congress from Alaska, laid the cornerstone on land set aside by Congress on March 14 for the support of a land-grant college. The Territorial Legislature by its acts of May 3, 1917, accepted the land-grant and created a corporation, "The Alaska Agricultural College and School of Mines," defining its duties and providing for a Board of Trustees consisting of eight members.

The college opened for instruction on September 18, 1922, with the Hon. Charles E. Bunnell as president. The college became the University of Alaska by act of the Territorial Legislature July 1, 1935; the Board of Trustees became the Board of Regents. The university offered its first summer session in 1947. In 1949, Dr. Terris Moore succeeded President Bunnell, who became President Emeritus.

Dr. Ernest N. Patty, member of the first faculty of the Alaska Agricultural College and School of Mines and former dean of the college, was inaugurated as the third president of the university in 1953 and named President Emeritus upon his retirement in 1960. Dr. William R. Wood became the university's fourth president at that time.

Today, in addition to the main campus located at College, Alaska, university facilities encompass seven community colleges and serve students at a number of military installations around the state.

OBJECTIVES OF THE UNIVERSITY

Truly unique among institutions of higher learning in the United States, the University of Alaska serves, within the scope of its resources, all of the public educational needs beyond high school of an entire state.

When the legislature established Alaska's state university, it joined with the national government to make it also a land-grant university with a fivefold function:

To instruct youth and adults seeking higher learning in the liberal arts, the sciences, and the professions.

To increase and apply through research, knowledge of value to mankind and particularly to the residents of the state.

To serve the people throughout the 586,400 square miles of Alaska as an intellectual, scientific, and cultural resource.

To provide and to develop competent leadership for the people of Alaska in their continued improvement of the state as a good region in which to live.

To strive above all to develop in its students at all levels those qualities of mind and body that are necessary for life as a worthy human being in a democratic society.

ACCREDITATION

The university is accredited as an institution of higher learning by the Northwest Association of Secondary and Higher Schools; belongs to the Association of American Colleges, 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.

The four-year curricula in mining engineering and geological engineering and five-year curricula in civil engineering and electrical engineering are accredited by the Engineers' Council for Professional Development. The council represents the principal engineering societies and examining boards of the United States and Canada.

The university is approved by the Federal Office of Vocational Education for teacher-training in vocational home economics. It also is on the approved list of colleges and universities of the American Association of University Women.

CAMPUS BUILDINGS AND FACILITIES AT COLLEGE, ALASKA

Administrative, Classroom, and General Use Buildings

The Bunnell Memorial Building, dedicated to the late Charles E. Bunnell, first president of the university, consists of general administrative offices, classrooms, laboratories, and a large lecture hall. It also includes offices of the Cooperative Extension Service.

The Brooks Memorial Mines Building provides space for classrooms, laboratories, offices of the College of Earth Sciences and Mineral Industry, and offices of the U.S. Geological Survey. The four-story structure is dedicated to the late Dr. Alfred H. Brooks, chief Alaskan geologist of the U.S. Geological Survey from 1903 to 1924.

The Bio Sciences Building, completed in the winter of 1966, provides offices, research facilities and laboratories for upper division classes of the College of Biological Sciences and Renewable Resources. It also houses the Institute of Arctic Biology.

The Eielson Memorial Building contains general classrooms, laboratories, offices of the College of Behavioral Sciences and Education and the offices of the Division of Statewide Services.

The William E. Duckering Building houses offices, classrooms and laboratories of the College of Mathematics, Physical Sciences and Engineering; the College of Business, Economics and Government; the Institute of Marine Sciences; the Institute of Water Resources; the Institute of Arctic Environmental Engineering; laboratories of the State Division of Highways, and the Computer Center.

The Ernest N. Patty Building, dedicated to President Emeritus Ernest N. Patty, includes a gymnasium, swimming pool, rifle range, classrooms, and office facilities for the Department of Health, Physical Education, and Recreation and the Department of Military Science.

The Museum exhibits thousands of catalogued specimens of Eskimo and other artifacts in mineral, anthropological, ethnological, paleontological, botanical, and natural history fields.

The Sydney Chapman Building is the former home of the Geophysical Institute. The laboratory facilities of the three-story structure are used by various science departments.

Constitution Hall was completed in 1955 and is the university Student Union Building. It houses dining, recreational, and co-curricular facilities. It was the site of the convention of territorial delegates which drafted the constitution for the State of Alaska. This building provides temporary facilities for a variety of student services and activities. On the ground and main floors are an information booth, book store, game room, barber shop, coat room, and a lounge with television. The snack bar, which serves all members of the university community, occupies the entire second floor of Constitution Hall. Located on the third floor are offices of the student government, the student publications, the director of student activities, the radio station, and the alumni and graduate placement office.

The University Commons, completed during the summer of 1963, provides beautiful and functional dining, food preparation, and lounge facilities for all students living in residence halls. Although most meals are served cafeteria style, table service for as many as 570 people is provided on special occasions.

The Elvey Building houses the Geophysical Institute, formerly located in the Sydney Chapman Building. It contains facilities for

research in arctic and sub-arctic natural phenomena as well as graduate instruction in geophysics. The impressive six-story structure is located on the west ridge of the campus, overlooking the Tanana Valley and the Alaska Range. The building bears the name of Christian T. Elvey, Director of the Geophysical Institute, Emeritus.

The Library, Fine Arts and Humanities Complex, provides some of the finest facilities in the country for the fine arts and humanities curriculum. The departmental offices of the College of Arts and Letters are housed in the complex. Features of the building are a 480-seat theater, a 1,072-seat recital hall, vast art studios, and, full-sized FM radio and educational television studios that can be centrally controlled.

THE UNIVERSITY LIBRARY

The University of Alaska Library moved into the new five-level, five-million dollar Library, Fine Arts and Humanities complex in the fall of 1969. The library collection consists of approximately a quarter of a million volumes, 5,000 periodical and serial titles, 5,500 reels of microfilm, 300,000 microcards and microfiche and 2,000 phono-records. Book holdings are available on open stacks for the use of patrons during the 89 hours per week the library is normally open. A separate reserve reading room is open until midnight five nights a week.

Materials are classified according to the Library of Congress system. Current acquisitions are received immediately following publication on the English Language Approval Plan (ELAP) for college libraries.

One of the outstanding features of the new facility is the abundance of study areas and lounges. The seating capacity of 1,000 includes individual study carrels for one-third of the student body as well as closed graduate student carrels and research studies for use by faculty members. The graduate carrels and faculty studies are available upon application to the Director of Libraries.

The main book collection is housed on the fourth and fifth levels. Books in Library of Congress classification A through N are located on the fifth level, P through Z on the fourth. Graduate carrels, seminar rooms, individual study carrels and smoking rooms are located on each of these levels. Rooms for using personal typewriters also are available.

The main floor of the new library is on level three and contains the circulation and information desks, the card catalog, the separate

reserve book room, the reference area, a student lounge area, and study tables and carrels for student use. The Reader Services department and other library administrative offices are on level three. A special collection of books on Alaska and the polar regions, known as the Skinner Collection, is housed on this level. The bibliography, oversize, juvenile, and rare book collections also are located on level three.

The non-circulating collections are housed on level two. These include current periodicals which are on display shelves, bound volumes and microfilm of journals, and the appropriate periodical indexes. Microfilm readers and coin-operated self-service copy 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 and its indexes. A current collection of college and university catalogs and a curriculum laboratory of textbooks maintained by the Education Department are located here. Two lounges add to the comfort of patrons.

Level one houses the documents collection, the university archives and manuscripts collection, the map room and the microform room. The documents collection constitutes approximately one-fourth of the total library collection. It contains publications of the U.S. Government, for which the library is a selective depository. These materials are arranged by the Superintendent of Documents classification.

The microform room is adjacent to the documents collection, and houses the Atomic Energy Commission (AEC) research reports, the Educational Research Information Center (ERIC) publications, the Human Relations Area File (HRAF) and other microfilm, microfiche and microcard material.

The map room is located in the documents area. Available for use are subject area maps of the countries of the world, an extensive collection of Alaskana maps, U.S. Geological Survey maps of Alaska, and a special collection of rare maps.

The university archives and manuscript collection includes university records and special collections such as the Gruening, Bartlett, Rivers and Dimond papers, records of the Russian American Company 1802-1869, writings of pioneers and other original Alaskan material.

Interlibrary loan service is made available to graduate students and faculty through the Reader Services department of the library.

The library's membership in the Pacific Northwest Bibliographic Center makes the resources of the large university libraries in the nation available to the University of Alaska.

THE UNIVERSITY RADIO STATION

KUAC-FM, owned and operated by the University of Alaska, is Alaska's only educational radio station. In November, 1969 the Corporation for Public Broadcasting identified KUAC as one of 73 qualified public radio stations in the United States. At that time there were over 400 non-commercial stations in operation. Criteria for selection as a public radio station included number of hours on the air and percentage of educational and informational programming intended for the general public.

KUAC received a $5,000 grant from the corporation to produce a series of radio programs devoted to the Alaska native and the difficult cross-cultural transition which Alaska's Eskimos, Indians, and Aleuts face.

In addition to its program service for the Fairbanks community and interior Alaska, KUAC also provides valuable experience for students majoring in speech with a broadcast option and for non-majors who also are interested in broadcasting. The station is supervised by a professional staff and much of the day-to-day operation is handled by students working in announcing, news, copywriting, engineering, and other phases of broadcasting.

KUAC encourages students to use their work at the station as an opportunity to gain as much experience in varying phases of operation as possible, including the creation and production of new program ideas. Many members of the university faculty and the local community contribute invaluable time and effort to program production as well.

The station operates seven days a week, year-round, with 10,500 watts of power in full stereo. Programming includes a great deal of local production as well as many programs from international sources.

ALUMNI SERVICES

The Office of Alumni Services is the headquarters for the Alumni Association and the Graduate Placement Service.

The University of Alaska Alumni Association was founded November 16, 1927. The association promotes interests in the university among graduates and former students of the university in an effort to encourage continuing education among alumni, to

advance the scholastic standing and the physical plant of the institution, and to preserve its history and traditions. There are independent branch chapters in Juneau, Seward, Anchorage, Fairbanks, Palmer and Nome, Alaska; Northern California, Southern California, Washington State, Inland Empire and Washington, D.C. The association has an office on campus in Constitution Hall. All correspondence should be addressed to: Executive Secretary, Alumni Association, University of Alaska, College, Alaska 99701.

All graduates and former students who have taken courses for credit at the University of Alaska, including any of its community colleges, and no longer are attending, are eligible to belong to the association. There are no dues but members are asked to contribute to the Annual Fund each year. The "Alaska Alumnus," a quarterly magazine, is published by the alumni office and sent to all alumni.

Graduate Placement Service is a student personnel service which operates as a revision of the Office of Alumni Services. The service provides a central search for new or better positions. Employers may notify the office of their need for qualified, university-trained men and women. The office maintains a job research service which seeks to provide continuous, accurate information regarding current and anticipated employment conditions. All students are encouraged to visit the Placement Office to obtain advisement on careers.

ENROLLMENT SUMMARY 1969-70 First Semester

	Men	Women	Total
Freshmen	413	276	689
Sophomores	203	129	332
Juniors	170	89	259
Seniors	163	59	222
Graduates	141	67	208
Without Class Standing	115	171	286
Transfers	88	53	141
Post Graduates	75	53	128
Totals	1368	897	2265

ENROLLMENT DISTRIBUTION 1969-70 First Semester

Alaska	950	725	1675
Other States and U.S. Possessions	350	148	498
Foreign Countries	68	24	92
Totals	1368	897	2265

ENROLLMENT HISTORY – Main Campus

1922-23 15
1932-33 121
1942-43 157
1952-53 296
1962-63 1159
1969-70 2265

A geometric design is formed by the neatly aligned and catalogued library shelves.

Admissions

REQUIREMENTS FOR ADMISSION

Admission as a Freshman

1. High School Graduates – Baccalaureate Programs

Residents

An Alaskan high school graduate with an academic average of "C", or higher, is eligible for admission. An Alaskan whose high school grades averaged less than "C" will be considered for admission to the university only if his performance on a qualifying test demonstrates that he has the capacity to undertake successfully college academic work. The test required in such cases is prepared by the American College Testing Program. The ACT test is administered at testing centers throughout the country in November, February, April, and June of each year. Most Alaska high schools serve as ACT testing centers in November and/or February. Arrangements for taking the ACT test may be made through high school principals or guidance officers. The cost of the test to the student is $4.

Non-Residents

A non-resident high school graduate with an academic average of "B", or higher, is eligible for admission. A non-resident whose high school grades averaged less than "B" will be considered for admission to the university only if his performance on a qualifying test demonstrates that he has the capacity to undertake successfully college academic work. The test required in such cases is prepared by the American College Testing Program. Information concerning ACT testing centers and 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.

High School Subject Requirements

A high school graduate offering the following pattern of studies will have no deficiencies in any program that he enters.

SUBJECT	Units
English	3
Mathematics:	
Algebra	2
Geometry	1
Trigonometry	½
One Foreign Language	2
United States History	1
Physics or Chemistry	1

Natural or Social Science 1
Elective 4
TOTAL 15½

The specific entrance requirements for a high school graduate of the six colleges of the university are given below:

College	English	Mathematics	**Foreign Language	U.S. History	Natural or social Science	Academic and Elective
College of Arts and Letters	3	Algebra - 1 Geom. - 1	2	1	2	5
College of Behavioral Sciences and Education:						
Anthropology, Psychology, and Sociology	3	2	2	1	4	5
Education and Home Economics	3	*2	0	1	2	7
College of Biological Sciences and Renewable Resources	3	† Algebra - 2 Geom. - 1 Trig. - ½	‡	1	Physics or Chemistry - 1 Biology or Elective - 1	7
College of Business, Economics and Government:						
Business	3	2	‡	1	2	7
Economics, and Political Science	3	2	2	1	2	5
College of Earth Sciences and Mineral Industry:						
Geology, Geological Engineering, Mining Engineering,	3	Algebra - 2 Geom. - 1 Trig. - ½	0	1	Physics or Chemistry - 1	7½
Geography	3	2	2	1	4	5
College of Mathematics, Physical Sciences, and Engineering	3	Algebra - 2 Geom. - 1 Trig. - ½	0	1	Physics or Chemistry - 1	7½

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

** Students who offer two units of a high school foreign language will normally enroll in second year language. See placement tests, page 39.

† 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, such as graduate work, medicine, etc.

‡ Two years of French, German, or Russian language highly recommended. See departmental curricula.

Entering freshmen whose background of training in English and mathematics appears to be deficient when measured by placement tests may be required to take Engl. I or Math. 105 or both.

Achievement of a certain level of excellence in these subjects is essential to succeed in other areas of study. These basic English and mathematics courses are especially designed to assist the student in achieving these competencies.

When a student is deficient in specific subjects, but offers a satisfactory general record, he may enter with an entrance deficiency. The student must remove deficiencies during the freshman year. All courses taken to remove deficiencies must satisfy the department head concerned and must be in the subject in which the student is deficient.

2. Non High School Graduates — Baccalaureate Programs

Mature students, at least 21 years of age, residing in Alaska, who have not graduated from high school, or been awarded a high school diploma on the basis of GED military tests, or have not completed any previous college level work, may be admitted. Such students may be converted to "regular" status and become baccalaureate degree candidates after completion of not less than 30 collegiate semester hours of credit with at least a "C" average (2.00).

3. High School Graduates — Associate Programs

Any high school graduate is eligible for admission to all associate degree programs except electronics technology (see page 185).

Admission of a Transfer Student

Applicants who have attended other accredited institutions are eligible for admission provided they have a 2.00 grade point average and honorable dismissal. The university will transfer credits from other accredited institutions when the grades of courses completed are "C" or above. Transfer credits are evaluated and equated by the registrar and approved by the department head after a student is admitted to the university. The university reserves the right to reject work of doubtful quality or to require an examination before credit is allowed.

Transfer students with less than 30 acceptable credits are required to take the tests prepared by the American College Testing Program. Information concerning ACT testing centers and 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.

Members of the Armed Forces who have taken USAFI courses may, upon presentation of credentials to the university's head of Evening Classes and Correspondence Study, receive credits as recommended in the Evaluation of Educational Experiences of the Armed Forces. College credit will not be allowed for the General Education Development Tests.

Credit for military service may be substituted for the ROTC and/or physical education requirements.

Admission of Post Graduate and Graduate Students

Post Graduate — Students who hold a bachelor's degree but who have not defined their graduate program or declared the subject in which they wish to pursue their studies toward a higher degree may be admitted as "Post Graduates." Registering as a post graduate is satisfactory for those who hold a bachelor's degree and who have the following or similar purposes:

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

Graduate — See page 33.

Admission of Others

Special Students — Mature students, at least 21 years of age, who have graduated from high school and/or attended college previously may be admitted without filing transcripts of high school or college work completed. Such students are limited to enrollment in two classes unless special permission is obtained. Special students are subject to the academic regulations of the university, but are not considered degree candidates until regular admission requirements are met and transcripts filed.

Auditors — Auditors are students who enroll for informational instruction only. They do not receive academic credit, have laboratory privileges, or submit papers for correction and grading. They must apply for admission, register formally on the designated registration dates, obtain approval of class instructors, and pay the required fees.

A course in which a student is registered as an auditor may not be completed for credit by examination at a later date.

High School Students—To facilitate the transition and adjustment from high school to college, the university has made special provisions for students of varied background and ability.

Qualified Alaskan high school seniors of advanced academic standing and ability are permitted to enroll, while attending high school, in certain University of Alaska classes taught by university faculty and to enroll in college courses which may be offered at authorized high schools. To qualify for admission to college classes while still attending high school, a high school senior must have the recommendation of his high school principal, the approval of his parents, and a satisfactory score on the usual testing program required for entering students. Credits earned in such college classes may not be applied to high school graduation, but will apply toward graduation from the university and may be transferred to other universities following graduation from high school, provided the grades earned are satisfactory. Seniors who are interested in participating in this program should contact their high school principal.

After enrollment at the university, a student may receive credit by presenting acceptable CEEB Advanced Placement Test Scores, or the equivalent, when test scores warrant it and may receive course credit by examination upon presentation of adequate justification.

APPLYING FOR ADMISSION

When to Apply

Seniors in high school should make application for admission during the last semester of their senior year, if they plan to enroll at the university during the next fall semester. Transfer students should apply after the completion of a semester or school year, so that a complete transcript can be sent. Graduate students should make application during their senior year of college. Applications for admission should be presented no later than August 1 for the fall semester and December 1 for the spring semester. Applications received after these closing dates may be considered for the following semester.

How to Apply — Read Carefully

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

1. **Application for Admission.** The $10 application fee must accompany the completed application for admission form.

2. **Scholastic Records.** A secondary school record form completed by the high school where the applicant finished his high school work should be mailed by the high school. Applicants are required to submit complete official transcripts of all high school and college credits. Secondary school records are not required of graduate student applicants and those transfer students who have completed more than one full year of college work elsewhere. If the work has been taken at two or more collegiate institutions, an original transcript from each college attended is required. These transcripts should be sent directly from the registrar of the college where the work was taken to the Director of Admissions and Registrar at the University of Alaska. The applicant is responsible for securing these scholastic records. An application for admission is not processed until all such records are on file. Any person who willfully refrains from transferring all of his scholastic records or giving full information concerning previous attendance at other institutions will not knowingly be accepted or retained as a student.

3. **ACT Test.** Results from the tests prepared by the American College Testing Program (ACT) or the Educational Testing Service (SAT) are required for all entering freshmen and those transfer students with less than 30 semester hours of transferable credit. Test results must be on file with the office of the Director of Admissions and Registrar before an application can be accepted. It is the responsibility of the student to have the test results sent to this office.

   It is suggested that whenever possible, applicants complete the ACT Test since this is a registration requirement for all entering freshmen and transfer students with less than 30 semester hours of transferable credit.

4. **Letters of Recommendation** (graduate applicants only). At least three letters of recommendation are required from people capable of describing the applicant's character and ability to undertake graduate study and research.

After Acceptance

After receiving and processing the above materials, the Registrar's Office will mail to the student a statement of

acceptance. After the acceptance statement is received, the following items, where applicable, should be completed and mailed to the proper offices within the time limits suggested.

1. **College Catalogs** (transfer students only). Transfer students are responsible for having catalogs of colleges previously attended sent to the Director of Admissions and Registrar at least two months prior to the expected date of enrollment.

2. **Medical and Physical Examination.** Registration at the university is dependent upon the applicant having completed a recent physical examination which will confirm that his health is sufficient to enable him to undertake successfully the course of study for which he is applying. This requirement applies to all new students enrolling in seven credits or more, any students enrolling in seven or more hours for the first time, and to former students returning to the university after an absence of two or more semesters enrolling in seven or more credits. The physical examination is to be completed by the physician of the applicant's choice, and recorded on the university physical examination form, no earlier than five months before registration and no later than two weeks before registration. Evidence of smallpox vaccination within three years and results of a tuberculin test within the year (also of chest X-ray within the year if the test is positive) must be included. These all must be received by the university nurse before registration may be completed. A physical examination form will be sent with the notice of acceptance.

3. **Residence Hall-Board Contract and Advance.** All accepted single students will receive a residence hall-board contract with their acceptance notice from the Registrar's Office. In order to secure a room in the residence hall, this form should be completed immediately and mailed to the Head of Student Housing, University of Alaska, College, Alaska 99701, with a $50 reservation and damage deposit. For additional information on single student housing and/or married student housing, see the appropriate sections in this catalog.

Conditional and Final Acceptance

Qualified applicants can be accepted for admission while currently enrolled in their last semester of high school or at another college. However, the acceptance is conditional upon receipt of an official transcript indicating the satisfactory completion of the work in progress at the time of acceptance and in the case of high school seniors and graduate applicants, the 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.

The craggy summits of the Alaska Range are a favorite hiking area for members of the Alpine Club.

Fees and Expenses

Summary of Semester Charges

		Resident	Non-Resident
Undergraduate Full-time Students:			
University Fee		$100.00	$250.00
Campus Activity Fee		26.00	26.00
Recreational-Athletic Fee	$ 4.50		
Associated Student Fee	16.50		
Campus Activity Center Construction Fee	5.00		
Health Service Fee		25.00	25.00
		$151.00	$301.00
Residence Hall Rent (double room)		230.00	230.00
Meal Tickets (2nd sem. $354.00)		355.00	355.00
Total Fees		$736.00	$886.00
Undergraduate Part-time Students (7 to 11 credit hours):			
University Tuition Fee:			
7-credit hours		$110.00	$135.00
8-credit hours		110.00	160.00
9-credit hours		110.00	185.00
10-credit hours		110.00	210.00
11-credit hours		110.00	235.00
Campus Activity Fee		10.00	10.00
Associated Student Fee	$5.00		
Campus Activity Center Fee	5.00		
Recreational Athletic Fee ($5.00)		(voluntary)	(voluntary)
Health Service Fee ($25.00)		(voluntary)	(voluntary)
Residence Hall Rent ($230.00)		space available	
Meal Tickets (cost as above)		(voluntary)	(voluntary)

All semester charges are payable each semester upon registration.

Undergraduate students normally will pay approximately the sums above at semester registration time. However, those taking less than seven semester credit hours pay $18 per credit hour in lieu of the University Fee, and are not eligible for dormitory occupancy.

Other expenses at registration time will require extra funds for less predictable amounts, including personal and social expenses, textbooks, meals needed before meal tickets become effective, bus fare, athletic equipment, musical instruments, and other specialized classroom supplies which certain students may need.

The university reserves the right to change or add to its fees at any time.

TUITION

Non-residents — Tuition shall be charged full-time, non-resident students carrying 12 or more semester credit hours, at $150 per semester. Part-time, non-resident students carrying seven to eleven credit hours shall be charged extra tuition at the following rates:

7-credit hours	$ 25.00
8-credit hours	50.00
9-credit hours	75.00
10-credit hours	100.00
11-credit hours	125.00

Fee rates apply to students auditing any course in the same manner as for those taking it for credit.

Residents — Alaskan residents as well as students from Hawaii, the Yukon Territory, and the Northwest Territories are exempt from a tuition fee. Alaskan residents are defined as persons 19 years or older who have established residence in Alaska for at least one year prior to the date set for registration. The residence of those under 19 years of age is the residence of the parents or legal guardians as defined above.

REGISTRATION FEES

Undergraduate University Fee — Students registering for seven to eleven credit hours shall be charged a fee of $110 per semester. Students registering for 12 or more credit hours shall be charged a fee of $100 per semester. Residents and non-residents alike shall pay this fee.

Undergraduate Credit-hour Fee — Students registering for less than seven semester credit hours shall be charged a fee of $18 per credit hour.

Graduate Fees — Graduate and post-graduate students are subject to the following schedule of charges for 600-700 level courses:

Full-time (12 or more credit hours) University Fee	$150. per semester
Part-time (7 to 11 credit hours) University Fee	$165. per semester
Credit-hour Fee (1 to 6 credit hours)	$27. per credit hours

Those taking a combination of undergraduate and graduate credit courses pay the appropriate full-time or part-time graduate-level University Fee or the separate credit hour fees, whichever is the lower. Graduate students subject to payment of any other fees pay such fees at the same rate as undergraduates.

MISCELLANEOUS FEES

Application Fee — A fee of $10 shall be paid at the time the application for admission is submitted.

Late Registration Penalty — Students registering later than the day designated for that purpose shall pay a late registration fine of $5 for the first day, plus $2 for each succeeding day allowing for late registration (excluding Saturday and Sunday).

Change of Registration — A penalty fee of $1 shall be paid for each course added or dropped after the third day following the scheduled date for registration. Changes necessitated by university cancellation or re-scheduling of classes are not subject to penalty.

Examination Fee — A minimum charge of $3 shall be made for each examination required for removal of an incomplete, clearance of an entrance deficiency or credit by examination, plus an additional $1 for each credit over three.

Late Placement and Guidance Test — A charge of $5 shall be made for a placement and guidance test taken at a time other than the scheduled time.

Transcript Fees — One certified transcript is issued free. A charge of $1 shall be made for each additional transcript.

Graduate Placement Fee — The university charges $10 for filing of credentials and one year of service. Thereafter, $5 is charged for each year the file is used. There is no filing fee for students who file before graduation.

Program Plan — The Registrar's Office will provide without charge one plan for a schedule of courses leading to a degree. A fee of $5 will be charged for each subsequent alternate plan.

Music Course Fees — All music fees shall be waived for students enrolled for seven or more credit hours and taking a major or minor in music, as certified by the department chairman. Fees for class lessons: $15. Fees for private lessons: $45. Practice room rental: $7.50.

Residence Hall Room Change — A fee of $10 shall be charged for every move within the halls after the first one if initiated by the student.

CAMPUS ACTIVITY FEE

Full-time undergraduate students carrying 12 or more semester credit hours or the equivalent, under 26 years of age, shall be charged the Campus Activity Fee totaling $26 per semester. Each will receive an identification card entitling him to privileges in the following programs:

Recreation-Athletics Program — Use of Patty Building recreational facilities, including pool, admission to scheduled and tournament

athletic events. This program is administered by the head of the Department of Health, Physical Education, and Recreation.

Associated Students Program — Participation in all student-managed, social, education, and governmental activities, including receipt of student paper and yearbook, movies, scheduled social events, and student elections and administration of student government. This program is administered by elected and appointed student officials of Associated Students of the University of Alaska. Five dollars of this fee is designated for planning and design of a new Campus Activities Center building.

A deposit of $2 will be required once each year of all students paying the $26 Campus Activity Fee. This sum will be refunded at the time of taking the student's picture for the yearbook.

Part-time students carrying seven or more semester credit hours, including graduate students and those 26 years of age or older carrying 12 or more credit hours, shall be charged a Campus Activity Fee of $10 per semester. Each will receive an identification card entitling him to all privileges of the Associated Students Program, except voting, holding office, the yearbook, and movies. Such students may purchase voluntarily privileges of the recreational-athletic program at $5 a semester.

STUDENT HEALTH SERVICE FEE

All students under 26 years of age, carrying seven or more semester credit hours or equivalent shall be charged a Student Health Service Fee to be quoted at registration, which includes use of the Health Center and participation in a group medical plan to cover accidents and sickness.

The Student Health Program is administered by the Health Center under the direction of the Director of Student Affairs and the head of Student Health. Hospital and medical treatment for common illnesses and injuries are provided, under limits of coverage set forth in the student health plan. Each student will be supplied with a set of regulations outlining the plan.

Married students may secure additional 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.

ROOM AND BOARD

Contracts for room and board are binding from the date signed to the end of the academic year.

Room Deposit — The completed application for housing, with a $50 reservation and damage deposit, must be returned to the Head of Student Housing, University of Alaska, College, Alaska 99701. If you decide not to attend the University of Alaska, and a written statement is received by the Housing Office, the policy in regards to refunds will be as follows:

Fall Semester — Cancellations received prior to August 15; $25 will be refunded. Cancellations received on or after August 15; NO REFUND OF DEPOSIT.

Spring Semester — Cancellations received prior to December 15; $25 will be refunded. Cancellations received on or after December 15; NO REFUND OF DEPOSIT.

If all provisions of the contract have been complied with and no damage charges have been assessed, the $50 deposit will be refunded at the end of the school year. If the resident elects to re-apply for a room in the residence halls for the following year, his deposit will not be refunded but will be transferred to the renewal application.

THERE ARE NO REFUNDS FOR APPLICATIONS MADE AND THEN CANCELLED AFTER AUGUST 15 or DECEMBER 15.

Room Rent —

Double Room per semester	$230.00
Single Room per semester	$265.00

This rental covers all lounge, recreation room, storage, laundry room, and telephone privileges. Toll calls may not be made over floor phones in dormitories.

Meal Tickets — When registering, each residence hall occupant is required to buy a semester meal ticket for cafeteria meals.

First Semester Meal Ticket	$355.00
Second Semester Meal Ticket	$354.00

Meal tickets become effective at the evening meal, September 3, and the evening meal, January 13. Refunds are granted only with approval of the director of Student Affairs upon formal withdrawal, for absence on university activities, or for extreme personal emergencies.

Semester meal tickets do not include vacation periods. Special meal tickets may be purchased before specified dates at the rate of $3.50 per day. Those not possessing special meal tickets may buy meals during vacation periods at à la carte prices.

PAYMENT OF FEES

All charges, deposits, rent, and meal fees for the semester are payable in full. An installment contract may be arranged under which a 25 per cent payment is due upon registration and additional installments are payable for up to three months following the date of registration. The installment contract service fee is $2 for the contract and $2 for each additional payment. Delinquent payment of installments is subject to a $2 fine for each occurrence.

Refundable Charges — Refunds of the University Fee, Tuition Fee, Music Course Fees, and Campus Activity Fee shall be made to withdrawing students upon formal withdrawal by or for the student, according to the following schedule:

Withdrawal within the first week — 90 per cent refund
Withdrawal within the first 1/3 of term — 50 per cent refund
Withdrawal after first 1/3 of term or semester — no refund
Health Service and miscellaneous fees shall not be subject to refund

Board — The unused portion of a meal ticket, less the board net fee and a service charge equal to five days' meals, shall be refunded upon formal withdrawal. There are no refunds if a student withdraws during the last two weeks of a semester.

Rent — Room rent is refundable only in emergency cases as approved by the Director of Student Affairs upon the recommendation of the Student Faculty Housing Advisory Committee. However, there are no refunds if a student withdraws during the last two weeks of a semester.

Financial Obligations — The university withholds delinquent students' diplomas pending their final payment of debts owed to the university. The Registrar also withholds grade reports and transcripts until debts to the university have been paid. No student owing the university money can receive honorable dismissal or register for succeeding semesters. A student's registration may be suspended for failure to meet financial obligations.

TRANSPORTATION TO THE UNIVERSITY

The Alaska Railroad gives qualified students a round-trip ticket for the price of a one-way ticket. This applies to Summer Sessions and Home Economics Short Course students as well as those attending regular sessions. The student must request the special rate when purchasing his first ticket. Two days prior to departure on the return trip, the student must present his ticket receipt and identification to the Office of the Registrar for certification of student status.

Degrees

DEGREES OFFERED

The university offers programs leading to the following:

Undergraduate Degrees

Associate of Arts, A.A.
Associate of Electronics Technology, A.E.T.
Associate of Office Administration, A.O.A.
Associate of Mineral and Petroleum Technology, A.M.P.T.
Bachelor of Arts, B.A.
Bachelor of Business Administration, B.B.A.
Bachelor of Education, B.Ed.
Bachelor of Music, B.Mus.
Bachelor of Science, B.S.

Professional Degrees

Engineer of Mines, E.M.

Graduate Degrees

Master of Arts, M.A.
Master of Arts in Teaching, M.A.T.
Master of Business Administration, M.B.A.
Master of Civil Engineering, M.C.E.
Master of Education, M.Ed.
Master of Electrical Engineering, M.E.E.
Master of Fine Arts, M.F.A.
Master of Mechanical Engineering, M.M.E.
*Master of Public Administration, M.P.A.
Master of Science, M.S.
Educational Specialist, Ed.S.
Doctor of Philosophy, Ph.D.

GENERAL REQUIREMENTS FOR UNDERGRADUATE DEGREES

To receive a degree from the university, a student must have earned the required number of credits as well as satisfied the special requirements of his curriculum. He must attain an average grade of 2.00 (C) in all work as well as in the major field and minor fields; transfer students must maintain a 2.00 (C) average in all work at the University of Alaska.

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*For further information write to the Director of Admissions and Registrar.

BACHELOR'S DEGREES

All physically qualified women students under 24 years and all physically qualified men students under 24 years entering the university for the first time, must enroll in physical education or Basic Course, ROTC. This requirement of P.E. 100 for four courses or Basic Course, ROTC (see under Military Science) should be completed during the first two years of attendance at the university.

Transfer students must meet the requirements of the university with respect to military science or physical education, unless they have completed the requirements of the schools previously attended.

Students must earn in residence at the University of Alaska at least 24 credits in upper division courses and at least 30 of the last 36 credits for the degree.

A regular student who has earned 60 academic credits is required to present a passing score on the library orientation test before registering again; or, in case of a transfer student with more than 60 credits, prior to his second registration at the University of Alaska. The library orientation test is a basic one for which syllabi are available in the library. It is given approximately six times a year.

An upper division student showing a marked English deficiency may have to pass a remedial course in English.

A maximum of 32 semester hours of work completed by correspondence may be accepted toward a baccalaureate degree. A maximum of 15 semester hours of work completed by correspondence may be accepted toward an associate degree.

A student enrolled in a bachelor's degree program may elect to graduate under the requirements of the general catalog in effect during the year of graduation or in effect at the time he originally enrolled, providing there has not been a time lapse of more than seven years.

GENERAL REQUIREMENTS FOR B.A. DEGREE

	Credits
English Composition and Literature, including Engl. 101-102	12
Foreign Language — two years of collegiate work in one language ..... 12 credits fulfill the requirement if all are above the 100 level.	12-16
Social Science, including Hist. 101-102 and work in two other fields	15
Mathematics and/or Natural Science, Math. 106-200 or Math. 121-122 or a year sequence in a laboratory science plus enough credits to total 12	12
Major Specialty — (See Department Sections for specific requirements)	23-26
Minor Specialties — two of 12-18 credits each, or a second major to be approved by petition	23-24

Military Science or Physical Education	4-6

Electives to bring total credit to 130 credits.

Major Specialties Available For B.A. Degree — Anthropology, Art, Biological Sciences, Business Administration, Chemistry, Economics, English, French, Geography, Geology, German, History, Journalism, Linguistics, Mathematics, Music, Physics, Philosophy, Political Science, Psychology, Russian, Sociology, Spanish, Speech.

Minor Specialties Available For B.A. Degree — Anthropology, Art, Biological Sciences, Chemistry, Economics, Secondary Education, English, French, Geography, Geology, German, Home Economics, History, Journalism, Linguistics, Mathematics, Military Science, Music, Philosophy, Physics, Political Science, Psychology, Russian, Sociology, Spanish, Speech.

GENERAL REQUIREMENTS FOR B.B.A. DEGREE

	Credits
English Composition and Modes of Literature: Engl. 101 & 102	6
Exposition: Engl. 213	3
Public Speaking I: Speech 111	3
Behavioral Science: Psy. 101, Soc. 101	6
History (other than American or European)	3
Political Science: P.S. 101	3
Economics: Econ. 121, 122, 221	9
Mathematics: Math. 106, 110, 200	12
Natural Science	4
Military Science or Physical Education	4-6

If general credits (i.e., credits other than business and advanced economics) exceed 78, then more than 130 total credits will be required for the degree.

GENERAL REQUIREMENTS FOR B.ED. DEGREE

For requirements for a B.Ed. in Elementary Education, see page 90.
For requirements for B.Ed. in Secondary Education, see page 92.

GENERAL REQUIREMENTS FOR B.MUS. DEGREE

For requirements for a B.Mus. degree, see page 83.

GENERAL REQUIREMENTS FOR B.S. DEGREE (ENGINEERING SCIENCE)

English Composition and Literature, including Engl. 101-102	12
Social Science, including Econ. 121	9
Engineering Science, including E.S. 101, 102, 111, 207, 208, 331, 341, 346	24
Mathematics, including Math. 106, 200, 201, 202, 302, 312	23
Chemistry, including Chem. 201, 202	8
Physics, including Phys. 211, 212	8
Military Science or Physical Education	4-6

Departmental requirements and electives to bring total credits to 130.

Major Specialties Available For B.S. (Engineering Science) Degree — Civil Engineering, Electrical Engineering, Mechanical Engineering.

GENERAL REQUIREMENTS FOR B.S. DEGREE

	Credits
English Composition and Literature, including Engl. 101-102	12
Foreign Language A first year (101-102) or a second year (201-202) of a language approved by the department head. Students with two or three years of study of an approved language may petition to have this requirement removed by examination.	0-10
Social Science	9
Mathematics	8
Physics	8
Chemistry or Biology	8
Major Specialty (See Departmental Sections for specific requirements)	
Military Science or Physical Education	4-6
Departmental requirements, minor specialties, and/or electives to bring total credits to 130.	

Major Specialties Available For B.S. Degree — Anthropology, Biological Sciences, Chemistry, Fisheries Biology, General Science, Geography, Geology, Geological Engineering, Home Economics, Mathematics, Medical Technology, Mining Engineering, Physics, Psychology, Sociology, Wildlife Management.

Minor Specialties Available For B.S. Degree — Refer to Departmental Section, since some B.S. degree programs do not require minor specialties.

ASSOCIATE DEGREES

The associate degree is awarded upon the successful completion of a two-year technical or general program. The degree has its own integrity and for many people it will be their most advanced formal educational experience. For others, it will be the first undergraduate degree and a stepping stone to a baccalaureate program.

GENERAL REQUIREMENTS FOR A.A. DEGREE

	Credits
English	6
American Government or American History	6
Speech	2
At least six credits in any three of the following areas: (a) humanities, (b) social studies, (c) natural science, (d) mathematics, (e) other.	18
Major Specialty (See Department Sections for specific requirements)	20-30
Electives to bring total credits to 60.	

Major Specialties Available For A.A. Degree — Behavioral Sciences, Liberal Arts, Office Administration, Police Administration, Science, Vocational Arts.

REQUIREMENTS FOR A.A. WITH MAJOR IN SCIENCE

	Credits
A total of 60 credits required for graduation.	
I. General Education	
A. Specific Requirements	
Engl. 67, 68 or 101, 102	6
Speech	2
History of U.S. or American Government	6

B. General Requirements

Humanities	6
Social Sciences	6
Six credits in one of the following: Natural Science, Mathematics, or other.	6

II. Major in Science

Courses used to meet the General Education requirements may not be used to meet the requirements of the major.

Math. 121-122, Math. 106-200 or equivalent	8
A year's sequence course in Biology, Chemistry, Geology, or Physics, plus two semesters in area other than that chosen for sequence.	14-16
Approved Science elective (may include courses in Mathematics or Applied Science such as Engineering, Wildlife Management, etc.)	4-6

GENERAL REQUIREMENTS FOR A.E.T. and A.M.P.T. DEGREES

For requirements for A.E.T. see page 139.
For requirements for A.M.P.T. see page 123.

GENERAL REQUIREMENTS FOR GRADUATE STUDY

Graduate study seeks to prepare the student for creative work—for all work that extends the bounds of knowledge, that cherishes and transmits knowledge, and that applies knowledge for the benefit of man. It seeks 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 experience, academic background, and aspirations. Earning an advanced degree entails more than the satisfactory completion of specified courses; the student must show promise and performance in productive scholarship.

MASTER'S DEGREE

As will be seen under departmental listings, programs leading to master's degrees are offered in the areas of anthropology, biology, botany, business administration, chemistry, civil engineering, counseling psychology, creative writing, environmental health engineering, education, engineering management, English, fisheries biology, French, geology, geophysics, history, mathematics, mineral industry management, mineral preparation engineering, physics, public administration, wildlife management, and zoology. Students wishing to enroll for graduate study in any of these fields should obtain an application form from the Director of Admissions and Registrar's

Office. The completed form and official transcripts of all previous college or university work should be returned to that office.

However, programs leading to master's degrees may be arranged on request in certain aspects of other subjects; for example, economics, land resources, linguistics, etc. Students interested in pursuing studies in one of these or any other discipline not listed should write directly to the Vice-President for Research and Advanced 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, French, geology, history, mathematics and physics; the Master of Science in general science is offered with emphasis in biology, chemistry, geology, mathematics and physics; the Master of Science is offered in oceanography and ocean engineering. Students interested in obtaining more information about these degrees and their requirements should also write to the Vice-President for Research and Advanced Study.

In general, a student may be admitted to graduate status if he has a bachelor's degree from an accredited institution with at least a "B" average in his major and if his major is deemed suitable for continuation of studies in the field of his choice.

Department 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. Applications from students whose projected programs do not fall within a department will be reviewed by a Committee for Admissions. Committee recommendations will be transmitted to the student by the Director of Admissions.

As soon as the student is accepted, an advisory committee of not fewer than three faculty members will be set up to assist the student in planning and carrying out his program.

The requirement for a master's degree is a minimum of 30 semester credits, of which a maximum of 12 may be devoted to the thesis. At least nine semester credits, in addition to those earned for the thesis, must be at the graduate level. No lower division courses (100 or 200) are applicable. A maximum of nine semester credits from another institution may be transferred to the University of Alaska and applied toward a degree if approved by the student's advisory committee and by the dean of the college in which the student is enrolled.

B is a minimum passing grade in courses not primarily for graduate students (300 or 400); C will be accepted in courses primarily for graduate students (600) provided a B average is obtained in graduate courses. Such standards are requisite for continuing study toward a master's degree.

A student may be admitted to candidacy for a specific master's degree after he has satisfied all the following requirements: 1) completed at least eight credits of graduate study at the University of Alaska; 2) demonstrated a reading ability of a foreign language, if required; 3) received approval of the provisional title of his thesis, if a thesis is required, and of his program of studies by the dean, if he is enrolled in a college, or by the Vice-President for Research and Advanced Study if he is not enrolled in a college.

The candidate must pass a final examination, either written or oral; if a thesis is required, the examination will include a defense of the thesis. The examining committee shall consist of a candidate's advisory committee and one member of the faculty from outside the candidate's college appointed by the Vice-President for Research and Advanced Study.

All work toward the fulfillment of the requirements of a master's degree must be completed within seven years.

DOCTOR OF PHILOSOPHY DEGREE

No restrictions are placed on the disciplines that may be studied by students seeking doctoral degrees. There are well established programs in certain areas of physics, geophysics, and geology, while students are commonly accepted in oceanography, zoophysiology, zoology, wildlife management, and English.

Prospective candidates in these or other topics, should write to the Vice-President for Research and Advanced Study outlining in some detail their previous training and interests for future study. Each application is reviewed by an admissions committee both in light of the applicant's qualifications and the faculty and facilities available on the campus relevant to the field of projected study.

The degree of Doctor of Philosophy is granted for proven ability and scholarly attainment. There are no fixed credit requirements for this degree at the University of Alaska. It is not the 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 advisory committee, such lines of study in related fields as are necessary for achievement of a thorough and scholarly knowledge of

his subject. With approval of his advisory committee, the student prepares a program 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.

A grade average of B must be maintained in graduate course work.

Reading ability in one foreign language appropriate to the student's discipline is required for the doctorate. German, French, or Russian are usually taken and the standard is set at the equivalent of three or four semesters study with at least one semester representing reading in the subject field.

Admission to graduate study does not imply admission to candidacy for a degree. The student should seek admission to candidacy approximately one year before he will have completed the requirements for his doctorate. A student may be accepted as a candidate by his advisory committee after 1) completing the equivalent of two academic years of graduate study, 2) completing at least one semester in residence at the University of Alaska, 3) meeting his foreign language requirement, 4) obtaining approval by his advisory committee of the title and synopsis of his dissertation, and 5) passing a qualifying examination set by his advisory committee.

The dissertation, which is expected to represent the equivalent of at least one full academic year's work at the University of Alaska, must be a contribution of knowledge.

After submitting the dissertation, the candidate must pass an oral examination supporting his dissertation. The examining committee will consist of a minimum of five members: the candidate's advisory committee supplemented by additional members appointed by the dean, when the student is enrolled in a college, and by the Vice-President for Research and Advanced Study.

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

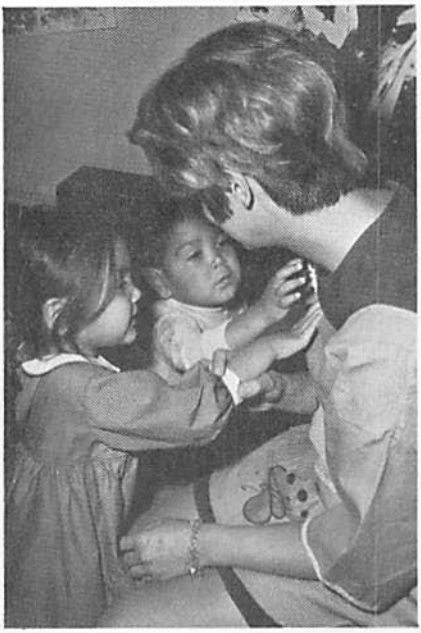
THESES AND DISSERTATIONS

Two copies of the thesis or dissertation, typed and bound (original and first carbon), must be filed in the university library. Departments may require additional copies. All records of work done in connection with the preparation of theses and dissertations are the property of the university and can be released with the permission of

the head of the department and the Vice-President for Research and Advanced Study after having been reproduced by the university.

EXTENDED REGISTRATION FOR GRADUATE STUDENTS

A student who is working toward a higher degree must be registered. A student whose only remaining requirement is the removal of a deferred grade in Thesis or Special Topics must request the Registrar to allow him extended registration at the beginning of each semester until the deferred grade is removed. With the request, the student must state the approximate time at which he expects to complete the work. Upon receipt of such a request, the Registrar refers the request to the chairman of the student's advisory committee. With his approval, the student is considered as enrolled in the current semester.



The learning experience goes on both inside and outside the classroom.

Academic Regulations

Each student will be held responsible for the regulations of the university as they apply to him.

Orientation and Placement Testing — All entering undergraduate students are required to participate in the orientation program conducted just before fall and spring semester registration. The purpose of this program is to acquaint the new student with the history, the customs, and the campus of the University of Alaska, and to aid him in the planning of a profitable college career.

Many entering freshmen will have taken the examination of the American College Testing Program during their senior year in high school. Those entering freshmen for whom the university has received ACT scores will not be required (or permitted) to repeat the examination during the orientation program. However, all new students who are entering the university with fewer than 30 hours of acceptable transfer credit and for whom the university has not received ACT scores will be required to take the test during orientation week and to pay a $5 testing fee. The ACT and other placement and guidance tests must be taken before a new student with less than sophomore standing may complete his registration. On the basis of test scores, a student whose background of training appears to be deficient in areas such as English and mathematics may be required to take Engl. 1 or Math. 105 or both. In such cases, the student will be unable to complete the requirements of most curriculums in the minimum time.

A student continuing the study of a foreign language begun in high school will be required to take a placement test. If he fails to place at the level appropriate to the amount of his previous language study, he will be allowed to enroll for credit in a course that is one semester below this level. Work more than one semester below the normal level will be considered remedial and, although prerequisite to further study, will carry no credit.

An additional fee of $5 will be charged to students who take the placement and guidance tests at other than the scheduled times during orientation week.

Although transfer students are required to participate in the orientation program, they are not required to take the placement and guidance tests if they have at least sophomore standing. However, for the assistance which test scores may give the transfer student and his advisers in planning his educational program, it is recommended that

he take the placement and guidance tests at the time they are administered to entering freshmen.

Advanced Placement — The University of Alaska will grant advance credit, with waiver of fees, on satisfactory performance in College Board Advanced Placement Tests or other national examinations declared acceptable by individual departments. Advanced placement may also be available, with waiver of fees, in some departments through departmental placement tests given at the time of the student's enrollment.

Such credit is available to enrolled students only after the students have completed one or more semesters at the university.

In the case of the College Board Advanced Placement Tests, a grade of "3" or higher is acceptable for placement. The level of performance required on other departmentally approved tests is determined by the specific department involved.

The instructor initiates a form for advanced placement credit, completes it, and forwards it through his department head and dean to the Registrar. The Registrar will record this credit on the student's permanent record with a "P" grade.

Attendance — Regular attendance is expected in all classes. Unexcused absences may result in a student's being dropped from the course with a failing grade. It is the responsibility of the student to establish to the instructor's satisfaction the validity of an excuse for absence and to work out with the instructor acceptable arrangements for making up missed work.

Class Standing — Class standing is determined on the basis of total credits earned.

Students are classified as:

Freshman	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 credits accepted by the university. Special students are registered without class standing.

Study Load — Students normally may register for 18 semester hours of credit; for 19-20 semester hours with the approval of the dean of the college; for 21 or more semester hours provided the student's grade point average with a full time study load for the past two semesters is at least 2.75 and with the approval of the Academic Council.

For the purpose of computing study loads, non-credit courses are rated the same as credit courses.

No student who has failed in any work may register for more than the number of credits tabulated in his curriculum until he has carried that number successfully for one semester.

A full-time student is one who enrolls for 12 or more semester hours of credit. Any student who qualifies for entrance and registers for fewer than 12 credits will be classified as "part-time" regardless of his previous standing.

Any student registered in 12 or more credits must fulfill the requirements in military science or physical education.

Any regular student who does not follow a prescribed course of study or curriculum leading to a specific degree will be enrolled as "interim" major. A student with an interest in a specific college, but who has not selected a major from that college, will be enrolled as a "non-major" in the college.

Special students are considered "undeclared" and are not assigned class standing.

Credit by Examination — An enrolled student is eligible to petition for permission to receive credit by examination if he can provide evidence of sufficient experience or previous study pertaining to the course in question. When permission is granted, the student is required to register immediately and pay the fees of the course which has been officially approved. A course in which a student has been registered as an auditor may not be completed for credit by examination.

Change of Curriculum — A student desiring to change his curriculum may do so only at the beginning of a semester, and must obtain the written consent of the heads of the departments concerned on a change of department and/or major form.

Change of Registration — A student is expected to complete the courses in which he is enrolled. He may, if circumstances warrant, withdraw without penalty during the first two weeks of the course; after that time a grade of "WP" is given only if he is doing passing work and a grade of "WF" is given if he is doing failing work. After the first month of the course, a student who wishes to withdraw must submit his request by petition, which shall include the reason for the request. Student initiated withdrawals are not permitted during the last month of the semester. Elective and non-sequence courses should be dropped first; withdrawals from deficiency courses or Engl. 101-102 may be made only upon petition. The fee for

student initiated course changes is $1 per course. A Change of Registration card must be obtained from the student's academic advisor.

Grading System — Only letter grades appear on the student's record and transcript. Attention is called to the following analysis:

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.

B — Indicates outstanding ability and a performance definitely above the average.

C — Indicates a satisfactory and average response to assignments.

D — The lowest passing grade; indicates work of poor quality and does not entitle the student to the recommendation of the university.

P — Indicates passing work and carries no grade point.

F — Indicates failure.

S — Indicates satisfactory completion, is used only for graduate theses and carries no grade points.

I — Given only in cases where additional work is necessary for the satisfactory completion of the course; not given unless the work already performed is grade C or better; may be given for unavoidable absence.

The grade for work that is incomplete (I) becomes a failure (F) if the work is not completed by the end of the sixth week following the student's next registration. At the option of the instructor and head of the department offering the course, the removal of the incomplete may be postponed until the next semester in which the course is regularly given.

Def — Indicates that for good cause, as determined by the instructor, the grade in certain courses, such as thesis, may be withheld, without penalty, until the requirements of the course are met within an approved time.

WP — Given when a student makes a regular withdrawal from a course while doing passing work.

WF — Given when a student makes a withdrawal from a course while doing failing work. It indicates failure and is so computed in the grade point average.

Grade Points — For the completion of grade points, each credit is multiplied by a grade factor: Grade A by 4, grade B by 3, grade C by

2, grade D by 1, and grade F or WF by 0. The record and transcript of the student show all grades received, together with all rulings on special petitions or authorized substitutions. A grade point average 2.00 is required for good scholastic standing.

Probation and Academic Disqualification — At the end of any semester of attendance, a student failing to earn or maintain a grade point average of 2.00 may be placed on academic probation. Students who fail to raise their scholastic average after being placed on probation may be disqualified or, under unusual circumstance, may be permitted to continue on probation but may enroll for a maximum of two college level courses in any unit of the university providing they have their program approved by the dean of their college. If a "C" or higher average is obtained in these two courses a student may again enroll as a full-time student. If less than a "C" average is obtained in these two courses, the student may be academically disqualified. A disqualified student will not be permitted to re-enroll in any unit of the university for one or more semesters, and will be re-admitted only upon his presentation of evidence indicating a high probability that he can do satisfactory college level work. The most obvious evidence is the completion of two or more college level courses with a grade of "C" or higher at another accredited institution or by correspondence.

Students who are academically disqualified from a baccalaureate degree program may, as high school graduates, enroll, after a lapse of three months, in associate degree programs at the university upon the recommendation of the dean who disqualified them and the acceptance of the dean of the college or the director of the community college to which he applies. If such a disqualified student transfers from a baccalaureate degree program to an associate degree program, he must complete the associate degree program before applying for re-admission to a baccalaureate degree program.

Dismissal — A student may be dismissed for cause at any time by the president of the university, after appropriate review.

Honor Rolls — Students who earn at least a 3.5 semester grade point average for no less than 12 credit hours are listed by the academic vice president on the university's honor roll.

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

Graduation with Honors — 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.

In order to graduate with honors, students transferring from institutions must have been in attendance at the University of Alaska for at least four semesters with a minimum of 12 credits each semester.

Graduate in Absentia — It is a policy of the university that students who will not be present at commencement submit written requests with justification to graduate in absentia.

AWARDS

Listed below are awards which have been established for students who demonstrate outstanding achievement in various fields and activities. Information concerning awards may be obtained from the Office of Student Affairs, from the Department of Military Science, or from the Department of Health, Physical Education, and Recreation.

American Institute of Mining and Metallurgical Engineers, Alaska Section
American Society of Civil Engineers, Fairbanks Sub-Section of the Alaska Section
Athletic Letters and Awards
Marion Frances Boswell Memorial Award
Chemistry Department Outstanding Freshman
Druska Carr Schaible Memorial Award
Fairbanks Garden Club Conservation Award
Fairbanks Weavers Guild
George M. McLaughlin Memorial
Archie W. Shiels Prize
Sigma Xi Club, University of Alaska
General James Steese Prize
Joel Wiegert Award

Office of Student Affairs

GENERAL RESPONSIBILITIES

The university provides services intended to assist students in making their educational careers more profitable and meaningful. While the principal function of the university is to foster the intellectual growth of the student, it is recognized that the social, moral, physical, and spiritual development of the individual also are of prime importance. Mindful of its obligation to assist the total development of the student, the university continues to expand its student personnel facilities to meet the need for individualization in the educational process.

The Office of Student Affairs is responsible for coordinating and extending personnel services such as: a) orientation activities to assist new students adjusting to the privileges and responsibilities of membership in the university community; b) psychological testing to aid students in finding out more about their academic and vocational potentialities and capabilities; c) counseling with students relative to their personal or educational problems; d) financial assistance for students through the administration of scholarships, loans, and part-time jobs; e) medical attention for students with health problems; f) the assignment to, and the supervision of student residence halls; g) the guidance of student co-curricular activities and organizations; and h) the promotion of high standards of student conduct.

Recognizing the need to insure the privacy of individual records the university releases information only upon permission of students to agencies off campus. Records are available for legitimate on-campus professional use on a need-to-know basis. Information on students is maintained by the following offices: Registrar for academics, Counseling for professional reference, Health Services for medical history, and Office of Student Affairs for disciplinary records and extra-curricular activities. Academic and personal information is released to other institutions or employers solely upon release by the student. General information only is discussed with governmental agencies conducting standard investigations.

It is recommended that students release information concerning their participation and performance in university activities for inclusion in their references. Otherwise, reports are written indicating that there is no record of the students' activities at the university, which

might be misleading. It is suggested that students encourage fellow students, staff, and faculty to forward personal references for the Office of Student Affairs to keep on file.

COUNSELING AND TESTING

The office provides professional counseling services and specialized testing services for all regularly enrolled students.

Educational Counseling — Each student who has declared a major is assigned a faculty advisor who assumes special responsibility for the student's welfare and helps him plan his academic program. The student who is uncertain of his choice of an academic major is assigned an interim advisor until a definite academic goal is chosen. Students who wish information or help with regard to the selection of a major academic field should avail themselves of the counseling and testing services offered by the university.

The Department of Counseling and Testing assists students who fail to meet the scholarship standards of the university, who need help to discover academic weaknesses, and who need help in developing adequate study skills.

Vocational Counseling — The counseling and testing staff assists students in self-appraisal of their unique interests and aptitudes and in their search for a vocational goal. Psychological and vocational interest tests are used as needed. A library of vocational information is maintained and each academic department has additional information pertinent to its field.

Personal Counseling — The student may meet with professionally trained and experienced counselors individually and/or in groups to discuss adjustment problems of a personal nature. Students who encounter normal uncertainties and stress, which interferes with their ability to succeed, i.e., difficulty in social relationships, indecision regarding the draft, personal indecision, and moodiness may find it helpful to talk with a counselor. All interviews are private and the discussions are kept confidential. The student may apply in person for these services. Student contacts with the counseling service are usually voluntary, although individuals may be referred to the Counseling Center by faculty and other university personnel.

Testing — Some tests are required of all new students with less than sophomore standing. The required tests include the test battery prepared by the American College Testing Program, the English and mathematics placement test, and the library skills test.

To assist students in self-appraisal, a number of other instruments are provided. Vocational interest inventories, scholastic aptitude

tests, achievement tests, and personality inventories are available with interpretation given by members of the counseling staff.

In addition to the above services, special nationwide testing programs are administered by the Department of Counseling and Testing. Students who intend to proceed with advanced study and who are required to take the Graduate Record Examination, the Law School Admission Test, the Medical School Admission Test, or similar tests, may arrange for these tests in the Office of Counseling and Testing.

STUDENT HOUSING AND FOOD SERVICE

Because the physical environment of the student during his college years is an important part of his educational experience, the university takes pride in providing the student with carefully planned and supervised modern facilities which help promote maximum educational and social development.

Each residence hall is staffed with a resident advisor and several student advisors. These key people in the residential living environment help create and sustain productive and creative experiences through which students realize a maximum amount of educational, social, and cultural values. The resident advisor is responsible for the administration, programming, and counseling within a residence hall. The student advisors are full-time students who are selected to work with the resident advisor in planning and administering an interesting and meaningful social, governmental, and recreational program. All staff members have had considerable experience in group living and group activities.

Student rooms have either fixed or movable furniture. Each student has his own bed, desk, chair, mirror, and drawer and closet space; it is his responsibility to provide all other furnishings, including bedding, pillow, and towels. Sleeping bags may not be used in residence halls. Animals are not permitted on campus; do not bring pets.

In addition, each hall includes a public lounge for entertaining, relaxing, and recreational facilities. Regular custodial service is provided in common areas such as corridors, lounges, and bathrooms.

Only a limited number of headbolt heaters for automobiles are available. All motor vehicles garaged, stored, or used on campus one or more times each week must be registered and bear a university decal. Applications for decals are taken at the Safety and Security Office located in the Bunnell Building.

Students bringing guns into the residence halls are required to store them in a central storeroom under staff supervision. There is absolutely no exception to this policy.

All single 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, b) they have had previous community living experience of more than a year beyond the high school level, or c) they have special permission from the Dean of Students. Students of sophomore standing or higher may live in one of the halls if space permits. Full-time students will be given preference over part-time students in the assignment of hall accommodations. Upperclassmen are given preference over new students in the assignment of single rooms. Room assignments in general are made on a first come first served basis provided application and deposit requirements are complete.

Andrew Nerland Hall houses 98 men in double and single rooms on its four floors. First occupied in 1953, 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, completed in 1956, has double and single rooms for 98 men. This four-story building is named for a former president of the Board of Regents.

Wickersham Hall, completed in 1957, is a three-story residence for 99 women. It has 19 single rooms and 20 suites. Four women share each suite, which consists of two sleeping rooms, a study, and a lavatory. It is named for the late Judge and Mrs. James Wickersham. Judge Wickersham introduced the bill into Congress that created the University of Alaska, and Mrs. Wickersham served on the Board of Regents.

Morton Stevens Hall, completed in the fall of 1958, is a four-story structure with accommodations for 102 men in double and single rooms. This hall is named for Morton Stevens, who was president of the Board of Regents from 1921 until 1932.

Austin E. Lathrop Hall, a co-educational unit, houses 100 men in double rooms on its four floors, and upperclass women on the fifth floor. The building is named for a prominent Fairbanks businessman whose interests throughout Alaska were many and varied. Mr. Lathrop served as a member and later as vice president of the Board of Regents during the period from 1932 until his death in 1950.

Ivar Skarland Hall, completed in the fall of 1964, provides double and single room accommodations for 138 women. The study-bed-

rooms are located around a central core area containing lounge, sewing rooms, ironing rooms, T.V. lounge, and shower facilities. The hall is named for Ivar Skarland, long-time professor of anthropology at the university.

Terris Moore Hall, a co-educational unit, named for the second president of the university is an eight-story building containing both single and double rooms. Capacity of the building is 322 students. Facilities in Moore Hall are similar to those of its companion halls—Skarland and Bartlett. These three units comprise to date a living center on the hill for men and women to the west of the president's residence overlooking the Tanana Valley.

E.L. Bartlett Hall is a new high-rise residence hall which accommodates 322 persons. Opened to occupancy during the fall of 1969, the eight-story residence hall was constructed at a cost of $2.9 million. Bartlett Hall is the central building in a student housing complex that includes Moore Hall and Skarland Hall. A food service and dining facility, planned for completion late this year, will complete the complex. The hall was named for E.L. "Bob" Bartlett, who served for 24 continuous years as the Alaskan delegate to Congress and U.S. senator.

MARRIED STUDENT HOUSING

Married student housing is provided in several areas. **Walsh Hall,** completed in 1959, has accommodations for couples with no more than one child. This spacious building contains 12 furnished apartments consisting of a living room-kitchen, bedroom, and bath. The building is named for the late Michael Walsh of Nome who was a long-time member of the Board of Regents.

Harwood Hall, completed in the spring of 1964, was named for the late Boyd Harwood, former member of the Board of Regents. The building houses an additional 38 married student couples or families. All apartments are furnished except for personal items such as dishes, utensils, and bedding. Only six two-bedroom apartments are available for families with two or three children. One-bedroom apartments similar to those at Walsh Hall are assigned to couples without children, or with not more than one child. Still other quarters, without a separate bedroom, are assigned to couples without children.

Modular Units consist of 29 one-bedroom units to be completed by the fall of 1970. The units are located on the south slope behind Lathrop and Stevens halls facing the Alaska Range. All units are furnished except for personal items such as dishes, utensils and bedding.

Residence Hall Application Procedures — Applications for student housing will be mailed to all students with their notification of acceptance from the Registrar's Office. Student rooms cannot be reserved until the student is accepted by the university, through notification from the Registrar's Office. Continuing students may reserve rooms during the spring semester for the fall semester or during the fall semester for the next spring semester providing they have not been disqualified for scholastic or disciplinary reasons by the university. After being accepted and in order to secure student housing, the student should complete the housing-board contract and mail it immediately to the HEAD, STUDENT HOUSING, UNIVERSITY OF ALASKA, COLLEGE, ALASKA 99701, with a $50 reservation and damage deposit. Confirmation for student housing is not assured until the student receives his copy of the contract with a receipt for his advance. Specific room assignments will be available after August 15. Spring semester assignments are made as space becomes available. The contract for single student housing in undergraduate residence halls is for room and board. The contract for married student housing does not include board.

The housing-board contract is in effect from the date of signing to the end of spring semester, subject to terms indicated thereon. Students are expected to pay for the entire semester during registration; however, installment payments may be arranged.

Contracts are voided only if a student does not attend the university full time, cancels his contract prior to August 15, or is released by the director of Student Affairs upon the advice of the Housing Advisory Committee because of marriage, health reasons, finances, and for other emergencies as deemed appropriate.

Rent for double room approximates $230 per semester and for a single room $265 per semester. This rental covers all lounge, recreation room, storage room, laundry room, and local telephone privileges. Students may remain in the residence halls during vacation periods, but during the Christmas holidays they may be moved to one central location.

Meal Tickets — Each occupant of an undergraduate residence hall is required to buy a five or seven day meal ticket for cafeteria meals. Meal tickets do not include vacation periods which occur during the semester. Full payment for a semester's meal ticket is required at registration time. The first meal covered by the meal tickets is the first day of upperclass registration.

All members of the undergraduate residence halls are required to contract for their meals both semesters at the University Commons.

Breakfast, lunch, and dinner are served daily throughout the school year. Although meal service continues during the Thanksgiving, Christmas, and spring recesses for the benefit of those students who remain on the campus at those times, the cost of meals during such periods is not included in the board contract.

In order to provide students with meals of high quality at minimum cost, it is essential that the staff be able to plan its food purchases and preparations for relatively constant numbers. Therefore, it is not possible to provide special diets or to give refunds for meals missed, except as approved by the director of Student Affairs, upon the advice of the Housing Advisory Committee, in cases of prolonged illness, university-sponsored activities where meals are not provided, or other unavoidable absence.

STUDENT HEALTH SERVICE

Preventive and educational, as well as protective health services, are the concern of the university and are administered by the Student Health Service. Supervision and limited out-patient treatment during the day are the responsibility of the university nurses at the Health Center. Physicians are available on campus two hours daily, Monday through Friday, for more extensive treatment. Only those students who have paid the student health fee and have a physical on file are eligible for services of the Student Health Center.

In addition, the head of Student Health reviews mandatory health examinations for new students, does follow-up on medical conditions as needed, provides out-patient service during the day and advice for emergencies at night, and provides information concerning the health insurance coverage.

Students receive special rates for mandatory health insurance which provides hospital, medical, and surgical benefits. The coverage is extensive, inexpensive, and compulsory for all students carrying seven or more hours and under the age of 26 years. For all students over 26 years of age it is optional up to the age of 35 years. It is designed to supplement, but not to replace Health Service care. Brochures containing details of the policy are available at the Health Center.

FINANCIAL AIDS

Three types of financial aid are available at the University of Alaska:

1. Grants (scholarships)
2. Loan funds
3. Part-time student employment

1. Grants (scholarships). At the present time grants are awarded only to Alaskan high school seniors and to currently enrolled University of Alaska students. Non-residents must successfully complete at least two semesters of academic work at the University of Alaska before they become eligible to apply for scholarship assistance. Students who are enrolled at any of the university's community colleges and who plan to continue their study on the main campus at College during a forthcoming semester are invited to apply.

A limited number of talent grants are awarded each year to students of extremely high capabilities and potential in the performing arts and athletics. Amounts awarded are $1,400 per year for Alaska residents and $1,700 for non-residents. Contributors to the program for 1969-70 include First National Bank, Pan American Petroleum, University of Alaska Alumni Association, Vinnell Corporation, Alaska Redi-Mix, Alaska National Bank, Burgess Construction Company, M&O Auto Parts & Equipment Inc., Rotary Club of Fairbanks, Market Basket, Sach's Mens Shop, E.L. Cassel, C. Burglin, Professional Pharmacy, Mr. and Mrs. D. Young, Yukon Office Supply, Fairbanks Medical Clinic, Craig Taylor Equipment, Nevada Bar, Aurora Motors and Chandler Plumbing and Heating.

The Educational Opportunity Grants program of the Department of Health, Education and Welfare was initiated at the University of Alaska in the fall of 1966. These grants are awarded on the basis of acute need and are renewable.

Information regarding the Bureau of Indian Affairs Grant-in-Aid program may be obtained from the Juneau Area Office of the Bureau of Indian Affairs. Students should apply far enough in advance to know the amount of assistance available to them prior to arriving at the university.

Applications for the Alaska State Scholarship-Loan Program may be obtained from the high schools throughout the state. The purpose of this program, initiated in 1968-69, is to assist qualified Alaskan students to secure a higher education in Alaska and to assist in retaining able students in Alaska for higher education and future leadership. Funds for this program, authorized by the Alaska State Legislature, may be used for tuition and book expenses, up to a maximum of $500 per recipient per year.

Applications from currently-enrolled students are accepted twice each year, before March 1 and November 1. Applications from Alaska high school seniors are accepted once each year before March 1 and are reviewed only after the applicant's admission to the

university has been approved and after his American College Test scores have been forwarded to the Office of Student Affairs. Requests coming in after this deadline will not be considered. No grants are available for the summer session.

These awards are based primarily on need. The amount of the grant is based upon information suppled on the College Scholarship Service Parents' Confidential Statement. Entering students seeking financial assistance are required to submit a copy of the Parents' Confidential Statement (PCS) form to the College Scholarship Service, designating the University of Alaska as one of the recipients, by March 1 or November 1. The PCS form may be obtained from the university, secondary schools, or the College Scholarship Service, P.O. Box 176, Princeton, New Jersey 08540 or P.O. Box 1025, Berkeley, California 94704.

Although need is the primary basis upon which these grants are given, demonstration of academic competence, personal characteristics, and contributions to the university community are evaluated.

Recipients at the University of Alaska forfeit the entire grant which is to become effective in the forthcoming semester if they earn below 2.0 grade point average in the current semester. Grants are automatically forfeited by recipients who do not enroll during a semester in which their grant is in effect, who enroll for less than a full-time program of studies without special arrangement with the scholarship program co-ordinator, who are placed on disciplinary probation, or who are suspended from the university for disciplinary reasons.

Questions concerning application forms, specific grants, or selection procedures should be directed to the Financial Aids Office.

Although numerous grants are awarded annually to students at the University of Alaska by various individuals and organizations, the list below includes only those which were administered by the university's Financial Aid Committee during the 1969-70 school year:

Name of Scholarship	Number	Total Amount
AIME, Southwestern Alaska Section	One	$ 400
Alaska Insurance Agency "Major George W. Albrecht Memorial"	One	100
Alaska National Guard Officers Association	One	250
Alaska Native Scholarships	Varies	13,475
Alaska State Employees Association "President John F. Kennedy Memorial"	One	250
Covenant High School Alumni Association "Stanton Oyoumick Memorial"	One	50

Educational Opportunity Grant	Varies	10,747
First National Bank of Fairbanks	Two	1,000
General Motors	Four	3,423
Harcourt Foundation	One	600
Henderson Estate, John B.	Four	1,600
Hess Estate, Harriet	Two	880
Hess Estate, Luther	Three	1,200
Kennecott Copper Corporation	Two	1,000
Lathrop Estate, Austin E.	Varies	13,129
Leach Estate, Frank M.	One	100
Lewis Fund, Charles W. and Hortense W.	One	500
McIntosh Estate, Jessie O'Bryan	Varies	14,000
McKinnon Scholarship, Emma	One	400
Mellon Foundation	Varies	5,600
National Bank of Alaska	Varies	2,000
National Electrical Contractors Association	One	500
Noel Wien Scholarship	One	500
Northern Commercial Company	One	500
Phipps, Margaret R.	Three	450
Pioneers of Alaska Igloo No. 4	One	500
Presser Foundation	One	400
Radio Corporation of America	Two	800
Ralston Purina Company	One	500
Sears Roebuck Foundation (Home Economics)	One	300
Sheppard Trading Company	One	500
State Room Scholarships	Varies	27,600
Texaco Inc.	Two	1,000
Unalakleet PTA "Sen. William E. Beltz Memorial"	One	150
U.S. Smelting, Refining and Mining Company	One	250
University of Alaska Alumni Association	One	300
Women's Athletic Association	Five	700

2. Student Loan Fund. There are different types of loan programs:

Emergency Loans are available to all regularly enrolled full-time students whose financial need is modest and temporary. Although emergency loans require no co-signer, they are limited to $100 for not more than 30 days and interest is in the form of a flat service charge of $2 per loan or 50 cents if repayment is made within ten days of the date of the borrowing.

The University Loan Fund is available to regularly enrolled students who have successfully completed one semester as a full-time student. Loans are limited to $500 and are payable prior to the forthcoming September 1. The interest rate on the money borrowed is four per cent per annum. The loan requires a co-signer (not a fellow student), and will be made only for university expenses such as room, board, fees, and books.

The University Loan Fund represents the pooled resources of several separate loan funds given to the university over a period of many years:

Anchorage Women's Club (1926)
American Military Engineer Revolving Loan Fund
Lawrence C. Phipps (1930)
Fairbanks High School Alumni (1932)
First National Bank (1945)
Phi Tau Gamma (1953)
Palmer Community (1953)
Glenn Carrington (1953)
Larry Doheny (1953)
Pioneer Women of Alaska (1954)
Women's Auxiliary No. 4, Pioneers of Alaska (1957)
Dave M. Dishaw (1958)
Rotary Club of Fairbanks (1963)
Southern California Alumni (1963)
Arthur A. and Anne Shonbeck Memorial (1964)
Anchorage Soil Conservation Subdistrict No. 4 (1966)
Ann Meeks Memorial Fund (1967)
Anchorage High School (1956)
Anchorage High School PTA (1959)
Sheils-Timson (1936)
Leopold F. Schmidt (1938)
Palmer Associated Students (1941)
Frank Slaven (1944)
Mr. & Mrs. Walter G. Culver (1959)
Verne E. Roberts Memorial (1960)
James Stanley Rodebaugh Memorial (1960)
James E. Nankervis Memorial (1961)
Herman Turner Memorial (1961)
Marianne Casson Memorial Fund (1965)
Ketchikan Communication Committee (1966)
Lt. Gen. Glenn R. Birchard Memorial Fund (1967)
Lt. Donald R. Robison Memorial Fund (1968)
Patrick Anderson Memorial Fund (1969)

The National Defense Education Act Loans are always available to a limited number of qualified students. Undergraduate students may borrow up to $1,000 a year or $500 maximum per semester, graduate students $1,500 per year. Total funds available to a student for his undergraduate work are limited to $5,000. These loans are repayable nine months after a student discontinues or completes his education or finishes his military obligation, service with the Peace Corps or VISTA. For those who become teachers, one-tenth of the amount borrowed is cancelled each year for five years, representing as much as 50 per cent of the original loan. Interest rate is three per cent per annum. Loans must be paid within ten years.

The Clarence J. Rhode Memorial Scholarship Loan Fund was initiated by the Territorial Sportsmen, Inc. of Juneau. Junior, senior, and graduate students in wildlife management are eligible for loans up to $300 under terms similar to those of the University Loan Fund. The head of the Department of Wildlife Management administers these funds.

The Juneau Women's Club has a $5,000 loan fund on deposit with the University of Alaska for the use of Greater Juneau Borough High School graduates.

Mr. Ralph R. Stefano, consulting engineer of Fairbanks, has established "The Stefano Loan Fund" for the purpose of furthering instruction in mechanical engineering. The dean of the College of Mathematics, Physical Science, and Engineering administers these student loans.

The Society of American Military Engineers Revolving Loan Fund enables students in engineering, science, and mathematics to borrow money to continue their education under terms similar to those of the University Loan Fund. Application is made through the Financial Aids Office.

3. Part-Time Employment. Two types of work opportunities are available:

a. Listings are available in the Financial Aids Office for both on-campus and off-campus jobs. Students interested may apply at the office for information but must apply for the position themselves. The university does not contract work for students although it may make recommendations to employers.

b. The university actively participates in the work-study program of the Economic Opportunities Act. This program is designed to provide work opportunities for students with acute financial problems. The university determines student eligibility for this program on the basis of family income. Under this program students may work up to 15 hours per week during the school term and 40 hours per week in the summer. Most of the work opportunities are on-campus and can be related to a student's professional or vocational interest. A student may inquire about this program at the Financial Aids Office, Bunnell Building.

In most cases financial aids are combined so that a student's financial need may be met from several sources: for example, 1/3 from a grant or scholarship, 1/3 from loans or savings, and 1/3 from work.

CO-CURRICULAR ACTIVITIES

In coordination with the Associated Students of the University of Alaska, i.e., the student self-governing body, the Office of Student Affairs promotes and provides staff guidance for the development of a wide range of balanced and contemporary co-curricular activities. These activities include special interest groups, departmental clubs, honoraries, religious organizations, military groups, governing bodies, and service organizations. ASUA specifically sponsors the yearbook, the newspaper, and some campus social events. The Student Union Board provides a comprehensive program of union activities. Partici-

pation in all these activities is open to anyone interested. These programs are critical to the total university educational plan because of the cultural, social, and recreational environment they create and maintain on campus and for the opportunity they afford students of implementing in a responsible manner principles learned in the classroom.

To encourage students to maintain a proper balance between their curricular and co-curricular activities, and to protect the best interests of the university, the following code which determines eligibility for participation in all co-curricular activities and organizations has been adopted:

1. All members of university organizations must be currently enrolled students at the university.
2. Officers of co-curricular activities must maintain a cumulative grade point average of 2.00 or higher while carrying 12 or more semester hours of credit.
3. Additional eligibility requirements for members and officers in university organizations and co-curricular departmental activities may be established by the organization or department. Copies of these regulations shall be kept on file with the Office of Student Activities. The responsibility for enforcing eligibility regulations shall rest with the organization or department.

SPECIAL ORIENTATION SERVICES

In response to the needs of students from rural areas of Alaska and students whose cultural background is different from the majority of the campus student body, the university is developing a new program called Special Orientation Services. The primary concern of this program is helping the student make the transitions from a small school and rural environment to the complexities of university life. The program is inter-cultural in nature in that services are offered to students from all cultural backgrounds. The program is especially responsive to the needs of the Alaska native student. The initial planning and development of the program has been guided by an advisory board of seven native university students.

A Special Orientation Services Center 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 in the fall and spring semesters. A lounge is open for students and faculty in which they may relax and visit.

Special courses are being developed in areas such as English, sociology and study skills which will aid the student in developing the academic skills necessary for success at the university.

STUDENT BEHAVIORAL STANDARDS

Education at the university is conceived as training for citizenship as well as for personal self-improvement and development. When a student enrolls he acquires a special status and prestige and assumes commensurate responsibility as a citizen in the university community. As long as he remains a student he represents the university — whether on or off the campus.

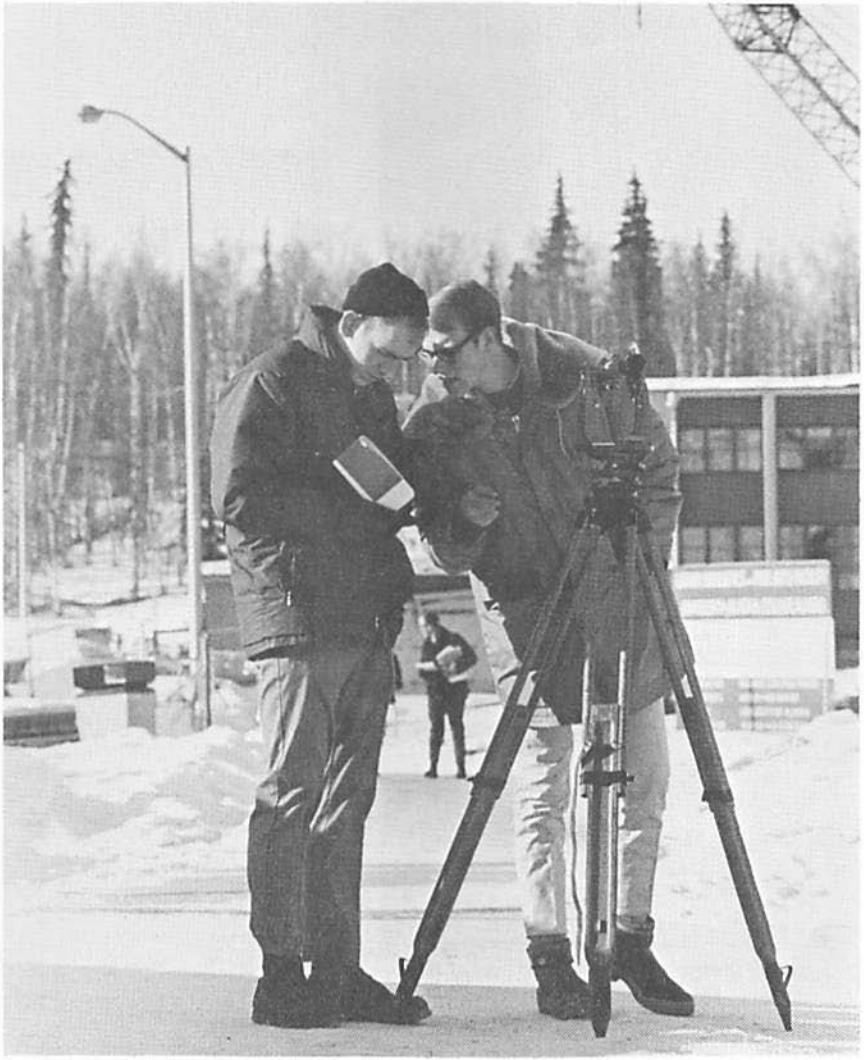
It is the university's policy to provide its students as much freedom of individual expression and action as is consistent with their maximum growth and with the welfare of the university. Students are expected, individually and collectively, to maintain this freedom by the exercise of that self-discipline which is imposed by a sense of social responsibility. Most students find it relatively easy to adjust to the privileges and responsibilities of the 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.

In order that new students become fully informed of the university's expectation, specific rules and regulations will be announced during the orientation sessions preceding registration for each semester. Printed copies of these rules and regulations are available for the guidance of students in the Office of Student Affairs. To those who live in university residence halls, manuals containing housing regulations will be distributed at the time rooms are occupied.

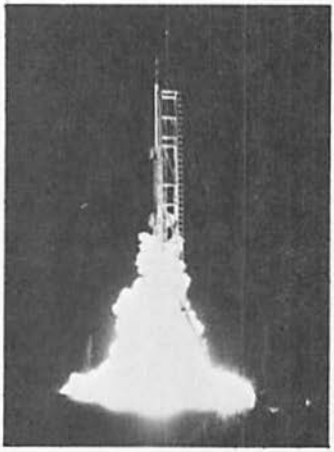
University regulations are designed to help the student work efficiently in his courses and develop a high standard of character and citizenship. They are not designed to ignore individuality, but rather to encourage students to formulate rules for their own guidance and develop methods of enforcing the rules.

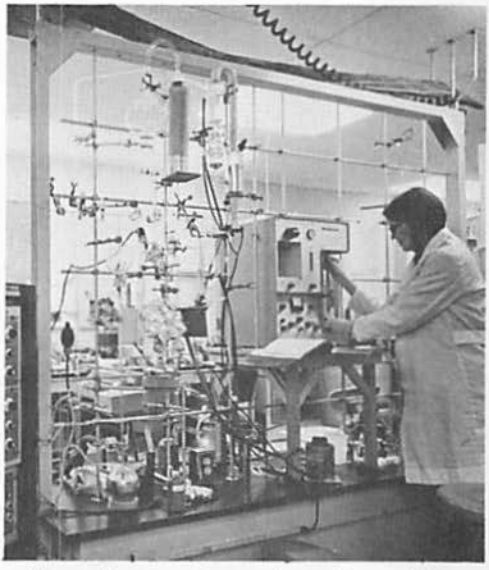
These regulations, except for those based on state law, have been developed jointly by staff and students. Students charged with infractions are advised in writing and given a full hearing with right of counsel and the opportunity to question witnesses or accusers before either elected or appointed student committees or for the

more serious cases the joint Student Faculty Judicial Board. The university subscribes to principles of due process and a fair hearing as prepared by the joint statement of the American Association of University Professors, the U.S. National Student Association, the Association of American Colleges, the National Association of Women Deans and Counselors, and the National Association of Student Personnel Administrators.



Campus is utilized by engineering students as a practice surveying site.





Research programs are an integral part of the university. In addition to academic departmental research, several research institutes and associated activities are carried out.

Research and Advanced Study

The research programs of the University of Alaska take advantage of the university's unique location in the sub-Arctic 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 research, which is carried out in the academic departments, the university has several research institutes and associated activities.

Alaska Agricultural Experiment Station — The university conducts an agricultural research program, in cooperation with the U.S. Department of Agriculture, as a part of its land grant university functions. The research of the station includes animal science, plant science, economics and environmental quality research programs.

Due to the wide range of environments occuring within the borders of Alaska, station facilities are maintained at several locations. The station headquarters and College research center are located adjacent to the main campus, the Palmer center at Palmer, the Matanuska Farm seven miles to the west of Palmer, and the Petersburg Fur Farm in Southeastern Alaska. Research studies also are carried out with cooperators in numerous off-station locations throughout the state.

Alaska Cooperative Wildlife Research Unit — The unit is one of several located at land grant colleges and universities. The Alaska 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 unit provides technical and professional training in wildlife management, research, education, and administration. The research program of the unit includes ecological and management investigations of big game, waterfowl, marine mammals, furbearers, and upland game species, and often requires close collaboration with biologists of the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and other state and federal resource management agencies.

Graduate work leading to advanced degrees in wildlife management may be performed at the unit in cooperation with the Department of Wildlife Management.

Institute of Arctic Environmental Engineering — The institute was originally organized as the Arctic Environmental Engineering Laboratory on July 1, 1965, and operated as a department of the College of Mathematics, Physical Sciences, and Engineering, attaining institute status on July 1, 1969. The purpose of the institute is to (1) gather

information necessary for the solution of arctic and sub-arctic engineering problems, (2) perform research where information is not otherwise available, (3) provide challenging problems and a stimulating environment for graduate student research, and (4) assist in the development of the arctic regions by providing engineering data and trained personnel for up-to-date economical applications of science to specialized human needs.

Geophysical Institute — The institute was opened on July 1, 1949, as a department of the university. The 79th Congress of the United States established the institute, and the 80th Congress appropriated funds for the construction of the present laboratory and associated houses. The Geophysical Institute has grown from a modest program of auroral observations begun in 1929 to present activities embracing many fields of arctic and sub-arctic research.

The institute's purpose is to advance knowledge of the earth and its environment in space. Emphasis is placed on studies of the upper atmosphere and the solar-terrestrial relationship using a network of ground stations and rocket-borne instruments. Programs also are established in meteorology, glaciology, seismology, vulcanology, and tectonic physics. In addition to the main office building located on the campus, the institute operates a number of field sites in Alaska and elsewhere, and participates in antarctic research. The present staff numbers approximately 150, including some 30 graduate students who obtain their research training at the institute. Financial support is obtained mainly through federal grants and contracts.

The director of the Geophysical Institute is chosen by the Board of Regents upon the recommendation of the president of the university, subject to approval by the president of the National Academy of Sciences.

Institute of Arctic Biology — Following recommendations on its prospective national value by a committee of eminent biologists, the institute was established by the Alaska State Legislature in 1963 for studies of life in the extreme climate changes of arctic and sub-arctic regions. To an initial component in zoophysiology have been added programs in human ecology and zoochemistry, and a further component in plant physiology is now being developed. The staff which currently numbers more than 60 persons, exclusive of some dozen doctoral candidates, encompasses a breadth of biological specialities ranging from physical chemistry and biophysics through physiology and biochemistry to field ecology and archaeology. The institute is located in the new Bio Sciences Building which provides a variety of technical and instrumental facilities and services. Special field sites include the adjacent 40-acre Campus Experimental Biological Reserve, the Cantwell Reindeer Station, the Healy Lake Taiga

Station and the Homer Shore Station. Visiting scientists from other states and countries are welcomed with a half dozen in each category in residence during the current year.

Institute of Marine Science — The institute was authorized in 1960 by the Alaska State Legislature. Its purpose is the advancement of knowledge of the sea, with particular emphasis on problems of the northern regions. A program of education and research in biological, chemical, geological and physical oceanography is included within this broad scope. Sea-going and laboratory facilities are available at the Douglas Station, situated some five miles from Juneau; and the Seward Station, situated in Seward and Izembek Lagoon near Cold Bay on the Alaska Peninsula. Campus activities are centered in a new laboratory, completed in January, 1963, and enlarged in 1968. The institute operates the research vessels Acona, an 85-foot modern oceanographic vessel, the Ursa Minor, an 88-foot power scow, and the Maybeso, a 43-foot trawler. Scientists are invited to request permission to work in residence.

Institute of Social, Economic and Government Research — The Alaska State Legislature established the institute in 1961 for the purpose of interdisciplinary research in the social and related sciences, with particular emphasis on questions peculiar to Alaska, Northern North America, the North Pacific Basin, and the North Polar region and the circumpolar lands. Research interests center on state, regional and national economic development, utilization of natural resources, human resources and the interaction between man and the environment, the impact of technology and change, education, cultural change and interchange, and governmental institutions and political processes. Among its service functions, the institute provides data and information necessary to support activities and development in the public and private sectors, including the collection, processing, and publishing of statistical data on the economy, population, government and resources of the state. The institute regularly publishes the "Alaska Review of Business and Economic Conditions" and a variety of major special reports.

Institute of Water Resources — The Institute of Water Resources was established in May, 1965, to promote research in all phases of water resources. The institute staff is an interdisciplinary group whose research interests are concerned with hydrology and hydrodynamics, limnology, water quality control, water chemistry, physical and chemical methods of water and waste treatment, and biological waste treatment, as well as economic and engineering aspects of water resource problems. The institute works closely with many academic departments and other research institutes on the campus. Research

emphasis is concentrated on solutions to Alaska and far northern water resource problems.

Mineral Industry Research Laboratory — The 1963 Alaska State Legislature authorized the establishment of a mineral industry research program at the University of Alaska. The purpose of the laboratory is to conduct appropriate applied and basic research in various areas of the mineral industry that will aid in the further utilization of Alaska's mineral resources. Research is conducted in facilities of the university and is coordinated with graduate student academic programs.

Musk Ox Project — The University of Alaska has maintained since 1964 a breeding station for domestic musk oxen on a farm adjoining the university campus. The purpose of this project is to further a wider use of organic resources within the areas to which the musk oxen are naturally adapted.

The musk ox, native to the arctic regions, is able to maintain itself year-round in a tundra environment, digging through the snow in winter for its food. Not a suitable animal for hunting, since it stands its ground, it is easily tamed and adapts readily to the routines of animal husbandry. Possessed of a thick blanket of qiviut, or underwool, which is on the order of cashmere, the musk ox offers strong possibilities of adding to the economies and cash income of the people of the tundra and coastal regions of Alaska.

A training program in herd management is carried out for persons selected by village councils and similar groups prior to the distribution of breeding stock. At the same time, the project's textile specialist teaches native women how to spin, knit, and weave qiviut for established markets. The breeding station and program are supported by the W. K. Kellogg Foundation through a grant to the university and in collaboration with the Institute of Northern Agricultural Research.

Naval Arctic Research Laboratory, Point Barrow — Under contract with the Office of Naval Research the university operates the Naval Arctic Research Laboratory. Laboratory facilities are maintained, and scientific teams from other universities and organizations carry on arctic research problems there.

More than 300 scientists from many of the leading universities of the world made use of the extensive facilities at the laboratory last year.

Office of Research and Academic Coordination — The department maintains an office on campus in cooperation with the university and other government agencies to provide assistance in solution of

environmental engineering problems encountered in water supply, waste disposal, housing, community development, etc., in the far north.

STATE AND FEDERAL AGENCIES ON CAMPUS – ASSOCIATED WITH THE UNIVERSITY OF ALASKA

State Division of Mines and Geology — The central headquarters and laboratory of the division are located on the campus in the Maintenance Warehouse (Services Building). A staff of 19 are located here, including mining geologists, engineers, and minerals laboratory analysts. The laboratory is for assay and analytical services to miners and prospectors. The geologists and engineers carry out economic geologic field mapping, examination of mining prospects, and technical advice and assistance to prospectors and mineral exploration companies. An active Kardex file of mineral occurrences and mining claims is maintained. The division also works in close cooperation with faculty members in related fields to further encourage and assist the development of mineral resources in Alaska.

State Highway Testing Laboratory — The Alaska State Division of Highways operates a road materials 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.

Alaska Water Laboratory — This new 2.5 million dollar facility is a regional laboratory of the recently established Federal Water Pollution Control Administration (Department of the Interior).

Research and technical assistance on water pollution problems of particular concern to Alaska are being investigated. The effect of wastes discharged by communities, rural families, native villages, fisheries, lumber, mining, and paper and pulp industries on humans and aquatic life are problems being considered by the professional staff. This laboratory is a part of the growing Arctic Research Center on the campus of the University of Alaska.

Alaskan Mineral Resources Branch of the U.S. Geological Survey — This branch conducts a program of geological exploration and research in Alaska. Some of the functions are aerial 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 Mineral Resources Branch Office has a complete file of Alaskan maps and geological reports available to the public for use in the office.

Arctic Health Research Center — The Arctic Health Research Center (AHRC) of the Public Health Service, U.S. Department of Health, Education and Welfare was established in Anchorage in 1948 as the first and, to date, the only permanent research facility in North America devoted to the full-time study of health problems in low temperature environments on a year-round basis. During the summer of 1967 the AHRC moved into new quarters located on the West Ridge of the main campus.

The center contains six major research sections: Entomology, Environmental Engineering, Epidemiology, Nutrition and Metabolic Disease, Phyisology, and Zoonotic Disease. During the 20 years of its existence, the laboratory has pioneered in expanding knowledge of factors which influence human health and adaptation in northern latitudes and has gained international recognition for its contribution in many fields. A one and a half million dollar research facility is being added to the center and is scheduled for completion by September.

The AHRC includes a reference library containing over 30,000 cataloged items pertaining to the fields of public health, medicine, and related subjects.

The center also maintains a field unit in Anchorage for continuing clinical investigations planned or underway in association with the Alaska Native Medical Center. A small field unit of the AHRC Epidemiology Section is located in Bethel.

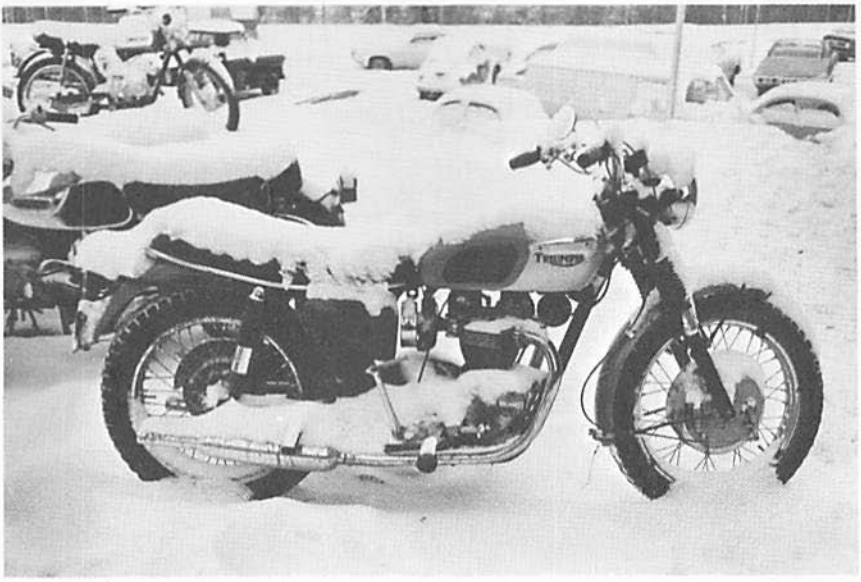
Forest Service, U.S. Department of Agriculture — The Institute of Northern Forestry, a unit of the Pacific Northwest Forest and Range Experiment Station, maintains and operates a Forestry Sciences Laboratory on the campus. Research at this laboratory is focused upon the management, protection, and utilization of Alaska's boreal forests. Active programs are underway in the ecology and growth requirements of sub-arctic forests, fire control methods, and forest entomology. Although field work is conducted throughout the boreal forest in Alaska the 12,500-acre Bonanza Creek Experimental Forest, 23 miles from the campus, has been and will continue to be a convenient research facility for Forest Service and university scientists.

U.S. Coast and Geodetic Survey — The College Magnetic and Seismological Observatory is operated by the U.S. Coast and Geodetic Survey, with the main facility on the West Ridge of the university campus and an outpost facility on Grenac Road. Originally constructed in 1947, the observatory has expanded to 19 buildings and operates 28 instruments that continuously gather data for studies in the fields of geomagnetism and seismology. Prior to 1948

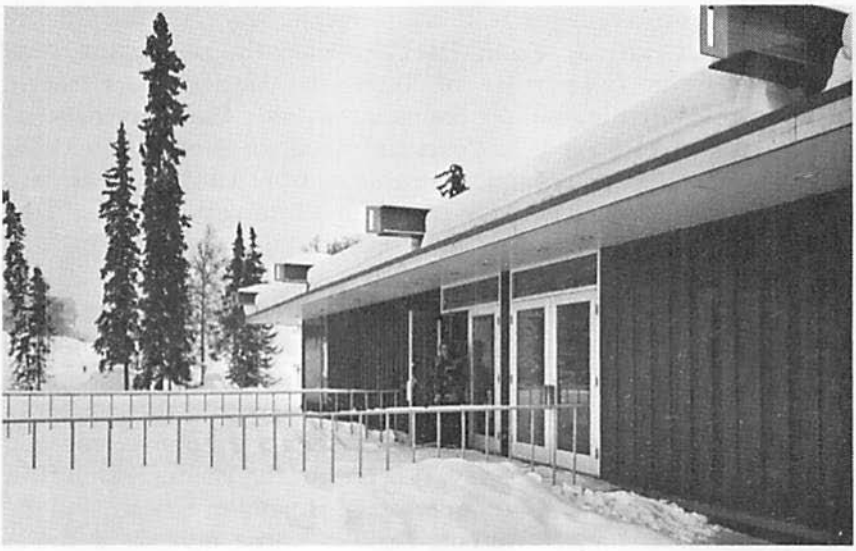
the magnetic observatory was at a different location on the University of Alaska campus. From 1941 to 1946 the observatory was operated by the Department of Terrestrial Magnetism, Carnegie Institution of Washington, in cooperation with the University of Alaska, and then by the U.S. Coast and Geodetic Survey until 1948. The piers used for the magnetic instruments from 1941 to 1948 were the same ones that were used for the Second International Polar Year (1932-1934). The operation of the seismic equipment dates back to 1935.

The general mission of the observatory is to produce accurate and comprehensive data in the fields 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. It is part of the Pacific Seismic Sea Way Warning System with headquarters in Honolulu, Hawaii, and the Alaska Seismic Sea Wave Warning System whose nerve center is at Palmer, Alaska. The facility plays a major part in keeping the people of Alaska informed of current earthquake activity and informing scientific organizations of the occurrence of major world magnetic events.

The observatory is also responsible for overseeing the operation of the Barrow Observatory at Point Barrow in cooperation with the university's Naval Arctic Research Laboratory.



Students' fairer-weather vehicles wait patiently for a Chinook.



A well-planned building program is constantly changing the face of the U-A campus

Public Service

Through Public Service the university makes available to many residents of Alaska in their local communities, or through special training programs, academic credit courses, educational and training programs, and special services. Public Service makes available many of the educational and training programs sponsored in part by the federal government through such legislation as the Economic Opportunity Act, State Technical Services Act, Higher Education Act, Manpower Development and Training Act, Education Professions Development Act, and the Smith-Lever Act.

Community Colleges — The Division of Statewide Services administers the following community colleges: Juneau-Douglas Community College, Ketchikan Community College, and Sitka Community College.

Through these colleges the university offers collegiate courses for academic credit. The courses and instructors are approved and supervised by the university. All university courses carry resident credit. In addition, each community college offers vocational and interest courses under the sponsorship of the local school district. These courses do not carry university credit.

For detailed information write to the resident director of the community college in which you are interested or the dean of the Division of Statewide Services, University of Alaska, College, Alaska 99701.

Evening Classes — Resident academic credit courses are offered on the main campus during the evening, at military installations in the Interior of Alaska, and in other communities throughout Central, North, and Southeastern Alaska. Summer sessions are conducted at Eielson Air Force Base and Ft. Wainwright. Information is available prior to each semester from the Office of the Dean, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Correspondence Study — A limited number of academic credit courses are available through the correspondence study program. Alaskan courses are emphasized. Further information and catalogs are available by writing to Correspondence Study, University of Alaska, College, Alaska 99701.

Summer Sessions — A wide range of courses is offered on the university campus at College for both graduate and undergraduate credit. Courses are grouped into three- and six-week sessions and are open to: (1) candidates for graduate or undergraduate degrees, or (2) unclassified students wishing to take special classes or desiring intellectual enrichment without reference to a degree. A maximum of seven hours of credit may be earned during the six-week session,

and three hours during the three-week session. A post session Workshop on Alaska includes subjects such as anthropology, education, history, natural resources, and other Alaskan topics.

Proposals for special summer institutes are prepared by university faculty members and submitted each year to various governmental agencies and private foundations for funding. Summer Institutes in Teaching of French, Counseling and Guidance, English, and the Teaching of Science and Mathematics have been held.

Summer institutes are usually conducted for an eight-week term, and participants may ordinarily earn eight hours of credit. Institutes are usually open to both residents and non-residents of Alaska.

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

Special workshops and institutes open to high school age students also are presented. These include the Music Camp and a Youth Leadership Conference. Other programs of a continuing nature include the annual Homemaker's Short Course.

An extensive recreation program is planned for summer session students. Typical recreational activities include trips to Eskimo and Indian villages, gold panning expeditions, hiking, dances, movies, and a riverboat excursion.

Further information is available by writing to the Office of Summer Sessions, University of Alaska, College, Alaska 99701. A catalog listing courses to be offered is available after March 1 of each year.

Mining Extension Program — The Mining Extension Program, supported by state appropriations, consists of three short courses: a four-week or five-week basic prospecting course which emphasizes the various methods of prospecting; a two-week geochemical prospecting course which emphasizes the use of chemical analysis in prospecting; and a two-week geophysical prospecting course. These courses are offered each year in various communities in Alaska and are open to all persons without regard to previous training or academic qualifications.

The Mining Extension Courses are designed to give basic training in various phases of the mineral industry and to enable prospectors to find and explore ore deposits. An appropriate certificate is awarded to students who satisfactorily complete the respective course of study.

For additional information, contact the Mining Extension Program, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Fisheries Extension Program — Fisheries Short Courses, covering various aspects of commercial fishing, are held in commercial fishing

centers throughout the state. These courses present information on fishing gear and materials, fisheries technology, hydrology, biology, and pollution. Courses taught in remote areas of the state include lectures and demonstrations on fisheries biology, fish spoilage, proper care of fish, netting materials used by fishermen, and maintenance of equipment. An appropriate certificate is awarded to students who satisfactorily complete the course.

For information contact the Fisheries Extension Program, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Cooperative Extension Service in Agriculture and Home Economics — The program is a cooperative educational service of the university and the United States Department of Agriculture. District offices and field staff are located in Fairbanks, Palmer, Juneau, Homer, Anchorage, Nome, and Aniak. University Extension specialists and district Extension agents extend the results of research by the university and the USDA to the public. Local people are helped to identify and solve problems, and to apply the results of scientific research to the improvement of farms, homes, and communities. They work with young people through the 4-H and Youth Program.

Extension's traditional audience has been rural people. Today, with no sharp dividing lines between rural and urban interests, Extension agents also serve the consumer, marketing, and agri-business groups. They help citizens of the state to plan rural civil defense programs and to organize for broader economic and social development. Their teaching is carried out informally through television, radio, newspaper and newsletter media, publications, farm and home visits, special interest meetings, and short courses.

Audio-Visual Communications — The Department of Audio-Visual Communications is an all-university and statewide service which supports instruction.

The department has a large collection of educational films, filmstrips, tapes, and slides that are available to the university faculty, groups, and schools throughout the state.

Requests for the film catalog should be mailed to the Department of Audio-Visual Communications, University of Alaska, College, Alaska 99701.

Extension Center in Arts and Crafts — The division operates a resident center on campus at College for artists and craftsmen who have potential for further development. Supported in part by grants from the Indian Arts and Crafts Board and the Alaska State Council on the Arts, young adults are given training in the use of new media such as wood, soapstone, and silver, and the development of new designs. Communication skills and basic business methods are also included in the nine-month training program. Further information is

available from the Extension Center in Arts and Crafts, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Special Programs — Special programs of a continuing nature include classes and conferences in various civil defense subjects, an Upward Bound Program, a Law Officers Training Program, and a Continuing Legal Education Program. A Headstart regional training officer is employed to assist local Headstart programs throughout the state.

Non-academic credit short courses, programmed in many areas according to need, are offered. Some of the recent short courses offered are swimming, fencing, upholstering, and private pilot ground school.

For information on these and related programs plus the handling of conferences on the university campus, contact the Director, Division of Statewide Services, University of Alaska, College, Alaska 99701.

Stuart Hall provides on-campus housing for faculty members.

Southcentral Regional Center

The Southcentral Regional Center, administered by the Office of the Provost, has responsibility for supervising and coordinating all University of Alaska educational programs in the area bounded roughly by Talkeetna and Glenallen on the north, Yakutat on the east, Dillingham on the west, and Adak to the southwest. In seeking to fulfill the university's responsibility for meeting public higher educational needs in the most populous area of the state, the Southcentral Regional Center operates the following units:

1. **Community Colleges** — Four community colleges, established cooperatively with local school districts under specific statutory authority, are a part of the center. The Kenai Peninsula Community College and the Matanuska-Susitna Community College (Palmer) both activated within the past decade, offer limited lower division academic courses each semester under the University of Alaska's authorization and a number of vocational-technical and interest courses under school district sponsorship. The Kodiak Borough Community College, activated in 1968, has started out with a number of credit courses and has the potential for an extensive vocational and technical program using facilities of the state Kodiak-Aleutian Vocational School. In all three of these community colleges classes are held in school district or rented facilities—usually on a late afternoon or evening basis.

Authorized by the state legislature in the spring of 1953, the Anchorage Community College opened its doors to students in February, 1954. The college offers an extensive program of lower division academic programs including associate degrees, all carrying resident university credit. A broad range of vocational-technical and interest courses are offered under the school district sponsorship. Extensive counseling and testing are provided.

With the completion of its initial building program the Anchorage Community College now operates a full-time day program for both academic terminal or transfer associate degrees and vocational-technical associate degrees and certificates.

Each community college operates under the supervision of a director, either full-time or part-time, who is responsible to the Office of the Provost. In Anchorage a cadre of full-time instructors supplemented by qualified part-time lecturers serves the instructional needs while as yet other locations have only part-time instructors. Some upper division courses under the framework of the Southcentral Regional Center are placed at the various community college locations on a demand basis.

2. **Military Installations** — Since 1949, the university has provided evening class academic offerings at the Anchorage area military bases. Through the Elmendorf-Ft. Richardson Unit, operated under a program director, the offerings encompass lower division, upper

division and graduate courses, including programs leading toward a bachelor's degree in the education, history, psychology, and business administration fields. Although the program largely serves military personnel and dependents, the adjacent civilian community also may enroll in the on-base program and likewise military personnel can and do enroll at the Anchorage Community College and Regional Center.

The Southcentral Regional Center also has responsibility for credit course offerings at other military installations including Wildwood Air Force Station, Shemya Air Force Station, King Salmon Air Force Station, Kodiak Naval Station, and Adak Naval Station. Upper division and some graduate level courses, particularly for teachers, are extended to various cities and communities within the area, usually utilizing the Anchorage area staff.

3. Upper Division and Graduate Work — As indicated in previous paragraphs upper division and some graduate courses are offered at all the community colleges. However, the main upper division and graduate programs where students may earn bachelor and master degrees are in Anchorage through the Center itself.

A teacher education program in the Anchorage area includes provision for cadet teaching and completion of a bachelor's degree as well as meeting certification requirements. Graduate level courses are offered which, along with applicable upper division credits, enable persons to complete a Master of Education in areas of Elementary, Administration, or Counseling and a Master of Arts in Teaching through the Anchorage facilities. Courses are placed at the Elmendorf-Ft. Richardson Unit and other locations depending on space available and the number of persons to be served.

A full-fledged master's degree in engineering management can be earned in Anchorage. A resident engineering instructor, assisted by commuting instructors from the main campus, covers the entire program.

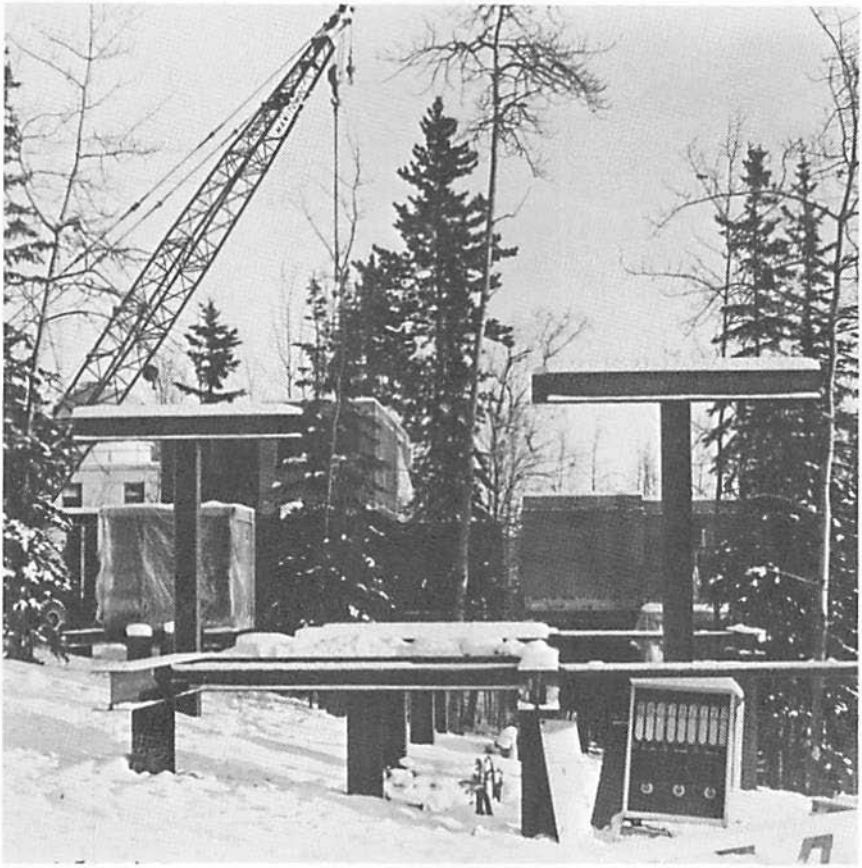
Two additional master's level programs were established for the Anchorage area in 1968-69 and response to both has been excellent. A small resident staff, supplemented by commuting staff from the main campus and well-qualified local lecturers, offers course work, practicum, and projects for master's degrees in counseling psychology and business administration.

All programs under the Southcentral Regional Center are operated under a trimester arrangement. The Southcentral Regional Center is building a full-time staff in each of the major disciplines to service the Anchorage area and some outlying needs. Part-time lecturers, each approved under university standards, supplement the full-time corps. All academic credit offered under the Southcentral Regional Center framework is considered resident University of Alaska credit.

The provost's office coordinates schedules and programs in the Southcentral area, to afford full utilization of staff and resources.

The provost, directly responsible to the president of the university, serves on the president's Administrative Council, Academic Council, and the Research and Advanced Study Council. The provost provides liaison between the main campus and the Southcentral Regional Center and provides for broadened public information and public involvement in all locations served by the Center.

Offices of the Southcentral Regional Center are located at 1820 W. Northern Lights Blvd., Anchorage 99503. The telephone number is 272-1424.



Modular housing units, erected on staggered pilings, add a new pattern to the university's physical plant.

Prime weather conditions, natural ski terrain and outstanding scenery makes skiing a favorite pastime of students. A ski slope and tow is maintained, and a cross country ski trail wends its way through campus.

College of Arts and Letters

WALTER J. MUELLER – DEAN

The humanities diversify the quest for knowledge in an era of specialization. Examining what men have thought and expressed, they keep knowledge current, expanding, and general. Technique distinguishes them from subjects primarily using the empirical method of science, for there are truths which transcend verification. The study of languages breaks cultural fetters, directed reading builds appreciation, exposure to the fine arts quickens sensibility; and all language, literature, and the arts, collaborate to make knowledge prevail and discovery imminent.

UNDERGRADUATE DEGREES — The College of Arts and Letters offers the Associate of Arts degree with majors in Liberal Arts and Vocational Art, the Bachelor of Music degree, and the Bachelor of Arts degree with majors in Art, English, French, German, Journalism, Linguistics, Music, Philosophy, Russian, Spanish, and Speech (options in Public Address, Drama, and Broadcasting). The college also offers minors for the Bachelor of Arts in these subjects.

GRADUATE DEGREES — The College of Arts and Letters offers the Master of Arts degree in English and French and the Master of Fine Arts degree in Creative Writing. Students also may earn an M.A. or M.F.A. degree in other fields through an interdisciplinary program.

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE WITH A MAJOR IN LIBERAL ARTS

I. General Education

A. Specific Requirements ..... (14)
Eng. 101-102 — Comp. and Modes of Lit. 6
Hist. 131-132 — Hist. of U.S.
or
P.S. 101-102 — Intro. to Amer. Govt. 6
Sp.68 — Basic Speech Communication Skills 2

B. General Requirements ..... (18)
At least six credits each in three areas below:
Humanities 6
Social Studies 6
Natural Science 6
Mathematics 6
Other 6

II. Major in Liberal Arts
No course used to meet the General Education requirements may be used to meet the requirements of the major.

A. Specific Requirements ..... (14-20)
One year of foreign language 6-10
or
Two years of one foreign language in high school.
Speech (Public Speaking I) 3
Formal Humanities Course 4-6

B. Approved Electives ..... (10-16)
of which six must be in one department.

A total of 60 credits is required for graduation.

ART DEPARTMENT

HELMUT G. VAN FLEIN — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, ASSOCIATE OF ARTS IN VOCATIONAL ART

MINIMUM REQUIREMENTS FOR DEGREES:

A.V.A. — 60 CREDITS
B.A. — 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 language of art is universal and through it man's creative and intellectual endeavors become more meaningful.

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE WITH A MAJOR IN VOCATIONAL ART

I. General Education
- A. Specific Requirements ..... (12)
  - English 6
  - American Government
    or
  - American History 6
- B. General Requirements ..... (18)
  - At least six credits each in three areas below:
  - Humanities 6
  - Social Studies 6
  - Natural Science 6
  - Mathematics 6
  - Other 6

II. Major

No course used to meet the General Education requirements may be used to meet the requirements of the major.

- A. Specific Requirements
  - Art 55-56 — Elementary Drawing 4
    or
  - Art 105-106 — Freehand Drawing 4
  - Art 57-58 — Elementary Printmaking 4
    or
  - Art 207-208 — Beginning Printmaking 4
  - Art 59-60 — Elementary Metalcraft 6
    or
  - Art 209-210 — Beginning Metalcraft 6
  - Art 61-62 — Elementary Sculpture 6
    or
  - Art 211-212 — Beginning Sculpture 6
  - Art 63-64 — Elementary Oil Painting 6
    or
  - Art 213-214 — Beginning Oil Painting 6
  - Art 65-66 — Elementary History of World Arts 6
    or
  - Art 261-262 — History of World Art 6
- B Electives ..... (4-16)

A total of 60-75 credits numbered 50-299 are required for graduation.

The Department of Art would prefer that the candidate for the Associate of Arts degree in Vocational Art continue for at least a minimum of four credits, not exceeding a maximum of six credits in the area of his strongest interests and artistic inclinations.

REQUIREMENTS FOR B.A. DEGREE WITH AN ART MAJOR

1. Complete general requirements for a B.A. degree as listed on page 30.
2. Complete a minimum of 37 hours of credit in art courses. A maximum of 54 hours of credit in art courses may be counted toward the degree.
3. Complete the following courses in Art:

Art 105-106 — Freehand Drawing 4
Art 207-208 — Beginning Printmaking 4
Art 211-212 — Beginning Sculpture 6
Art 213-214 — Beginning Oil Painting 6
Art 261-262 — History of World Art 6
Art 307 — Intermediate Printmaking 2
Art 311 — Intermediate Sculpture 3
Art 313 — Intermediate Oil Painting 2
Art 407-408 — Advanced Printmaking 4
or
Art 411-412 — Advanced Sculpture 6
or
Art 413-414 — Advanced Oil Painting 4

For course descriptions, see page 151.

4. Transfer students who are candidates for the B.A. degree with a major in Art must complete a minimum of 18 hours of credits in art courses while in residence.
5. The Department of Art advises art students to use French or German to meet their foreign language requirements.

A minor in Art requires 12 hours 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.

For course descriptions, see page 174.

ENGLISH DEPARTMENT

JAMES R. WILSON — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, MASTER OF ARTS, MASTER OF FINE ARTS, MASTER OF ARTS IN TEACHING

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
M.A. — 30 ADDITIONAL CREDITS
M.F.A. — 45 ADDITIONAL CREDITS
M.A.T. — 30 ADDITIONAL CREDITS

1. Complete general requirements for a B.A. degree as listed on page 30.
2. Complete 33 credits in English beyond Engl. 101 and 102 including:

Engl. 201-202 — Masterpieces of World Literature 6
Engl. 423 — Elizabethan Drama 3
or
Engl. 424 — Shakespeare 3

Two courses (six credits) chosen from:

Engl. 421 — Chaucer 3
Engl. 426 — Milton 3
Engl. 472 — History of the English Language 3

A MINOR IN ENGLISH REQUIRES 18 CREDITS BEYOND ENGL. 101-102, INCLUDING:

Engl. 201-202 — Masterpieces of World Literature 6
Engl. 423 — Elizabethan Drama 3
or
Engl. 424 — Shakespeare 3

One course (three credits) chosen from:
Engl. 421 — Chaucer 3
Engl. 426 — Milton 3
Engl. 472 — History of the English Language 3

For course descriptions, see page 191.

REQUIREMENTS FOR M.A. DEGREE IN ENGLISH

1. A minimum of 30 credits of approved courses including Engl. 697-698, Thesis, six credits. For course descriptions, see page 191.
2. Completion of the general graduate degree requirements listed on page 33.
3. Reading knowledge of a foreign language.
4. Thesis 6

REQUIREMENTS FOR M.F.A. DEGREE IN CREATIVE WRITING

1. Graduate creative writing courses 12
2. English electives 15
3. Interdisciplinary electives 12
4. Thesis 6
5. Reading knowledge of a foreign language.

REQUIREMENTS FOR M.A.T. DEGREE IN ENGLISH

This degree is designed to serve baccalaureate graduates who have qualified 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 as well as in education. A minimum of 30 hours is required. An advisory committee, appointed by the head of the department, will require a minimum of 15 hours (nine of them on the graduate level) of English courses taken at the University of Alaska.

JOURNALISM DEPARTMENT

KURT F. REINWAND — DEPARTMENT HEAD

DEGREE — BACHELOR OF ARTS

MINIMUM REQUIREMENTS FOR DEGREE: 130 CREDITS

The journalism curriculum is designed to prepare students for a challenging profession which calls for a high degree of proficiency in communicating with words and pictures — while being versatile enough to allow a broad general education.

Students with diverse interests frequently find that journalism fits well into a joint educational program with such areas as broadcasting, home economics, wildlife management, anthropology, economics, or political science.

Emphasis on practical experience includes an intern program with Alaskan media.

REQUIREMENTS FOR B.A. DEGREE WITH A MAJOR IN JOURNALISM

1. Complete general requirements for a B.A. degree listed on page 30.
2. Complete a minimum of 21 hours of credit in journalism. A maximum of 30 hours of credit in journalism courses may be counted toward a degree.
3. Complete the following courses in journalism:

Jour. 201 — Introduction to Journalism 3
Jour. 202 — Reporting of Public Affairs 3
Jour. 203 — Basic Photography 3
Jour. 312 — Editing 3
Jour. 324 — Newspaper Production, Advertising and Typography 3

THE ABOVE COURSES ALSO CONSTITUTE THE MINOR IN JOURNALISM

4. Complete six hours in the following courses:

Jour. 204 — Journalism Laboratory 1
Jour. 303 — Advanced Photography 3
Jour. 311 — Magazine Article Writing 3
Jour. 320 — Journalism in Perspective 3
Jour. 403 — Cinematography 3
Jour. 411 — Advanced Magazine Article Writing 3
Jour. 412 — Advanced Editing 3
Jour. 420 — Biography 3
Jour. 493-494 — Special Topics 3-6

5. Work at least two semesters on a university or equivalent publication.

For course descriptions, see page 215.

LINGUISTICS AND FOREIGN LANGUAGES DEPARTMENT

BRUCE R. GORDON — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, MASTER OF ARTS, MASTER OF ARTS IN TEACHING

MINIMUM REQUIREMENTS FOR DEGREE:

B.A. — 130 CREDITS
M.A. — 30 ADDITIONAL CREDITS
M.A.T. — 30 ADDITIONAL CREDITS

In a shrinking world Americans increasingly need to communicate directly with other peoples in order to achieve mutual understanding. Whether it be Eskimo or English, the language of a people embodies its unique culture and 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 literature liberates the student from the confines of his own culture and makes his own culture more meaningful to him.

REQUIREMENTS FOR B.A. DEGREE WITH A FOREIGN LANGUAGE OR LINGUISTICS MAJOR OR MINOR

Majors are offered in French, German, Linguistics, Russian, and Spanish.

1. Complete general requirements for a B.A. degree as listed on page including foreign language requirement.
2. Complete 26 credits beyond first year in the major language.
3. Complete three credits in a linguistics course.

A MINOR IN A FOREIGN LANGUAGE REQUIRES FOUR SEMESTER (12 CREDITS) OF STUDY IN THAT LANGUAGE BEYOND THE 102 LEVEL.

For a major in Linguistics:

1. Complete general requirements for a B.A. degree as listed on page 30, including foreign language requirement.
2. Complete four semesters (12-16 credits) in language other than that offered as a fulfillment of foreign language requirements toward the B.A. degree.

   Both languages must be chosen from French (or Latin or Spanish), Greek, German, or Russian.
3. Complete 15 credits in linguistics courses.

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.

REQUIREMENTS FOR M.A. DEGREE IN FRENCH

1. A minimum of 30 credits of approved courses including French 697-698, Thesis.
2. Completion of the general graduate degree requirements listed on page 33.
3. Proficiency in a foreign language other than French.

REQUIREMENTS FOR M.A.T. IN FRENCH

1. Thirty additional credits.
2. Proficiency in a foreign language other than French.

   An interdisciplinary M.A. and an M.A.T. also are offered in other languages under certain conditions.

MUSIC DEPARTMENT

DUANE J. MIKOW — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF MUSIC

MINIMUM REQUIREMENTS FOR DEGREES: 130 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 degree offers intensive specialization for those desiring professional training in music — the vocal and instrumental major.

The various music organizations maintained by the department offer participation experiences for students in all colleges of the university. Performance in organizations (orchestra, band, choir) is required of all music majors in the area appropriate to their specializations.

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.

REQUIREMENTS FOR B.A. DEGREE WITH A MAJOR IN MUSIC OR MUSIC EDUCATION

For a major in Music:

1. Complete general requirements for a B.A. degree as listed on page 30.
2. Complete 40 credits in Music including:

Mus. 131-132 — Basic Theory 6
Mus. 231-232 — Advanced Theory 6
Mus. 321-322 — History of Music 6
Mus. 331-332 — Form and Analysis 4
Mus. 491-492 — Senior Seminar 2
Applied Music, to include eight credits of private lessons and eight credits of ensemble participation 16

3. Prior to graduation, satisfy an examination in piano proficiency.

For a major in Music Education:

1. Complete general requirements for a B.A. degree listed on page 30.
2. Complete 40 credits in Music including:

Mus. 131-132 — Basic Theory 6
Mus. 231-232 — Advanced Theory 6
Mus. 321-322 — History of Music 6
Mus. 315 — Music Methods and Techniques 6
Applied Music, to include six credits of private lessons and ten credits of ensemble participation, to include two semesters of a vocal ensemble 16

3. Complete a minor in Education, including either Mus. 309, or Mus. 405.
4. Prior to graduation satisfy an examination in piano proficiency.

REQUIREMENTS FOR A BACHELOR OF MUSIC DEGREE (INSTRUMENTAL)

English Composition and Literature, including Eng. 101-102 6
Humanities — Art, English, Foreign Language, Philosophy, Journalism, and Speech 11
Foreign Language 6-10
Hist. 101,102 plus six hours in another Social Science 12
Mathematics or Natural Science 8
Music:
Required Courses:
Mus. 151-362 — Piano Proficiency 0-8
Mus. 161-462 — Applied Music (Major) 24
Mus. 101-203-205-211 — Ensemble 8
Mus. 123-124 — Intro. to Music 6
Mus. 131-132 — Basic Theory 6
Mus. 231-232 — Advanced Theory 6
Mus. 321-322 — History of Music 6
Mus. 331-332 — Form and Analysis 4
Mus. 431 — Counterpoint 3
Mus. 432 — Orchestration 3
Mus. 351 or 352 — Conducting 2
Mus. 493 — Lit. of Major Instrument 3
Physical Education or Military Science 4-6
Electives — to bring total credit to 130 credits.

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.

REQUIREMENTS FOR A BACHELOR OF MUSIC DEGREE (VOCAL)

The requirements for the voice major are the same as above with these exceptions:

Foreign Language 22-26
Mus. 331 or 332 — Form and Analysis 2
Mus. 431 — Counterpoint (not required) 0
Mus. 493 — Vocal Literature 3

REQUIREMENTS FOR A BACHELOR OF MUSIC DEGREE (MUSIC EDUCATION)

English Composition and Literature, including Engl. 101-102 6
Humanities: Art, English, Foreign Language, Philosophy, Journalism, and Speech 11
Foreign Language 6-10
Hist. 101-102 — Western Civilization 6
Psy. 101 — Intro. to Psychology 3
Psy. 352 — Psychology of Adolescence 3
Mathematics or Natural Sciences 8
Education:
Required Courses:
Ed. 313 — Education Psychology 3
Ed. 332 — Test and Measurements 3
Ed. 405 — Methods of Teaching Music 3
Ed. 421 — Secondary Education 3
Ed. 452 — Student Teaching 6
Music:
Required Courses:
Mus. 151-362 — Applied Music (Piano Proficiency) 0-8
Mus. 161-462 — Applied Music (Major) 16
Mus. 101-203-205-211 — Ensemble 8
Mus. 123-124 — Intro. to Music 6
Mus. 131-132 — Basic Theory 6
Mus. 231-232 — Advanced Theory 6
Mus. 321-322 — History of Music 6
Mus. 331 or 332 — Form and Analysis 2
Mus. 315 — Music Methods and Techniques 10
Mus. 351 or 352 — Conducting 2
Mus. 432 — Orchestration 3
Physical Education or Military Science 4-6
Electives — to bring total credits to 130 credits.

Students who desire to meet cerfitication requirements for teaching music at the elementary school level should consult with the head of the Music Department concerning a petition to substitute required elementary level psychology and methods courses for similar courses in the Bachelor of Music (Music Education) curriculum.

A MINOR IN MUSIC REQUIRES 12 HOURS OF MUSIC CREDIT IN ADDITION TO 6 CREDITS IN:

Mus. 131-132 — Basic Theory 6
or
Mus. 123-124 — Intro. to Music 6

All music majors and minors are expected to attend all music department recitals and concerts.

All applied music students are expected to perform in student recitals each semester of study.

For course descriptions, see page 231.

PHILOSOPHY DEPARTMENT

RUDOLPH W. KREJCI — DEPARTMENT HEAD

DEGREE — BACHELOR OF ARTS

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 to independent reflection on them, thus broadening his perspectives for the various areas of specialization in science, the social sciences, and humanities.

REQUIREMENTS FOR B.A. DEGREE WITH A PHILOSOPHY MAJOR OR MINOR

1. Complete general requirements for a B.A. degree as listed on page 30.
2. Complete a year sequence in mathematics.
3. Complete 30 credits in Philosophy, including

Phil. 201 — Introduction to Philosophy 3
Phil. 204 — Introduction to Logic 3
Phil. 351-352 — History of Philosophy 6
Phil. 471 — Contemp. Philosophical Problems 3
Phil. 493 or 494 — Special Topics 3

Choose two courses out of the following:

Phil. 321 — Aesthetics 3
Phil. 332 — Ethics 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. 484 — Philosophy of History 3

A MINOR IN PHILOSOPHY REQUIRES 18 CREDITS OF APPROVED PHILOSOPHY COURSES INCLUDING:

Phil. 201 — Introduction to Philosophy 3
Phil. 351-352 — History of Philosophy 6
Phil. 471 — Contemp. Philosophical Problems 3

Choose six credits from the following:

Phil. 204 — Introduction to Logic 3
Phil. 321 — Aesthetics 3
Phil. 332 — Ethics 3
Phil. 341 — Epistemology 3
Phil. 342 — Metaphysics 3
Phil. 481 — Philosophy of Science 3
Phil. 482 — Comparative Religion 3
Phil. 484 — Philosophy of History 3
Phil. 493 — Special Topics .....*
Phil. 494 — Special Topics .....*

* Credits Arranged.

For course descriptions, see page 238.

SPEECH, DRAMA, AND RADIO DEPARTMENT

LEE H. SALISBURY — DEPARTMENT HEAD

DEGREE — BACHELOR OF ARTS

MINIMUM REQUIREMENTS FOR DEGREE: 130 CREDITS

Few phenomena of man's life are of greater concern to him than communication. In one way or another, communication has become the common problem, sine qua non, of the sciences and the arts alike. The life and behavorial sciences concern themselves directly with communication, for it is the processes of communication which define and maintain the structure and functioning of living things. The physical sciences from archaeology to space have an equal, if less direct, concern, for the progress and development of any science depends upon communication. It is the business of the arts to communicate, just as it is the art of science to communicate.

The university, as the embodiment of all the fields of human endeavor, has the responsibility to disseminate its accumulated and expanding knowledge to the state and to the world. The Department of Speech, Drama, and Radio through its related disciplines is an important part of this communication process.

The department offers elective courses leading to a major or minor in speech with options in public address, drama, and broadcasting.

REQUIREMENTS FOR B.A. DEGREE WITH A SPEECH MAJOR

1. Complete general requirements for B.A. degree as listed on page 30.

2. Complete 24 credits in Speech beyond Sp. 111, including:

   Sp. 221 — Introduction to Theater 3
   Sp. 231 — Introduction to Broadcasting 3
   Sp. 315 — Phonetics 2
   Sp. 316 — Voice and Diction 2

3. A Speech major may elect to take an option in Public Address by adding the following courses to those specifically required in No. 2 (above):

   Sp. 212 — Public Speaking II 2
   Sp. 313 — Argumentation and Debate 3
   Sp. 314 — Discussion 3
   Sp. 317 — Oral Interpretation 3

4. A Speech major may elect to take an option in Drama by adding the following courses to those specifically required in No. 2 (above):

   Sp. 223 — Acting I 3
   Sp. 325 — Theater Production 3
   Sp. 327 — Makeup for Theater 2
   Sp. 425 — Directing 3
   or
   Sp. 323 — Acting II 3
   Psy. 101 — Introduction to Psychology 3

5. A Speech major may elect to take an option in Broadcasting by adding the following courses to these specifically required in No. 2 (above):

   Sp. 237 — Announcing 2
   Sp. 333 — Writing for Radio and Television 3

Sp. 334 — Radio-Television Advertising 3
or
Sp. 433 — Radio-Television News 3
Sp. 335 — Broadcast Production 3

A MINOR IN SPEECH REQUIRES 12 CREDITS OF APPROVED SPEECH ELECTIVES

For course descriptions see page 261.

College of Behavioral Sciences and Education

WENDELL W. WOLFE — DEAN

The College of Behavioral Sciences and Education provides students an opportunity to develop an understanding of man in relation to his social, psychological, and cultural background. Such knowledge serves to broaden the student's concept of life and conditions of society and to provide a foundation for service in specific professional fields.

UNDERGRADUATE DEGREES — The college has programs that lead to Bachelor of Arts degrees in anthropology, psychology, and sociology. The Bachelor of Education degree is awarded to students majoring in education. The Bachelor of Science degree is awarded to students majoring in anthropology, home economics, psychology, and sociology. The Associate of Arts degree in behavioral sciences also is offered.

GRADUATE DEGREES — Master of Arts in anthropology; Master of Arts in teaching; Master of Science in counseling psychology; Master of Education, and Educational Specialist.

REQUIREMENTS FOR AN ASSOCIATE OF ARTS DEGREE WITH A MAJOR IN BEHAVIORAL SCIENCE

I. General Education — Credits

A. Specific Requirements .....(14)
Eng. 67 — Elementary Exposition I
or
Eng. 101 — Comp. and Modes of Lit. 3
Eng. 68 — Elementary Exposition II
or
Eng. 102 — Comp. and Modes of Lit. 3
P.S. 101,102 — American Govt.; Intro. to Pol. Sci.
or
Hist. 131,132 — History of the U.S. 6
Sp. 68 — Elem. Pub. Speaking I
or
Sp. 111 — Public Speaking I .....2 or 3

B. General Requirements .....(19)
Humanities .....(6)
Eng. 213 — Advanced Exposition 3
Elective 3

Behavioral Sciences .....(6)
Psy. 101 — Intro. to Psychology 3
Soc. 101 — Intro. to Sociology 3

Natural Sciences
Free Electives

Mathematics
Free Electives
Other .....(7)
O.A. 99 — Office Practice 2
O.A. 103 — Elementary Typing 2
Free Electives 3

II. Major Speciality

A. Requirements .....(15)
B.S. 101 — Field Observation 3
B.S. 201 — Field Practice 3
B.S. 251 — Research Principles 3
Psy. 201 — Advanced General Psychology 3
Soc. 102 — Intro. to Sociology 3

B. Electives .....(15)
Anth. 202 — Cultural Anthropology 3
Psy. 223 — Intro. to Counseling 3
Soc. 106 — Social Welfare 3
Soc. 109 — Principles of Case Work 3
Soc. 201 — Social Problems 3
Soc. 210 — Principles of Correction 3
P.A. 154 — Administration of Justice 3
P.A. 158 — Juvenile Procedures 3

A total of 63 credits is required for graduation.

ANTHROPOLOGY DEPARTMENT

WILLIAM J. LOYENS — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE, MASTER OF ARTS

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
B.S. — 130 CREDITS
M.A. — 30 ADDITIONAL CREDITS

The Anthropology Department offers undergraduate level courses and some opportunities for undergraduate research. 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. Archaeological 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.

REQUIREMENTS FOR B.A. DEGREE OR B.S. DEGREE WITH AN ANTHROPOLOGY MAJOR

1. Complete general requirements for a B.A. or B.S. degree as listed on page

2. Complete 25 credits in Anthropology exclusive of Anth. 101, including:

Anth. 203 — World Ethnography .....3 Credits
Anth. 204 — World Ethnography: New World, Pacific 3

Anth. 214 — Archaeology 4
Anth. 303 — Culture History 3
Anth. 402 — Human Biology 4
Anth. 423 — Social Structure 3
Anth. 424 — Primitive Religion 3
Anth. 498 — Thesis or Project 2

3. Complete the following:

Psy. 101 — Introduction to Psychology 3
Phil. 201 — Intro. to Philosophy 3
or
Soc. 101 — Intro. to Sociology 3
Geol. 101 or 102 — General Geology 4
or
Biol. 105 or 106 — Fundamentals of Biology 4

A MINOR IN ANTHROPOLOGY REQUIRES 12 APPROVED HOURS IN ANTHROPOLOGY EXCLUSIVE OF ANTH. 101.

REQUIREMENTS FOR M.A. DEGREE WITH AN ANTHROPOLOGY MAJOR

The graduate program allows for specialization in two broad fields of anthropology: (1) Social and cultural anthropology; (2) archeology. Students who wish to add linguistics may do so by taking courses in the Department of Linguistics and Foreign Languages by special arrangement.

Requirements for the degree: The master's degree requires 30 semester hours of anthropology and related subjects, which are divided as follows:

12 credit hours of graduate courses in anthropology
6 credit hours for thesis
12 credit hours in related subjects

Of these credit hours a maximum of nine may be transferred from another institution.

Language: The language requirement consists of demonstrating to the satisfaction of the faculty a reading knowledge of French or German by examination, of the extensive use of one of these languages in the writing of the thesis. Exceptions may be made in response to a petition if another language is eminently necessary for the student's current or projected work. This language should have a written literature.

Examination: The candidate will take a comprehensive written examination after the completion of the course work, and after completion of the thesis be called for a brief defense of the methods involved in its writing and the basis for its facts.

EDUCATION DEPARTMENT

FRANK DARNELL — DEPARTMENT HEAD

DEGREES — BACHELOR OF EDUCATION, MASTER OF EDUCATION, MASTER OF ARTS IN TEACHING, EDUCATIONAL SPECIALIST

MINIMUM REQUIREMENTS FOR DEGREES:

B.ED. — 130 CREDITS
M.ED. — 30 ADDITIONAL CREDITS
M.A.T. — 30 ADDITIONAL CREDITS
Ed.S. — 60 ADDITIONAL CREDITS

The Education Department offers curricula designed to prepare personnel for teaching in elementary and secondary schools. Students are introduced to fundamental problems of education in the contemporary world through courses designed to develop perspective and understanding of the relations of education to society. Courses provide information and practice in the development of instructional materials and the understanding of methods of instruction. Students are formally admitted to the program of teacher education on the basis of multiple criteria of their ability to make a positive contribution to the educational profession.

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 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 Education Department during their freshman year to obtain specific requirements.

ADMISSION TO TEACHER EDUCATION – Any student wishing to prepare for teaching through the University of Alaska must formally apply for admission to the Teacher Education Program. Students should consult with the head of the Education Department at the beginning of their sophomore year to secure procedure for formal application for admission to the Teacher Education Program. Enrollment in education courses in no way implies admission to the Teacher Education Program.

REQUIREMENTS FOR B.ED. DEGREE WITH AN ELEMENTARY EDUCATION MAJOR

1. Military Science or Physical Education (two years) 6-4
2. Humanities (Art, English, Languages, Linguistics, Music, Philosophy, Speech) 20
   a. Required Courses:
      Engl. 101-102 — Comp. & Modes of Lit. 6
      Engl. 318 — Modern Grammar 3
   b. Recommended Courses:
      Engl. 213 — Advanced Exposition 3
      Mus. 309 — Elementary School Music Methods 3
      Phil. 201 — Introduction to Philosophy 3
      Sp. 111 — Public Speaking I (3) or Speech 316 (2) — Voice and Diction ..... 3 or 2
3. Social Sciences (Anthropology, Economics, Geography, History, H.E. 236, Political Science, Psychology, Sociology) 24
   a. Required Courses:
      Hist. 101-102 — Western Civilization 6
      or
      131-132 — History of the U.S. 6
      P.S. 101-102 — Intro. to American Government and Political Science 6
      Psy. 101 — Introduction to Psychology 3
      Psy. 351 — Child Development 5
   b. Recommended Courses:
      Econ. 121-122 — Principles of Economics 6
      Anth. 101 — The Study of Man 3
      Anth. 342 — Anthropology of the Natives of Alaska 3

Geog. 101 — Introductory Geography 3
Hist. 341 — History of Alaska 3
Soc. 101-102 — Introduction to Sociology 6

4. Mathematics 6
(Students are advised to take Math. 105 and Math. 121 or Math. 345)

5. Natural Sciences (Anth. 402, Biological Sciences, Chemistry, Geog. 201-401, Geology, Physics).....6

6. Education (students must maintain a 2.00 average in all education courses) 30

a. Required Courses:
Ed. 313 — Educational Psychology 3
Ed. 332 — Tests and Measurements 3
Ed. 409 — The Teaching of Reading 3
*Ed. 452 — Student Teaching 6
*Candidates who have taught successfully two years in the public elementary schools may petition to be excused from Ed. 452.

b. Nine credits from the following courses:
Ed. 301 — Social Studies for Elementary Teachers 3
Ed. 302 — Language Arts for Elementary Teachers 3
Ed. 304 — Literature for Children 3
Ed. 306 — Teaching of Science in Elementary Schools 3
Ed. 307 — Teaching of Arithmetic 3
Ed. 309 — Elementary School Music Methods 3
Ed. 311 — Audio Visual Methods and Materials 3

c. Six credits from the following courses:
Ed. 345 — Sociology of Education 3
Ed. 348 — History of Education 3
Ed. 422 — Philosophy of Education 3
Ed. 426 — Principles and Practices of Guidance 3
Ed. 446 — Public School Organization, Control and Support 3

7. 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:

Anthropology
Art
Biological Sciences
Chemistry
Economics
English
French
Geography
Geology
German
History
Linguistics
Mathematics
Music
Philosophy
Physics
Political Science
Psychology
Russian
Spanish
Speech
Sociology

Credits earned in fulfillment of (2), (3), (4), and (5) above may be applied toward courses listed in (7) above.

8. Forty-eight credits of upper division courses, 24 of which must be completed at the University of Alaska.

9. Sufficient free electives to total 130 credits.

REQUIREMENTS FOR B.ED. DEGREE WITH A SECONDARY EDUCATION MAJOR

1. Military Science or Physical Ed. (two years) 6-4

2. Humanities (Art, English, Languages, Linguistics, Music, Philosophy, Speech) 20

   a. Required Courses:
   Engl. 101-102 — Comp. & Modes of Lit. 6

   b. Recommended Courses:
   Engl. 213 — Advanced Exposition 3
   Phil. 201 — Intro. to Philosophy 3
   Sp. 111 — Public Speaking I 3
   or
   Sp. 316 — Voice and Diction 2

3. Social Sciences (Anthropology, Economics, Geography, History H.E. 236, Political Science, Psychology, Sociology) 24

   a. Required Courses:
   Hist. 101-102 — Western Civilization 6
   or
   Hist. 131-132 — History of the U.S. 6
   P.S. 101-102 — Introduction to American Government and Political Science 6
   Psy. 101 — Introduction to Psychology 3
   Psy. 352 — Adolescence 3

   b. Recommended Courses:
   Anth. 101 — The Study of Man 3
   Anth. 342 — Anthropology of the Natives of Alaska 3
   Econ. 121-122 — Principles of Economics 6
   Hist. 341 — History of Alaska 3
   Soc. 101-102 — Introduction to Sociology 6

4. Mathematics and Natural Sciences (Anth. 402, Biological Sciences, Chemistry, Geog. 201-401, Geology, Physics) 8

5. Education (students must maintain at least a 2.00 average in all education courses) 24

   a. Required Courses:
   Ed. 313 — Educational Psychology 3
   Ed. 332 — Tests and Measurements 3
   Ed. 402 or 404 or 405 or 406 or 407 or 408 — Methods 3
   *Ed. 452 — Student Teaching 6
   *Candidates who have taught successfully two years in the public secondary schools may petition to be excused from Ed. 452.

   b. Six credits from the following courses:
   Ed. 345 — Sociology of Education 3
   Ed. 348 — History of Education 3
   Ed. 421 — Secondary Education 3
   Ed. 422 — Philosophy of Education 3
   Ed. 446 — Public School Organization, Control and Support 3

   c. Three credits of education electives selected from the following:
   Ed. 311 — Audio Visual Methods and Materials 3
   Ed. 426 — Principles and Practices of Guidance 3

6. Teaching majors and minors (students must maintain at least a 2.00 average in their teaching majors.)

Option A.
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.

Option B.
Complete an integrated teaching major-minor of 51 approved credits. See advisor.

MAJOR OR MINOR (Option A)

Art
Biological Sciences
Business Education
Chemistry
English
** Foreign Language
History
Home Economics
Mathematics
Music
*** Physical Education
Physics
Speech

MINOR ONLY (Option A)

**** Economics
*Geography
Journalism
*Political Science
*Sociology

INTEGRATED MAJOR-MINOR (Option B)

General Science
Social Sciences
Earth Sciences

7. Forty-eight credits of upper division courses, 24 of which must be completed at the University of Alaska.

8. Sufficient free electives to total 130 credits.

SECONDARY TEACHING CERTIFICATES FOR MAJORS IN OTHER DEPARTMENTS

All majors in other departments who wish to obtain an Alaskan secondary teaching certificate should confer with the head of the Education Department in their freshman year to obtain course requirements and application procedures for admission to the Teacher Education Program. It is essential that the student

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*Approved for history major only.

**Confer with Head of the Department of Education.

***See page 96 for requirements for B.Ed. degree with a major in physical education.

****Approved for history and business education teaching majors only. Credit earned in fulfillment of (2), (3), and (4) above may be applied toward the teaching major and teaching minor. The student is responsible for obtaining and keeping current his copy of the courses required for his teaching major and minor. Any deviations from the specified courses must be approved by written petition to the head of the Education Department.

have the necessary prerequisites and admission to the Teacher Education Program for placement in student teaching in the public schools. The following courses should be taken at the indicated times:

	FALL SEMESTER	SPRING SEMESTER
Sophomore	Psy. 101	*Psy. 352
Junior	*Ed. 313	*Ed. 332
Senior	*Ed. 421	*Ed. 452
	*Ed. 402, 404, 405, 406, 407, or 408	

*Students must maintain a 2.00 average in these courses.

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 November 1 for student teaching in the following spring semester and by March 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 Psy. 101, Psy. 351, six hours in mathematics, Ed. 313, Ed. 332, Ed. 409, and two other elementary methods and materials courses.
   f. A minimum G.P.A. of 2.00 in all required psychology and all education courses attempted, including a minimum G.P.A. of 2.00 in all elementary methods and materials courses attempted.
   g. Approval of Committee on Admission to Teacher Education to enter student teaching.
2. Secondary Schools — seventh grade through twelfth grade:
   a. Acceptance to Teacher Education Program.
   b. A formal application on file with the director of Student Teaching by November 1 for student teaching in the following spring semester and by March 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 Psy. 101, Psy. 352, Ed. 313, and Ed. 332 with a minimum G.P.A. of 2.00 in Psy. 352, Ed. 313, and Ed. 332.
   g. A minimum G.P.A. of 2.00 in all education courses attempted.
   h. Approval of Committee on Admission to the Teacher Education Program to enter student teaching.

REQUIREMENTS FOR M.ED. DEGREE IN EDUCATION

A person must make application for admission to graduate study and submit acceptable scores on a graduate entrance examination before he will be considered for admission to the M.Ed. program.

The M.Ed. 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 of the Department of Education. In addition, the head of the 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.

In general the requirements for the M.Ed. degree are as follows:

1. A satisfactory score on a graduate entrance examination.
2. Completion of a minimum of 30 credits of approved courses including Ed. 627, Educational Research.
3. One year of satisfactory teaching experience or administrative experience or reasonable equivalency.
4. The equivalent of an undergraduate major in education.
5. Passing a comprehensive examination.
6. Completion of the general graduate degree requirements listed on page 33.

REQUIREMENTS FOR MASTER OF ARTS IN TEACHING

The Master of Arts in Teaching is designed to serve the following groups of students:

1. Baccalaureate graduates with a good general education and with majors or equivalent majors in subjects commonly taught in high school who wish to prepare for a career in secondary school classroom teaching.
2. 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.
3. Baccalaureate graduates who have or who can academically 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.

Interested persons in the first two categories should contact the head of the Education Department for additional information; interested persons in the third category should contact the head of the department of their teaching major.

REQUIREMENTS FOR EDUCATIONAL SPECIALIST DEGREE

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, and (4) who wish to develop a background of knowledge in fields other than education.

ADMISSION REQUIREMENTS:

1. Applicants must be experienced educators who have successfully completed at least one year of elementary and/or secondary teaching.
2. All candidates should meet the University of Alaska Bachelor of Education degree requirements (or equivalent) for either elementary or secondary education majors with a minimum of 24 semester hours of education courses with an average G.P.A. of 3.00.
3. A master's degree preferred but not necessary.
4. Submission to the Director of Admissions:
   a. A completed university application for admission to graduate study.
   b. Official transcripts of all previous college or university work.
   c. Three letters of reference, at least one from the most recent employer, testifying as to teaching or administrative ability.

5. Admission also will be contingent upon: (1) satisfactory scores on the aptitude section of the Graduate Record Examination and/or the Miller Analogies Test; and (2) a satisfactory personal interview conducted by Department of Education faculty members.

MINIMUM DEGREE REQUIREMENTS:

1. Completion of 60 semester hours beyond the bachelor's degree, including a minimum of 18 semester hours at the graduate level. At least 24 semester hours of work must be completed at the University of Alaska. The university may accept a maximum of 36 semester hours of transfer credit. Acceptance of transfer credits is contingent upon approval by the student's advisory committee and by the dean of the College of Behavioral Sciences and Education.
2. Fulfillment of the requirements of the Ed.S. degree must be completed within seven years after admission to the program.
3. Satisfactory performance on a written and/or oral examination conducted by the Department of Education faculty and representatives from the student's academic discipline is required.

HEALTH, PHYSICAL EDUCATION, AND RECREATION DEPARTMENT

JOHN C. GILMORE — DEPARTMENT HEAD

DEGREE — BACHELOR OF EDUCATION

MINIMUM REQUIREMENTS FOR DEGREE: 130 CREDITS

The professional curriculum in physical education is designed to prepare qualified students to teach physical education, to coach athletic teams, and to direct recreational programs according to the needs of the State of Alaska. The curriculum provides for either a major or a minor in physical education to be coupled with the requirements of the Department of Education's Teacher Education Program.

REQUIREMENTS FOR B.ED. DEGREE WITH A PHYSICAL EDUCATION MAJOR

1. Complete the general requirements for a B.Ed. degree as follows:
   a. Physical Education:
      Women and men majoring in P.E. are exempt from required P.E. 100.
   b. Humanities:14 credits.
      Engl. 101-102 and Sp.111 are required.
   c. Social Sciences:18 credits.
      Psy. 101-352 and Soc. 101 are required.
   d. Natural Science:16 credits.
      Biol. 105-201-210; Chem. 104 are required.
   e. Education: 18 credits.
      Educ. 313-332-406-452 are required.
2. Complete the following required professional courses:

   P.E. 311 — Principles of Physical Education 4
   P.E. 242 — Personal and Community Health 3
   P.E. 246 — First Aid 2
   P.E. 308 — Physical Education for the Elementary School 3
   P.E. 331 — Sports Officiating 2

P.E. 358 — History of Physical Education 3
P.E. 425 — Organization and Administration of Physical Education 3
P.E. 440 — Prevention and Care of Athletic Injuries 2
P.E. 211 — Fundamentals of Sports — Volleyball and Soccer 1
P.E. 213 — Fundamentals of Sports — Swimming 1
P.E. 214 — Fundamentals of Sports — Skiing 1
P.E. 215 — Fundamentals of Sports — Tumbling and Gymnastics (men). .1
P.E. 216 — Fundamentals of Sports — Rhythms 1
P.E. 217 — Fundamentals of Sports — Tumbling and Apparatus Gymnastics (women).....1
P.E. 301 — Techniques in Physical Education — Basketball (men) 2
P.E. 302 — Techniques in Physical Education — Track and Field 2
P.E. 303 — Techniques in Physical Education — Team Sports (women) 2
P.E. 400 — Techniques in Physical Education — Tumbling and Gymnastics 2
P.E. 401 — Techniques in Physical Education — Aquatics and Rythms 2
P.E. 203 — Fundamentals of Sports — Tennis and Badminton 1

3. Teaching minor (will depend upon minor chosen).
4. Electives to total 130 credits.

A MINOR IN PHYSICAL EDUCATION REQUIRES COMPLETION OF THE FOLLOWING COURSES:

P.E. 311 — Principles of Physical Education 4
P.E. 246 — First Aid 2
P.E. 308 — Physical Education for the Elementary School 3
P.E. 425 — Organization and Administration of Physical Education 3
P.E. 440 — Prevention and Care of Athletic Injuries — Required (men) 2
P.E. 211 — Fundamentals of Sports — Volleyball and Soccer 1
P.E. 214 — Fundamentals of Sports — Skiing 1
P.E. 215 — Fundamentals of Sports — Tumbling and Gymnastics (men) 1
P.E. 216 — Fundamentals of Sports — Rhythms 1
P.E. 217 — Fundamentals of Sports — Tumbling and Apparatus Gymnastics (women).....1
P.E. 301 — Techniques in Physical Education — Basketball (men) 2
P.E. 302 — Techniques in Physical Education — Track and Field 2
P.E. 303 — Techniques in Physical Education — Team Sports (women) 2
P.E. 203 — Fundamentals of Sports — Tennis and Badminton 1

HOME ECONOMICS DEPARTMENT

ANN L. WALSH — DEPARTMENT HEAD

DEGREE — BACHELOR OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREE: 130 CREDITS

This curriculum strives to provide for preparation in professional careers in home economics and to offer students a sound background in nutrition, textiles, child development, foods, and clothing as well as experiences in the liberal arts.

HOME ECONOMICS CURRICULUM

FALL SEMESTER	SPRING SEMESTER
FIRST YEAR — 16 Credits	15 or 16 Credits
Engl. 101 — Comp. & Modes of Lit. .3	Engl. 102 — Comp. & Modes of Lit. .3
H.E. 102 — Meal Management 3	H.E. 241 — Home Mgt. 3
H.E. 131 — Related Art 3	H.E. 113 — Cloth. Const & Sel. 3
Chem. 101 — Gen. Chemistry 4	P.E. 100 — Physical Ed. Activities . . .1
P.E. 100 — Physical Ed. Activities . . .1	Soc. 101 — Intro. to Soc. 3
* Electives 2	* Electives .....2 or 3
SECOND YEAR — 16 Credits	16 Credits
Psy. 101 — Intro. to Psy. 3	H.E. 236 — Marriage & Fam. Life . . .3
P.E. 100 — Physical Ed. Activities: .1	P.E. 100 — Physical Ed. Activities . . .1
H.E. 211 — Textiles 3	H.E. 302 — Advanced Foods 3
Biol. 105 — Fund. of Biol. 4	Sp. 111 — Public Speaking I 3
English Elective 3	English Elective 3
* Electives 2	* Electives 3
THIRD YEAR — 16 Credits	17 Credits
Econ. 121 — Prin. of Econ. 3	H.E. 304 — Nutrition 3
H.E. 312 — Adv. Clothing 3	H.E. 351 — Child Develop. 5
*Electives 10	* Electives 9
FOURTH YEAR — 17 Credits	17 Credits
H.E. 441 — Family Health 2	H.E. 446 — House Plan. & Furn. 3
H.E. 445 — Home Mgt. 3	* Electives 14
* Electives 12	

Science requirements — a minimum of 12 credits in natural or physical sciences is required.

*All electives must be approved by the head of the department. Approximately sixty hours must be liberal arts, including natural and social sciences and the humanities.

Teaching Certificates — Home economics graduates may qualify for teaching vocational home economics. They may obtain an Alaskan teaching certificate by completing Ed. 407, Methods of Teaching Home Economics, and meeting the other requirements of the State Department of Education.

A MINOR IN HOME ECONOMICS REQUIRES A MINIMUM OF 12 APPROVED CREDITS IN HOME ECONOMICS.

MILITARY SCIENCE DEPARTMENT

LT. COL. EDMUND J. KENNEDY, III — DEPARTMENT HEAD

The mission of the Reserve Officers Training Corps is to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in the United States Army; to give students such basic military training as will be of benefit to themselves and to the military service; and to assist in qualifying students for positions of leadership in industries and professional careers.

The program of instruction prescribed by the Department of the Army for Senior Division ROTC is divided into the basic course for freshmen and sophomores and the advanced course for juniors and seniors.

Basic Course — All regularly enrolled, physically fit male students, without previous military training, who are citizens of the United States and are between the ages of 14 and 23 are eligible to take the Basic Course ROTC.

Advanced Course — Those students who successfully complete the basic course may apply for enrollment in the advanced course. Candidates must be physically qualified, recommended by the PMS and approved by the university president. Veterans may be allowed credit for prior active federal service in lieu of the basic course for the purpose of admission into the advanced course.

A contract, signed by the students who enroll in the advanced ROTC courses, makes satisfactory completion of these courses a prerequisite for graduation.

Flight Training — Department of the Army sponsors an Army Flight Training Program for senior ROTC cadets at the University of Alaska. This training program consists of 73 hours of instruction at a civilian flying school in the Fairbanks area. Successful completion of the course qualifies the student for a private pilot's license. Prerequisites: completion of the junior year of ROTC and approval of the PMS and academic vice-president. Applicants must also pass the Army Flight Training physical examination and aptitude test.

Necessary texts, flying clothes, cost of lessons and transportation are furnished by the Department of the Army.

Uniforms and Equipment — Members of the basic and advanced course are furnished uniforms and texts by the United States Army.

Regulation gymnasium shoes, available through the University Book Store, are required to be worn during Leadership Laboratory (drill). These shoes must be purchased by the individual student.

Allowance — Advanced course students receive a subsistence payment that amounts to approximately $1,000.00 for the two-year period.

Academic Minor — Eighteen credits in military science may be accepted by an academic advisor as fulfilling the graduation requirements for a minor.

Awards — Awards are made annually for outstanding achievement in ROTC band, drill team, rifle team, ski team; for the best individual, squad, and platoon in drill; to the outstanding cadet in each class.

ROTC Rifle Team — The ROTC rifle team competes in shoulder matches with both civilian and military teams in the state. Each year the team fires in Inter-collegiate Match in competition with west coast schools. Postal matches are fired against university and college teams throughout the United States. The finest target rifles, shooting coats and gloves, targets, and ammunition are available to all ROTC cadets at no cost. Varsity letters are awarded.

ROTC Band and Drill Team — The ROTC band and drill team participate in the Annual Winter Carnival in Fairbanks, at formations of the ROTC Cadet Corps, and at functions on campus.

Transfer Students — Transfer students with less than sophomore standing are eligible to enroll in military science. Transfer students and others who have not

completed the basic course may apply for enrollment in the two-year program. In order to qualify for this program, students attend a basic camp prior to their junior year.

Deferment from Draft — Students, upon successful completion of the first semester basic course, and continued enrollment in ROTC, may be deferred from induction under the provisions of the Universal Military Training and Service Act.

PSYCHOLOGY AND SOCIOLOGY DEPARTMENT

SARKIS ATAMIAN — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE, MASTER OF SCIENCE IN COUNSELING PSYCHOLOGY

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
B.S. — 130 CREDITS
M.S. IN COUNSELING PSYCHOLOGY
— 36 ADDITIONAL 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.

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.

Sociology option: a concentration in social services is offered which 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.

REQUIREMENTS FOR B.A. DEGREE OR B.S. DEGREE WITH A PSYCHOLOGY MAJOR

1. Complete General requirements for a B.A. or B.S. degree as listed on page 30-31.
2. Complete 32 credits in Psychology beyond Psy. 101 and 201, including:

   Psy. 201 — Advanced General Psychology 3
   Psy. 251 — Introductory Statistics for Behavioral Sciences (Soc) ...3
   Psy. 261 — Introduction to Experimental Psychology 3
   Psy. 301 — History and Systems of Psychology 3
   Psy. 492 — Seminar in Human Behavior (Soc.) 2

3. And six credits from the following courses:

   Psy. 362 — — Intermediate Experimental Psychology 3
   Psy. 373 — Psychological Testing 3
   Psy. 465 — Comparative and Physiological Psychology 3
   Psy. 473 — Social Science Research Methods (Soc.) 3

4. And six credits from the following courses:

   Psy. 406 — Theories of Personality 3
   Psy. 407 — Motivation 3
   Psy. 464 — Learning 3
   Psy. 466 — Perception 3

5. And six credits from the following courses:

   Psy. 302 — Social Psychology (Soc.) 3
   Psy. 351 — Child Development (H.E.) 5
   Psy. 352 — Adolescence (Soc.) 3
   Psy. 433 — Clinical Psychology 3

6. And in consultation with advisor, it is recommended that one course each be chosen from Anthropology, Philosophy, and Sociology.

A MINOR IN PSYCHOLOGY REQUIRES 15 APPROVED CREDITS IN PSYCHOLOGY BEYOND PSY. 101 and 201.

REQUIREMENTS FOR B.A. DEGREE OR B.S. DEGREE WITH A SOCIOLOGY MAJOR

1. Complete general requirements for a B.A. or B.S. degree as listed on page 30-31.
2. Complete 32 credits in Sociology beyond Soc. 101-102, including:
   Soc. 205 — Group Processes in Modern Society 3
   Soc. 257 — Introductory Statistics for Behavioral Sciences (Psy.) .. 3
   Soc. 302 — Social Psychology (Psy.) 3
   Soc. 309 — Urban Sociology 3
   Soc. 402 — Theories of Sociology 3
   Soc. 473 — Social Science Research Methods (Psy.) 3
   Soc. 492 — Seminar in Human Behavior (Psy.) 2
3. And 12 credits of Sociology electives.
4. And in consultation with advisor it is recommended that one course each be chosen from Anthropology, Philosophy, and Psychology.

A MINOR IN SOCIOLOGY REQUIRES 15 APPROVED CREDITS IN SOCIOLOGY BEYOND SOC. 101-102.

SOCIOLOGY OPTION

REQUIREMENTS FOR A SOCIOLOGY MAJOR B.A. or B.S. DEGREE WITH A CONCENTRATION IN SOCIAL SERVICES

1. Complete general requirements for a B.A. or B.S. degree as listed on page 30-31.
2. Complete 32 credits beyond Soc. 101-102 and Psy. 101 and 201. Required in the 32 credits are:

   Soc. 201 — Social Problems 3
   Soc. 251 — Introductory Statistics for Behavioral Sciences (Psy.) .. 3
   Soc. 333 — Social Welfare as a Social Institution 3
   Soc. 336 — Social Work Methods 3
   Soc. 383 — Field Observation 2-3
   Soc. 492 — Seminar in Human Behavior (Psy.) 2

3. And 12 credits from the following courses:

   Soc. 242 — The Family 3
   Soc. 302 — Social Psychology (Psy.) 3
   Soc. 304 — Culture and Personality 3
   Soc. 309 — Urban Sociology 3
   Soc. 343 — Sociology of Deviant Behavior 3
   Soc. 408 — Ethnic Minorities 3

4. And 3-5 credits from the following courses:

   Psy.338 — Abnormal Psychology 3

Psy. 351 — Child Development (H.E.) 5
Psy. 352 — Adolescence (Soc.) 3
Psy. 433 — Clinical Psychology 3

5. And in consultation with advisor it is recommended that one course each be chosen from Anthropology, Philosophy, and Psychology.

REQUIREMENTS FOR AN M.S. DEGREE IN COUNSELING PSYCHOLOGY

This curriculum is designed for counselors who are engaged in counseling within an agency setting. It includes the theory, personality dynamics, resources, methods and understanding of community organizations and services, and practicum training used to counsel effectively. Thirty-six hours of course work are required.

An applicant must have an accredited degree within the behavioral sciences. His undergraduate record should be above average and indicate an intellectual capacity, seriousness, maturity and other factors favorable to success in counseling.

Typical Courses:

Psy. 623 — Individual Counseling .....3 Credits
Psy. 624 — Group Counseling 3
Psy. 628 — Analysis of the Individual 3
Psy. 629 — Individual Tests of Intelligence 3
Psy. 630 — Laboratory in Individual Tests of Intelligence 3
Psy. 632 — Occupational Information 3
Psy. 634 — Counseling Practicum 3
Psy. 697 — Thesis 6

Up to 15 hours of undergraduate courses may be taken with committee approval, such as:

Psy. 331 — Industrial Psychology 3
Psy. 338 — Abnormal Psychology 3
Psy. 373 — Psychological Testing 3
Psy. 406 — Theories of Personality 3
Psy. 464 — Learning 3
Psy. 473 — Social Science Research Methods 3
Psy. 492 — Seminar in Human Behavior 2

In order to fulfill the degree requirements, 36 hours of course work and an investigative paper must be approved by the student's committee. Students with teaching experience may register for core courses in education and work toward a M.Ed. degree.

Completion of the general requirements for a graduate degree as listed on page 33.

College of Biological Sciences and Renewable Resources

BRINA KESSEL – DEAN

Biology is an area of science in which many disciplines come to bear; in fact, biology is in large part the summation of these various disciplines. A thorough knowledge of biology, in both its pure and applied phases, is fundamental to the welfare of mankind. With these axioms in mind, the programs in the College of Biological Sciences and Renewable Resources are designed to give students an introduction to the humanities and social sciences, a background in mathematics and the physical sciences, a firm foundation in basic biological sciences, and advanced training in specialized fields. For more details, students should read descriptive materials in the department sections below — Biological Sciences Department, Land Resources and Agricultural Science Department, and Wildlife Management Department.

Undergraduate Degrees — Bachelor of Arts in Biological Sciences; Bachelor of Science in Biological Sciences, Fisheries Biology, Medical Technology, Wildlife Management.

Graduate Degrees — Master of Science in Botany, Biology, Fisheries Biology, Wildlife Management, Zoology; Master of Arts in Teaching.

BIOLOGICAL SCIENCES DEPARTMENT

L. GERARD SWARTZ — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE, MASTER OF SCIENCE, MASTER OF ARTS IN TEACHING

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
B.S. — 130 CREDITS
M.S. — 30 ADDITIONAL CREDITS
M.A.T. — 30 ADDITIONAL CREDITS

The curricula in the Biological Sciences Department 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. A major in medical technology also is available for B.S. degree candidates. 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 greater 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 Department. Candidates who expect to teach in public secondary schools must be sure that education requirements are met.

REQUIREMENTS FOR B.A. DEGREE WITH A MAJOR IN BIOLOGICAL SCIENCES

1. Complete the general requirements for a B.A. degree as listed on page 30.

2. Complete the following courses:

   Biol. 105-210-302-303 and at least 16 additional credits in biology, a majority of which should be at the upper division level.*

   Chemistry — one year
   Mathematics — one year

A MINOR IN BIOLOGY SCIENCES REQUIRES 14 CREDITS OF BIOLOGY.

REQUIREMENTS FOR B.S. DEGREE WITH A MAJOR IN BIOLOGICAL SCIENCES

1. Complete the general requirements for a B.S. degree as listed on page 31.

2. Complete the following courses:

   Biol. 105-210-302-303 and at least 21 additional credits in biology, a majority of which should be at the upper division level.*
   Mathematics — one year**
   Chem. 101-102
   Phys. 103-104
   Organic Chemistry — one semester
   Foreign language or introductory linguistics — one year***

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN MEDICAL TECHNOLOGY

To receive a Bachelor of Science degree in Medical Technology, a student must have six semesters of collegiate training at an accredited college or university, three of which must be at the University of Alaska with a G.P.A. of at least 2.00 and he must fulfill all requirements of the university for the Bachelor of Science degree, plus the basic requirements as set forth by the Registry of Medical Technologists. The student then becomes a candidate to enter an affiliated school of medical technology, and, if accepted, registers for Biol. 401 at the University of Alaska and spends a 12-month internship, at the affiliated school. The university is affiliated with three ASCP-approved, non-denominational schools of medical technology — St. Luke's Hospital School of Medical Technology, Spokane, Washington; Tacoma General Hospital School of Medical Technology, Tacoma, Washington; and The Swedish Hospital School of Medical Technology, Seattle, Washington. Upon the satisfactory completion of Biol. 401 and the other above-mentioned university requirements, the student

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*Students preparing to enter professional schools (medical, dental, veterinary, etc.) may substitute up to eight credits in the B.A. program or 12 credits in the B.S. program of approved chemistry courses for some of these additional credits.

**Suitable mathematics sequences include Math. 121-122, Math. 107-108-109, Math. 106-200.

***Linguistics allowed only when students have had at least the equivalent of two years of high school foreign language. Students having three or four years of a language in high school may, with advisor's approval, fulfill this requirement in the humanities area.

is eligible to receive a Bachelor of Science degree from the University of Alaska. He also is eligible to take the registry examination as a medical technologist under standards set by the Board of Registry of the American Society of Clinical Pathologists. Upon registration, the graduate is privileged to add the initials M.T. (ASCP) after his name.

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	15 or 15½ Credits		15 or 15½ Credits
Biol. 105 — Fund. of Biology	.4	Biol. 106 — Fund. of Biology	.4
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Chem. 101 - General Chem.	.4	Chem. 102 — General Chem.	.4
P.E. 100 or Mil Sci.	.1 or 1½	P.E. 100 or Mil. Sci.	.1 or 1½
Mathematics	.3	Mathematics	.3
SECOND YEAR	17 or 18½		16 or 17½ Credits
Biol. 201 — Elem. Vert. Anatomy	.3	Biol. 210 — General Physiology	4
or		Biol. 302 — Genetics	.3
Biol. 217 — Comp. Anat. Verts.	.4	P.E. 100 or Mil. Sci.	.1 or 1½
Eng. 213 — Adv. Exposition	.3	Eng. Elective	.3
P.E. 100 or Mil. Sci.	.1 or 1½	Soc. Sci. Elective	.3
* Approved Chem. Elective	.4	General Elective	.2 or 3
* Soc. Sci. Elective	.3		
THIRD YEAR	17 Credits		17 Credits
Biol. 341 — Gen. Microbiology	.4	Biol. 342 — Gen. Microbiology	.4
Chem. 212 — Quant. Anal.	.4	Phys. 104 — College Physics	.4
Phys. 102 — College Physics	.4	Biol. Elective	.4
** Foreign Language 101	.5	**Foreign Language 102	.5
FOURTH YEAR	33 or 36 Credits		
Biol. 401 — Medical Technology	.30		
Soc. Sci. Elective	.3		
General Elective	0-3		

* Organic Chemistry recommended.

** Students with two years of an approved foreign language in high school may have this requirement waived.

PREPARATORY CURRICULUM — MEDICINE, DENTISTRY, NURSING, VETERINARY MEDICINE

Students planning to become medical doctors, dentists, nurses, or veterinarians may enroll in the Biological Sciences Department. Most of the professional schools in these fields require one to three to four years of collegiate work before a student will be admitted. These years of preliminary academic work are offered by the Biological Sciences Department, where the student will follow a sequence of courses planned to meet the requirements of the particular professional field in which he is interested.

Most pre-medical students plan on four preliminary years. Usually these students follow a curriculum leading to a Bachelor of Arts degree with a major in biological sciences and/or chemistry or 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. Pre-medical students who are accepted in medical school prior to finishing their bachelor's requirements and who have earned at least 100 hours of pre-professional work with a G.P.A. of 3.00 or better, may, upon the completion of certain course requirements, and upon the satisfactory completion of a year of medical school, petition to receive a bachelor's degree from the University of Alaska.

Pre-nursing students register as non-majors in the College of Biological Sciences and Renewable Resources. Course work is selected to meet the specific needs of individual students. In general, high school students interested in nursing should apply directly to an institution offering a full curriculum in nursing; those wishing to attend the University of Alaska should plan to transfer to an institution with a nursing program after one year.

STUDENTS FROM OTHER DEPARTMENTS

Students who wish a minor in the Department of Biological Sciences must have courses approved in advance by the head of the Department of Biological Sciences.

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 for B.A. degree major on page 30.

REQUIREMENTS FOR M.S. DEGREE WITH A BOTANY, BIOLOGY OR ZOOLOGY MAJOR

1. A minimum of 30 credits of approved courses, including Biol. 697-698, Thesis .

2. Demonstrated competence in one of the following: Statistics, Computer programming, or the reading of French, German, or Russian.

3. Completion of the general requirements for a graduate degree as listed on page 33. For course description, see page 155.

REQUIREMENTS FOR M.A.T DEGREE

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

LAND RESOURCES AND AGRICULTURAL SCIENCE DEPARTMENT

DWANE J. SYKES — DEPARTMENT HEAD

The undergraduate curriculum for the first two years is designed to provide the basic science foundation on which advanced courses are based. The curriculum is intended for students who expect to prepare for careers in wildland utilization (watershed management, forest resources, range management, recreation, conservation, etc.) and in agriculture.

Opportunities for summer employment are available through various state and federal agencies and through the university's Alaska Agricultural Experiment Station.

CURRICULUM

FALL SEMESTER		SPRING SEMESTER	
First Year	16 or 16½ Credits		16 or 16½ Credits
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Biol. 105 — Fund. of Biology	.4	Biol. 106 — Fund. of Biology	.4
Chem. 101 — General Chem.	.4	Chem. 102 — General Chem.	.4
P.E. 100 or Mil. Sci.	.1 or 1½	P.E. 100 or Mil. Sci.	.1 or 1½
Mathematics	.4	Mathematics	.4
Second Year	17 or 17½ Credits		16 or 17½ Credits
Phys. 103 — College Physics	.4	Phys. 104 — College Physics	.4
Geol. 101 — Gen. Geology	.4	P.E. 100 or Mil. Sci.	.1 or 1½
Econ. 121 — Princ. of Econ.	.3	Approved Biology Elective	.4 or 3
Engl. 213 — Adv. Comp.	.3	Engl. Elective	.3
P.E. 100 or Mil. Sci.	.1 or 1½	Soc. Sci. Elective	.3
Elective	.2	Elective	.2

GRADUATE STUDY IN LAND RESOURCES

A program of graduate study in land resources is available through the university's interdisciplinary graduate program. Areas include forestry, watershed, soils, water relations, and other aspects of natural resources sciences. Students interested in graduate work should write to the head, Department of Land Resources and Agricultural Science.

WILDLIFE MANAGEMENT DEPARTMENT

FREDERICK C. DEAN — DEPARTMENT HEAD

DEGREES — BACHELOR OF SCIENCE, MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES:

B.S. — 135 CREDITS

M.S. — 30 ADDITIONAL CREDITS

Both the wildlife management and fisheries biology curricula in the undergraduate program in the Department of Wildlife Management are 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 wildlife work. Students contemplating careers in research, administration, advanced management work, or teaching will find the bachelor's curricula solid foundations 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 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.

Wildlife plays an extremely important part in the economy and recreation of Alaskans; because of this, some courses in the department will be of interest to non-major students.

REQUIREMENTS AND CURRICULA FOR B.S. DEGREE WITH MAJORS IN WILDLIFE MANAGEMENT AND FISHERIES BIOLOGY

FALL SEMESTER

First Year — 16 or 16½ Credits

Biol. 105 — Fund. of Biology 4
Chem. 101 — General Chem. 4
Engl. 101 — Comp. & Modes of Lit. .3
Math. 121 — Intro. Algebra & Anal. .4
P.E. 100 or Mil. Sci. .....1 or 1½

Second Year — 16 or 16½ Credits

Biol. 217 — Comp. Anatomy of Vert.4
Biol. 303 — Ecology 3
Chem. 223 — Intro. Organic Chem. . .4
(Fisheries Major)
or
Geol. 101 — General Geology 4
(Wildlife Major)
Phys. 103 — College Physics 4
P.E. 100 or Mil. Sci. .....1 or 1½

SPRING SEMESTER

16 or 16½ Credits

*Biol. 210 — General Physiology 4
Chem. 102 — General Chem. 4
Engl. 102 — Comp. & Modes of Lit. .3
Math. 122 — Intro. Algebra & Anal. .4
P.E. 100 or Mil. Sci. .....1 or 1½

14 or 14½ Credits

Biol. 239 — Plant Form & Function .4
Land. Res. 101 — Cons. Natural Res. 2
Math 204 — Elem. Statistics 3
Phys. 104 — College Physics 4
P.E. 100 or Mil. Sci. .....1 or 1½

MAJOR IN FISHERIES BIOLOGY

Third Year — 14 + Credits***

Biol. 203 — Invertebrate Zool. 4
Biol. 309 — Biol. of the Vert. 4
W.M. 325 — Scientific Sampling 3
** Foreign Language 201 3

9+ Credits***

Biol. 302 — Genetics 3
Engl. 213 — Adv. Comp. 3
** Foreign Language 202 3

Fourth Year — 15 + Credits***

Econ. 121 — Princ. of Econ. 3
W.M. 331 — Wildlife Mgmt. Princ. ...4
W.M. 333 — Lit. Ecology 1
Geol. 411 — General Oceanography .3
or
W.M. 423 — Limnology 3
W.M. 429 — Gen. Fisheries Biol. 3
W.M. 491 — Seminar 1
or
W.M. 493 — Special Topics 1

10+ Credits***

Biol 414 — Comp. Physiology 4
Engl. 314 — Research Writing 3
W.M. 430 — Fisheries & Their Mgmt. 3

MAJOR IN WILDLIFE MANAGEMENT

Third Year — 14+ Credits***

Biol. 309 — Biol. of the Vert. 4
Biol. 331 — Systematic Botany 4
W.M. 325 — Scientific Sampling 3
** Foreign Language 201 3

16 or 17+ Credits***

Biol. 310 — Biol. of the Vert. 4
Land Res. 311 — Soils
or
Elective .....3 or 4
C.E. 116 — Mapping 3
Engl. 213 — Adv. Comp. 3
** Foreign Language 202 3

Fourth Year	14+ Credits***	11+ Credits***
Econ. 121 — Princ. of Economics	.3	Biol. 414 — Comp. Physiology	.4
W.M. 331 — Wildlife Mgmt. Princ.	.4	Engl. 314 — Research Writing	.3
W.M. 333 — Lit. of Ecology	.1	W.M. 492 — Seminar	.1
W.M. 423 — Limnology	.3	or	
or		W.M. 494 — Special Topics	.1
Geol. 411 — General Oceanography	.3	Land Res. 311 — Soils	
W.M. 429 — General Fisheries Biol.	.3	or	
		Elective	.3

* Note prerequisite.

** A proficiency equivalent to two college years of French, German, or Russian is required for graduation. Students with two to four years of one of these languages in high school may enter the third or fourth semester of the language or have the requirement waived, whichever is appropriate. Students entering this department are expected to have two high school years of one of these languages; students lacking this preparation must take ten credits of first year language in college, thereby reducing their college electives.

*** Sufficient elective credits to satisfy the minimum requirement of 135 credits are needed; six of these must be from courses which will satisfy the university's social science requirement. All electives must be approved by the head of the Department of Wildlife Management.

A minimum of two months must be spent in the employ of an approved conservation agency before a student will be eligible for a bachelor's degree. Two type-written copies of a report on the work done and the experience gained during this time must be approved by the head of the department.

Demonstration of proficiency in swimming is required for graduation.

REQUIREMENTS FOR M.S. DEGREE WITH A MAJOR IN WILDLIFE MANAGEMENT OR FISHERIES BIOLOGY

1. A minimum of 30 credits of approved courses, including W.M. 697-698, Thesis, in the field of Fisheries Biology or Wildlife Management.
2. Complete general requirements for a graduate degree as listed on page 33. For course descriptions, see page 265.
3. Students working in subject areas involving significant non-English literature will be expected to read the appropriate foreign language.

GRADUATE STUDY IN WILDLIFE MANAGEMENT

The Department of Wildlife Management and the Alaska Cooperative Wildlife Research Unit cooperate in offering graduate work leading to the Master of Science degree. Thesis work can be done in either Fisheries Biology or Wildlife Management. Persons desiring detailed information on the graduate program in Wildlife Management may obtain this from the head, Department of Wildlife Management. The procedure to be followed in applying for admission to graduate study is outlined in the section on Admission to Graduate Study 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, College, Alaska. Applications for these assistantships should be sent to the unit leader; such applications are supplementary to the application for admission for graduate study.

College of Business, Economics, and Government

R. LONDON SMITH – DEAN

The primary objective of the college is to provide courses of study which will prepare young men and women for careers of responsibility in private and public organizations and which will acquaint them with the kind of society in which they will live and work when they leave the university.

Specifically, the aims of the college are: (1) to educate students for positions in industry, government, and other organization which require analytical and decision-making ability; (2) to provide those who wish to prepare themselves for positions of responsibility in industry and government with the basic understanding of the economic, political, and social environment; (3) to offer courses in the fields of business, economics, history and political science which meet the needs of the students who wish to major in any of these disciplines with the intention of preparing themselves for advanced study or entering the teaching profession; (4) to acquaint the students with the problems and opportunities of economic, political and social development in Alaska and the northern region of which it is a part; and (5) to instruct students in social science research techniques.

Undergraduate Degrees — The college grants the following undergraduate degrees: Bachelor of Business Administration, Associate in Office Administration, Associate in Police Administration, and Bachelor of Arts.

Graduate Degree — Programs leading to the Master of Business Administration degree, M.A.T. in History, and the Master of Arts degree are offered to qualified students.

ACCOUNTING DEPARTMENT

JAMES W. BARGER — DEPARTMENT HEAD

DEGREE — BACHELOR OF BUSINESS ADMINISTRATION WITH A MAJOR IN ACCOUNTING

MINIMUM REQUIREMENTS FOR DEGREE: 130 CREDITS

The Accounting Department offers an extensive program for those interested in the fields of general accounting, auditing, cost accounting, and taxation. The objective of the program is to provide a strong business background through an understanding of accounting and to train students for employment in accounting work.

REQUIREMENTS FOR B.B.A. DEGREE WITH A MAJOR IN ACCOUNTING

1. Complete requirements for a B.B.A. degree listed on page 31.
2. Complete the following required Business Administration courses:

	Credits
B.A. 325 — Financial Management	3
B.A. 331-332 — Business Law	6
B.A. 343 — Marketing	3
B.A. 360 — Production Management	3
B.A. 361 — Industrial Relations	3
B.A. 371 — Business Data Processing	3
B.A. 424 — Managerial Economics	3

If the sum of all credits in accounting, business, and advanced economics is more than 78, then more than 130 total credits will be required for the degree.

3. Complete the following required Accounting courses:

	Credits
Acc. 101+102, or 201 — Elementary Accounting	5-6
Acc. 210 — Income Tax	3
Acc. 252,351 — Cost Accounting	6
Acc. 301 — Intermediate Accounting	5
Acc. 302 — Advanced Accounting	5
Acc. 452 — Auditing	3

If total accounting credits exceed 33, then more than 130 credits will be required for the degree.

REQUIREMENTS FOR A MINOR IN ACCOUNTING

Acc. 101-102 — Elementary Accounting	6
Acc. 210 — Income Tax	3
Acc. 252,351 — Cost Accounting	6
Acc. 315 — Analysis of Financial Statements	3

BUSINESS ADMINISTRATION DEPARTMENT

THOMAS SCHAEFER — ACTING DEPARTMENT HEAD

DEGREES — BACHELOR OF BUSINESS ADMINISTRATION, MASTER OF BUSINESS ADMINISTRATION

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, and marketing 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.

REQUIREMENTS FOR A BACHELOR OF BUSINESS ADMINISTRATION DEGREE

1. Complete general requirements for a B.B.A. degree listed on page 31.
2. Complete the following foundation courses:

Acc. 101 + 102, or 201 — Elementary Accounting	5-6
B.A. 331-332 — Business Law	6
B.A. 325 — Financial Management	3
B.A. 343 — Marketing	3
B.A. 360 — Production Management	3
B.A. 371 — Business Data Processing	3
B.A. 372 — Business Simulation	3
B.A. 462 — Administrative Policy	3

3. A student must take a minimum of 12 hours of the courses listed below including all of the courses in one of the three groups.

Management

B.A. 359 — Regulation of Industry	3
B.A. 361 — Industrial Relations	3

B.A. 424 — Managerial Economics 3
B.A. 480 — Organization Theory 3

Marketing

B.A. 359 — Regulation of Industry 3
B.A. 442 — Marketing Institutions and Channels 3
B.A. 443 — Marketing Theory and Analysis of Market Change .3

Finance

B.A. 423 — Investment Management 3
B.A. 425 — Advanced Corporate Financial Problems 3
Acc. 315 — Analysis of Financial Statements 3
Econ. 351 — Public Finance and Taxation 3

A MINOR IN BUSINESS ADMINISTRATION REQUIRES 15 CREDITS OF BUSINESS ADMINISTRATION ELECTIVES.

REQUIREMENTS FOR THE MASTER OF BUSINESS ADMINISTRATION DEGREE

1. Completion of the general requirements for a graduate degree listed on page 33 of the catalog. (Note that no foreign language requirement is involved in the Master of Business Administration degree.)
2. Completion of a minimum of 30 semester hours of required courses in business administration and economics, including a thesis or research project, as approved by the candidate's graduate committee. No more than nine semester hours of 300 or 400 level courses may be counted toward the MBA degree.
3. Completion of a thesis or research project, which normally will carry no more than six semester hours of credit. Under unusual conditions and upon petition, thesis credit may be granted beyond the traditional six. Thesis credit and research project credit apply toward the 30 required hours. (Decisions on thesis or research project are the sole prerogative of the candidate's supervisory committee.)
4. A minimum terminal grade point average of 3.00.
5. A minimum grade for a comprehensive written examination given during the last semester of course work to test achievement and knowledge in the general area of business.
6. Passage of an oral examination, after the thesis or research project has been approved, covering the student's field of specialization and thesis or research project content.

ECONOMICS DEPARTMENT

WILLIAM H. DINKINS — ACTING DEPARTMENT HEAD

DEGREE — BACHELOR OF ARTS

MINIMUM REQUIREMENTS FOR DEGREE: 130 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 of its relations with other economic systems is therefore essential to an understanding of the world in which we live.

The department considers its goal of teaching 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; (3) to offer a course of study suitable for a minor in economics.

REQUIREMENTS FOR B.A. DEGREE WITH AN ECONOMICS MAJOR

1. Complete general requirements for a B.A. degree listed on page 30.
2. Complete the following additional foundation courses:
   - Econ. 121-122 — Principles of Economics 6
   - Behavioral Sciences: Psychology, Sociology, Anthropology 9
   - History 6
   - Math. 121-122 — Intro. to Modern Algebra and Analysis 8
     or
   - Math. 106 — College Algebra and Trigonometry 5
     and
   - Math. 200 — Calculus 4
   - P.S. 101-102 — American Government 6
3. Complete 30 additional credits in Economics, including:
   - Econ. 221 — Interpretation of Business and Economic Data 3
   - Econ. 232 — Economic History of the U.S. 3
   - Econ. 321 — Price and Allocation Theory 3
   - Econ. 324 — Income and Employment 3
   - Econ. 350 — Monetary Economics 3
   - Econ. 493 or 494 — Special Topics 3
   - Electives in Economics 12
     (Six hours of the following business administration courses may be included: B.A. 325, 343, 359, 371, 372, 424, and 480.)

A MINOR IN ECONOMICS REQUIRES 15 CREDITS IN ECONOMICS.

HISTORY DEPARTMENT

HERMAN E. SLOTNICK — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, MASTER OF ARTS, MASTER OF ARTS IN TEACHING

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
M.A. — 30 ADDITIONAL CREDITS
M.A.T. — 30 ADDITIONAL CREDITS

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

Through the study of history, a student may prepare himself for a career in teaching, in the public service, or for advanced work in history and other social sciences.

REQUIREMENTS FOR B.A. DEGREE WITH A HISTORY MAJOR

1. Complete general requirements for a B.A. degree listed on page 30.
2. Complete the following foundation courses:
   Econ. 121 — Principles of Economics 3
   Hist. 101-102 — Western Civilization 6
   Hist. 131-132 — History of the U.S. 6
   P.S. 101 — American Government 3
   P.S. 102 — Introduction to Political Science 3
3. Complete 20 credits in History, including:
   Hist. 475 — Introduction to Historical Method 3
   Approved Upper Division Amer. Hist. Electives 6
   Approved Upper Division European Hist. Elect. 6

A MINOR IN HISTORY REQUIRES 12 CREDITS OF HISTORY ELECTIVES BEYOND HIST. 101 and 102, SIX OF WHICH MUST BE UPPER DIVISION.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE IN HISTORY

1. Completion of the general requirements for a graduate degree as listed on page 33.
2. Completion of a minimum of 30 semester hours of courses in history and other fields as determined by the candidate's graduate committee. The courses must include Hist. 601, Historiography, Hist. 691, Seminar in European History, and Hist. 692, Seminar in American History.
3. Completion of a satisfactory thesis for which six credit hours may be granted.
4. Successful completion of comprehensive examinations in two fields of history as determined by the candidate's graduate committee.
5. Passage of an oral examination on the thesis and general field of history.

REQUIREMENTS FOR M.A.T. DEGREE

Refer to general requirements for M.A.T. degree on page 95. Persons interested in this degree program should check with the head of the department.

OFFICE ADMINISTRATION DEPARTMENT

MELBA F. PELOSI — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS WITH A MAJOR IN OFFICE ADMINISTRATION OR BUSINESS EDUCATION, ASSOCIATE IN OFFICE ADMINISTRATION, CERTIFICATE IN SECRETARIAL SERVICE

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
A.O.A. — 60 CREDITS
CERTIFICATE — 30 CREDITS

This department offers four courses of study in order to meet the different needs of those who plan to specialize in the field of office operations. (1) an extensive four-year program leading to the degree of Bachelor of Arts with a major in office administration. The objective of the curriculum is to provide the students with the knowledge, skills, and abilities required of the efficient office administrator or executive secretary. (2) a four-year course leading to the degree

of Bachelor of Arts with a major in business education. The objective of the curriculum is to prepare young men and women for the teaching of business subjects in the secondary schools. (3) an intensive two-year program in office administration leading to an Associate in Office Administration degree with a major in office administration. (4) a one-year certificate issued after completion of 30 credits with emphasis placed on typewriting, machine transcription, filing, and the English language.

REQUIREMENTS FOR B.A. DEGREE WITH A MAJOR IN OFFICE ADMINISTRATION OR BUSINESS EDUCATION

1. Complete the requirements for the B.A. degree listed on page 30.
2. Complete the following required courses:
   - Acc. 101+102, or 201 — Elementary Accounting 5-6
   - O.A. 101-102 — Shorthand or approved electives 6
   - O.A. 105 — Intermediate Typewriting 2
   - O.A. 106 — Advanced Typewriting 2
   - O.A. 201 — Intermediate Stenography 3
   - O.A. 202 — Advanced Stenography 3
   - O.A. 203 — Office Machines 3
   - O.A. 208 — Secretarial Skills 3
   - O.A. 231 — Business Correspondence 3
   - O.A. 302 — Secretarial Training 3
3. Social Science must include:
   - Econ. 121-122 — Principles of Economics 6
   - B.A. 331 — Business Law 3
4. Approved Upper Division Electives 8
5. The following minor in education is required for Business Education majors:
   - Psy. 101 — General Psychology 3
   - Psy. 352 — Psychology of Adolescence 3
   - Ed. 313 — Educational Psychology 3
   - Ed. 332 — Tests and Measurements 3
   - Ed. 408 — Methods of Teaching B. Ed. Subjects 3
   - Ed. 421 — Secondary Education 3
   - Ed. 452 — Directed Teaching 6

REQUIREMENTS FOR A.O.A. DEGREE

1. Complete the following general requirements:
   - Acc. 101+102, or 201 — Elementary Accounting 5-6
   - Econ. 121 — Principles of Economics I 3
   - Econ. 122 — Principles of Economics II 3
   - or
   - P.S. 101 — Intro. to Amer. Government 3
   - Engl. 101-102 — Composition and Modes of Literature 6
   - Math. 110 — Math of Finance 3
   - Sp. 111 — Public Speaking I 3
   - Soc. 101 — Intro. to Sociology 3
   - or
   - Psy. 101 — Intro. to Psychology 3
2. Complete the following required courses in Office Administration:
   - O.A. 101-102 — Shorthand (or approved electives) 6
   - O.A. 105 — Intermediate Typewriting 2
   - O.A. 106 — Advanced Typewriting 2
   - O.A. 201 — Intermediate Stenography 3
   - O.A. 202 — Advanced Stenography 3

O.A. 203 — Office Machines 3
O.A. 208 — Specialized Secretarial Skills 3
O.A. 231 — Business Correspondence 3
Approved Electives 9

REQUIREMENTS FOR ONE-YEAR CERTIFICATE IN SECRETARIAL SERVICE

1st Semester

Engl. 67 — Elementary Exposition 3
Sp. 68 — Basic Speech Comm. Skills 2
O.A. 105 — Intermediate Typewriting 2
O.A. 61 — Clerical Skills 3
O.A. 65 — Machine Transcription 3
or
O.A. 102 — Shorthand 3
O.A. 63 — Adding and Calculating Machines 3

2nd Semester

Engl. 68 — Elementary Exposition 3
O.A. 106 — Advanced Typewriting 2
O.A. 66 — Machine Transcription 3
or
O.A. 201 — Shorthand 3
O.A. 99 — Office Practice 6

POLITICAL SCIENCE DEPARTMENT

RONALD E. CHINN — DEPARTMENT HEAD

DEGREES — ASSOCIATE OF ARTS IN POLICE ADMINISTRATION, BACHELOR OF ARTS
***MASTER OF PUBLIC ADMINISTRATION**

MINIMUM REQUIREMENTS FOR BACHELOR DEGREE: 130 CREDITS

The study of political science is the study of man's efforts to create social organizations and processes compatible with his 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.

The student of political science may prepare for teaching or for advanced study in law and social science, or prepare himself for a career in public service.

REQUIREMENTS FOR B.A. DEGREE WITH A POLITICAL SCIENCE MAJOR

1. Complete the general requirements for a B.A. degree listed on page 30.
2. Complete the following foundation courses:

   Hist. 101-102 — Western Civilization 6
   Hist. 131-132 — History of the U.S. 6
   Econ. 121-122 — Principles of Economics 6
   Phil. 201 — Introduction to Philosophy 3

3. Complete the following required courses:

   Econ. 221 — Interpretation of Economics & Business Data ...3
   P.S. 101-102 — Intro. to Amer. Govt. & Pol. Sci. 6
   P.S. 201 — Comp. Politics: Methods of Political Analysis 3
   P.S. 202 — Comp. Politics: Contemp. Doctrines & Structures .3

*For further information write to the Director of Admissions and Registrar.

P.S. 321 — International Affairs 3
P.S. 322 — International Affairs: Case Studies 3
P.S. 401-402 — Political Behavior 6
P.S. 411-412 — Political Theory 6

A MINOR IN POLITICAL SCIENCE REQUIRES 15 HOURS OF CREDIT DISTRIBUTED AS FOLLOWS:

P.S. 101-102 — Intro. to American Government & Pol. Sci. . . .6
P.S. 201 or 202 — Comparative Politics: Political Analysis and Doctrines and Structures 3
P.S. 321 or 322 — International Affairs: Case Studies 3
or
P.S. 332 — International Law and Organization 3
P.S. 411 or 412 — Political Theory 3
or
P.S. 393 — Special Topics (American Political Thought) 3

POLICE ADMINISTRATION PROGRAM

REQUIREMENTS FOR THE ASSOCIATE OF ARTS DEGREE IN POLICE ADMINISTRATION

1. Social and Behavioral Sciences (21 credits)

Anth. 101 — The Study of Man 3
P.S. 101 — American Government 3
P.S. 102 — Introduction to Political Science 3
Soc. 101 — Introduction to Sociology 3
Soc. 201 — Social Problems 3
Psy. 101-201 — Introduction to Psychology 6

2. Humanities (eight credits)

Engl. 101-102 — Composition and Modes of Literature 6
or
Engl. 67-68 — Elementary Exposition 6
Sp. 111 — Public Speaking I 3

3. Mathematics or Natural Science (eight credits)

Math. 106 — College Algebra and Trigonometry 5
Math. 110 — Mathematics of Finance 3
or
Biol. 105-106 — Fundamentals of Biology 8
or
Chem. 101-102 — General Chemistry and Introductory Qualitative Analysis 8

4. Police Administration (27 credits)

P.A. 151 — Introduction to Criminology 3
P.A. 152 — Criminal Law 3
P.A. 153 - Criminal Evidence 3
P.A. 154 — Administration of Justice 3
P.A. 155 — Criminal Investigation 3
P.A. 156 — Patrol Procedures 3
P.A. 157 — Traffic Control 3
P.A. 158 — Juvenile Procedures 3
P.A. 159 — Organization, Management and Administration . . .3

College of Earth Sciences and Mineral Industry

EARL H. BEISTLINE – DEAN

The objectives of the College of Earth Sciences and Mineral Industry are: to prepare students for their places as contributive citizens; and for professional careers in disciplines such as geography, geology, and mineral industry. The college also seeks to carry on research and development work that will add to basic knowledge as well as assist in the discovery, recovery, and utilization of mineral resources, and to provide more generalized instruction to students on campus and to interested persons in various communities in Alaska.

Undergraduate Degrees — The college has programs that lead to an Associate in Mineral and Petroleum Technology; Bachelor of Science Degrees in geography, geology, geological engineering, and mining engineering. A Bachelor of Arts degree with majors in geography and geology may be earned.

Graduate Degrees — Programs leading to a Master of Science degree are offered in geology, mineral industry management, and mineral preparation engineering; a M.A.T. degree is offered in Geology.

The professional degree Mining Engineer (E.M.) may be earned by engineering graduates of the college.

The Geology Department offers the Ph.D. degree. Interdisciplinary research and study programs leading to the doctorate are available through cooperative arrangements between the department and the Geophysical and Marine Science Institutes.

Mineral Industry Research Laboratory — The 1963 Alaska State Legislature authorized the establishment of a mineral industry research program at the University of Alaska. The purpose of the laboratory is to conduct appropriate applied and basic research in various areas of the mineral industry that will aid in the further utilization of Alaska's mineral resources. Research is conducted in facilities of the college and coordinated with graduate student academic programs.

Earth Sciences and Mineral Industry Agency — Housed in the Brooks Memorial Mines Building with the College of Earth Sciences and Mineral Industry is the College Office of the Alaskan Geology Branch of the U.S. Geological Survey. This arrangement, leading to close association and cooperation and sharing of some facilities, tends to give the harmony and efficiency to the work of all for the benefit of the mineral industries of Alaska.

GEOGRAPHY DEPARTMENT

HERBERT H. RASCHE — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES: 130 CREDITS

The department offers undergraduate courses in geography and a major can be earned. 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 draws upon many related disciplines for needed information; in return it serves by presenting comprehensive, integrated descriptions and interpretations of the total characteristics of areas, economic units, or political entities. It thus serves as a bridge between the physical sciences and the social sciences. At the University of Alaska 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; (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 graduate study in geography, regional planning, and related disciplines. Students majoring in geography, after completing required fundamental courses, may elect such advanced work in this and other departments as will provide a concentration either in physical science or in social science.

REQUIREMENTS FOR B.A. DEGREE OR B.S. DEGREE WITH A GEOGRAPHY MAJOR

1. Complete general requirements for a B.A. or B.S. degree including minors, as listed on page 30-31.
2. Complete 20 credits in geography beyond Geog. 101, including:
   Geog. 105 — Elements of Physical Geography .....3 Credits
   Geog. 316 — Pleistocene Environment 3
   Geog. 327 — Cold Lands 3
   Geog. 401 — Weather and Climate 3
   Geog. 402 — Man and Nature 3
   Geog. 491 — Seminar 3
3. Complete the following or approved alternative courses:
   Land. Res. 101 — Conservation of Natural Resources 2
   Biol. 303 — Principles of Ecology 3
   Geol. 101 — General Geology 4
   Geol. 102 — Historical Geology 4
   Anth. 101 — The Study of Man 3
   Anth. 214 — Archaeology 4

A MINOR IN GEOGRAPHY REQUIRES 15 HOURS OF GEOGRAPHY COURSES.

GEOLOGY DEPARTMENT

ROBERT B. FORBES — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE, MASTER OF SCIENCE, MASTER OF ARTS IN TEACHING, DOCTOR OF PHILOSOPHY.

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. GEOLOGY MAJOR — 130 CREDITS

B.S. GEOLOGY — 130 CREDITS, PLUS 8 CREDITS SUMMER FIELD COURSE

M.S. GEOLOGY — 30 ADDITIONAL CREDITS, INCLUDING THESIS

M.A.T. — 30 ADDITIONAL CREDITS

B.S. GEOLOGICAL ENGINEERING — 135 CREDITS PLUS 8 CREDITS SUMMER FIELD COURSE

PH.D. (OPEN)

The bachelor degrees curricula in geology provides broad training in the earth sciences and essential course work in mathematics and the physical sciences. The geological engineering curriculum is designed to prepare the student for professional work in the earth sciences, involving engineering problems. Graduate programs are tailored to the special research and study interest of the student. In addition to courses listed under the Geology Department, students should check the courses in geophysics, listed under the Physics Department, and those in oceanography and marine geology, listed under Oceanography and Ocean Engineering (OCN).

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN GEOLOGY

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	17 or 17½ Credits		16 or 16½ Credits
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Math. 106 — Algebra & Trig.	.5	Math. 200 — Calculus	.4
Geol. 111 — Physical Geology	.4	Geol. 102 — Historical Geology	.4
Chem. 101 — General Chemistry	.4	Chem. 102 — General Chemistry	.4
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
SECOND YEAR	16 or 16½ Credits		17 or 17½ Credits
Geol. 213 — Mineralogy	.4	Geol. 214 — Optical Mineralogy	.3
Math. 201 — Calculus	.4	Math. 202 — Calculus	.4
Phys. 211 — General Physics	.4	Phys. 212 — General Physics	.4
P.E. or Mil. Sci	.1 or 1½	P.E. or Mil. Sci	.1 or 1½
Social Science Elective	.3	Elective	.2
		English Elective	.3
THIRD YEAR	17 Credits		15 Credits
Geol. 304 — Geomorphology	.3	Geol. 314 — Structural Geology	.3
Geol. 315 — Petrology	.5	Geol. 402 — Strat. Paleo	.4
Geol. 401 — Invertebrate Paleo	.4	Foreign Language	.5
Foreign Language	.5	Min. 202 — Mine Surveying	.3

SUMMER

Geol. 351 — Field Geology, eight credits, eight weeks.

FOURTH YEAR	15 Credits		15 Credits
Geol. 321 — Sedimentation	.3	Phys. 362 — Gen. Geophysics	.3
Geol. 416 — Intro. to Geochemistry†	3	English Elective	.3
Social Science Elective	.3	Professional Electives††	.6
Professional Electives††	.6	Social Science Elective	.3

One year of a modern foreign language is required for graduation. Students who have completed two years of formal instruction in a modern foreign language at the high school level may petition to fulfill this requirement by taking a first year college reading examination in the language concerned.

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN GEOLOGICAL ENGINEERING

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	18 or 18½ Credits		17 or 17½ Credits
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Math. 106 — Algebra & Trig.	.5	Math. 200 — Calculus	.4
Chem. 101 — General Chemistry	.4	Chem. 102 — General Chemistry	.4
E.S. 101 — Graphics	.2	E.S. 102 — Graphics	.2
E.S. 111 — Engr. Science	.3	Econ. 121 — Prin. of Econ.	.3
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
SECOND YEAR	16 or 16½ Credits		16 or 16½ Credits
Math. 201 — Calculus	.4	Math. 202 — Calculus	.4
Phys. 211 — General Physics	.4	Phys. 212 — General Physics	.4
Geol. 111 — Physical Geology	.4	E.S. 208 — Mechanics	.4
Min. 202 — Mine Surveying	.3	Geol. 314 — Structural Geology	.3
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
THIRD YEAR	18 Credits		16 Credits
E.S. 331 — Mech. of Materials	.3	Geol. 214 — Optical Mineralogy	.3
Geol. 213 — Mineralogy	.4	Min. 102 — Min. Syst. Engr.	.4
Chem. 331 — Physical Chemistry	.4	Geol. 362 — Engr. Geology	.3
Math. 302 — Diff. Equations	.3	English Elective	.3
E.S. 341 — Fluid Mechanics	.4	Professional Elective	.3

SUMMER

Geol. 351 — Field Geology, eight credits, eight weeks

FOURTH YEAR	17 Credits		16 Credits
Geol. 315 — Petrology	.5	Geol. 404 — Economic Geology	.3
Min. 405 — Geophys. & Geochem. Exp.	.3	English Elective	.3
C.E. 435 — Soil Mechanics	.3	Professional Electives††	.7
Professional Elective††	.3	Social Science Elective	.3
Social Science Elective	.3		

REQUIREMENTS FOR B.A. DEGREE WITH A GEOLOGY MAJOR

1. Complete the general requirements for a B.A. degree listed on page 30.
2. Complete required courses in geology as planned in individual conference with the head of the Geology Department.

A MINOR IN GEOLOGY REQUIRES 12-16 CREDITS OF APPROVED GEOLOGY COURSES.

REQUIREMENTS FOR M.S. DEGREE IN GEOLOGY

1. A minimum of 30 credits, including a maximum of 12 credits in Geol. 693-694, Special Topics, and Geol. 697-698, Thesis.
2. An examination to demonstrate ability to read scientific literature in an approved foreign language.
3. Completion of the general requirements for a graduate degree listed on page 33.

REQUIREMENTS FOR PH.D.

1. Program arranged by conference.
2. Completion of the general requirements for the Ph.D. listed on page 35.

†Majors may elect to substitute Chem. 331 for Geol. 416.
††Approved courses in geology, mathematics, chemistry, physics, or the engineering sciences.

Suggested professional electives:

Chem. 331,332 — Physical Chemistry
Chem. 333,334 — Physical Chemistry Lab.
C.E. 344 — Hydrology
C.E. 412 — Elements of Photogrammetry
C.E. 422 — Foundation Engineering
C.E. 435 — Soil Mechanics
C.E. 603 — Arctic Engineering
E.S. 201 — Computer Techniques
Math. 204 — Elementary Probability & Stats.
Math. 302 — Differential Equations
Math. 309 — Programming of Digital Computers
Math. 312 — Numerical Methods for Engineers
Math. 405,406 — Applied Mathematics
M.PR. 313 — Intro. to Mineral Preparation
M.PR. 418 — Emission, Spectroscopy, X-Ray difraction, atomic absorption and electron microscopy
Min. 408 — Mineral Valuation and Economics
Phys. 311,312 — Classical Physics
Phys. 351 — Intro. to Dynamic Meteorology
Phys. 465 — Meteorology

(See other listings under OCN and Phys.)

MINERAL ENGINEERING DEPARTMENT

DONALD J. COOK — DEPARTMENT HEAD

DEGREES — ASSOCIATE IN MINERAL AND PETROLEUM TECHNOLOGY, BACHELOR OF SCIENCE, MASTER OF SCIENCE, ENGINEER OF MINES

MINIMUM REQUIREMENTS FOR DEGREES:

A.M.P.T. — 66 CREDITS
B.S. — 134 CREDITS
M.S. — 30 ADDITIONAL CREDITS
* E.M. — THESIS AND FIVE YEARS OF EXPERIENCE

The two year associate degree in mineral and petroleum technology is designed to give technical training as a first undergraduate degree. Upon completion of this program, students are qualified to serve as technicians in mineral, petroleum and related areas.

In the mineral 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 requires core courses in engineering and humanities, but allows the student the choice of technical electives to major in an area of exploration, mining, mineral beneficiation or mineral economics.

Undergraduate Degrees — The Department of Mineral Engineering offers the Associate Degree in Mineral and Petroleum Technology and the Bachelor of Science Degree in Mineral Engineering.

Graduate Degrees — The graduate program allows for the awarding of Master of Science Degrees in Mineral Industry Management and Mineral Preparation Engineering. The curriculum consist of core courses in engineering management with electives in mineral preparation, respectively. 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 AND CURRICULUM FOR AN ASSOCIATE DEGREE IN MINERAL AND PETROLEUM TECHNOLOGY

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	17 Credits		16 Credits
M.P.T. 61 — Math for Technicians	.3	M.P.T. 62 — Mineralogy & Petrology	3
M.P.T. 63 — Map Reading & Drafting	2	M.P.T. 64 — Meas. & Mapping	.3
M.P.T. 65 — Science for Technicians	.3	M.P.T. 68 — Petroleum II	.3
M.P.T. 67 — Petroleum I	.3	Engl. 68 — Elementary Exposition	.3
M.P.T. 69 — Geography & Geology	.3	Min. 102 — Mining Engin. Systems	.4
Engl. 67 — Elementary Exposition	.3		
SECOND YEAR	17 Credits		16 Credits
M.P.T. 71 — Exploration Methods	.3	M.P.T. 72 — Milling & Metallurgy	.3
M.P.T. 73 — Technical Drawing	.2	M.P.T. 74 — Lab Inst. & Control	.3
M.P.T. 75 — Petroleum III	.3	M.P.T. 76 — Petroleum IV	.3
Math. 105 — Intermediate Algebra	.3	M.P.T. 78 — Computer Applications	.3
Social Science Elective	.3	M.P.T. 80 — Intro: Min. & Pet. Econ.	3
Technical Elective	.3	M.P.T. 82 — Field Trip	.1

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE IN MINERAL ENGINEERING

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	17 or 17½ Credits		17 or 17½ Credits
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit	.3
Math. 200 — Calculus	.4	Math. 201 — Calculus	.4
E.S. 101 — Graphics	.2	E.S. 102 — Graphics	.2
E.S. 111 — Engineering Science	.3	Econ. 121 — Prin. of Econ	.3
Geol. 111 — Physical Geology	.4	Min. 102 — Min. Systems Engr	.4
P.E. or Mil. Sci	.1 or 1½	P.E. or Mil. Sci	.1 or 1½
SECOND YEAR	17 or 17½ Credits		18 or 18½ Credits
Math. 202 — Calculus	.4	Math Elective	.3
Phys. 211 — General Physics	.4	Phys. 212 — General Physics	.4
Chem. 201 — Gen. & Quant. Chem	.4	Chem. 202 — Gen. & Quant. Chem	.4
Geol. 213 — Mineralogy	.4	Min. 202 — Mine Surveying	.3
P.E. or Mil. Sci	.1 or 1½	Social Science Elective	.3
		P.E. or Mil. Sci	.1 or 1½
THIRD YEAR	15 Credits		16 Credits
*E.S. 346 — Basic Thermodynamics or		E.S. 208 — Mechanics	.4
Chem. 331 — Phys. Chem.	.3	Met. 304 — Intro. to Met	.3
Mn. Prep. 313 — Intro. to Min. Prep.	3	E.E. 314 — Elem. Elec. Engr	.3
E.E. 313 — Elem. Elec. Engr	.3	**Technical Elective	.3
Math. 302 — Diff. Equations	.3	Engl. Elective	.3
Social Science Elective	.3		
FOURTH YEAR	16 Credits		16 Credits
E.S. 331 — Mechanics of Materials	.3	Min. 408 — Min. Val. & Econ	.4
E.S. 341 — Fluid Mechanics	.4	Social Science Elective	.3
** Technical Electives	.9	**Technical Elective	.6
		English Elective	.3

*Either E.S. 346 or Chem. 331 is required, depending upon student's field of interest.

**Twelve credits of technical electives must be in subject matter relative to the students field of major interest in the field of exploration, mining, mineral beneficiation or mineral economics.

A chemistry sequence of Chem. 101, 102, and 212 may be selected in place of Chem. 201 and 202 listed above.

Petroleum Engineering — Because of recent developments in the petroleum industry in Alaska, the Board of Regents has approved the initiation of a two-year basic program in petroleum engineering at the University of Alaska. Students enrolling in petroleum engineering will normally complete the first two years of basic engineering listed in the mineral engineering curriculum. This course of study may be altered to include subject matter in petroleum engineering. Upon satisfactory completion of the two-year curriculum, students may transfer to a university having a petroleum engineering program and complete their course of study without loss of time or credit.

Selected subjects in petroleum engineering are currently offered, and it is anticipated that additional courses will be available in the near future.

REQUIREMENTS FOR M.S. DEGREE IN MINERAL INDUSTRY MANAGEMENT

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
E.M. 611 — Engr. Management	.3	E.M. 612 — Engr. Management	.3
E.M. 605 — Adv. Engr. Economy	.3	E.M. 613 — Engr. Management	.3
Min. 697 — Thesis	.3	Approved Elective	.6
Min. 621 — Adv. Mineral Economics	.3	Min. 698 — Thesis	.3
Approved Elective	.3		

Completion of the general requirements for a graduate degree as listed on page 33.

REQUIREMENTS FOR M.S. DEGREE IN MINERAL PREPARATION ENGINEERING

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
Min. Pr. 601 — Froth Flotation	.3	Min. Pr. 696 — Min. Prep. Res.	.3
Min. Pr. 695 — Min. Prep. Res.	.3	Min. Pr. 606 — Plant Design	.3
Min. 621 — Adv. Mineral Economy	.3	*Elective	.6
Min. Pr. 697 — Thesis	.3	Min. Pr. 698 — Thesis	.3
*Elective	.3		

Completion of the general requirements for a graduate degree as listed on page 33.

*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 specific background and interest.

College of Mathematics, Physical Sciences and Engineering

CHARLES E. BEHLKE — DEAN

Physical science is based upon mathematical fundamentals. Engineering is founded upon mathematical and physical principles. The integration of the departments of this college provides the common ground for training in science and technology.

The primary mission of the college is to provide education to the baccalaureate level in its departments and to supplement the primary purpose with research and graduate training where necessary.

Undergraduate Degrees — The college grants the following undergraduate degrees: Bachelor of Arts, Bachelor of Science.

Graduate Degrees — The college offers the following graduate degrees: Master of Arts, Master of Arts in Teaching, Master of Science, Master of (Civil, Electrical, Environmental Health, Mechanical) Engineering, and Doctor of Philosophy.

Departments — Departments in the college include: chemistry, civil engineering, electrical engineering, engineering management, general science, mathematics, mechanical engineering, and physics. The college also includes within its scope the program in electronics technology, the program in environmental health engineering, and the program in oceanography and ocean engineering.

Engineering Science Courses — The designation engineering science is given to courses which are common to all fields of engineering. Each engineering curriculum specifies which of these courses are required and the semester in which it is advisable to take them.

CHEMISTRY DEPARTMENT

G. WARREN SMITH — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE, MASTER OF ARTS, MASTER OF ARTS IN TEACHING, MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES:

B.A., B.S. — 130 CREDITS
M.A., M.A.T., M.S. — 30 ADDITIONAL CREDITS

Graduates in chemistry qualify in many fields; as teachers of chemistry, as supervisors in industry, as technical sales personnel; as 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 phenomenal growth in the profession since World War I. Specific mention may be made of the manufacture of plastics, glass, pigments, starch, explosives, dyes, gases, petroleum products, fine and heavy chemicals, perfumes, drugs, vitamins, hormones, solvents, specialized fuels including nuclear fuels, and the various metals and alloys.

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, metallurgy, and advanced courses in biology, chemistry, mathematics, and physics, according to the interest of the individual student.

The general offerings of the Chemistry Department are arranged to allow students in less specialized programs to meet requirements for the requisite major and minors. Such service courses and programs are an outstanding feature in the department.

The field of chemistry is highly developed. Graduate study is a necessity for the better opportunities in this field. A prospective chemist should have some advanced work in chemistry and/or additional courses in mathematics and physics. Sufficient study in two foreign languages, preferably German and Russian, to gain a reading knowledge is recommended.

REQUIREMENTS FOR B.A. DEGREE WITH A MAJOR IN CHEMISTRY

1. Complete the general requirements for a B.A. degree listed on page 30.
2. Complete the following Chemistry courses:

Chem. 101-102 — General Chemistry	8 Credits
or	
Chem. 201-202 — General and Quantitative Chemistry	8
Chem. 321-322 — Organic Chemistry	6
Chem. 324 — Organic Laboratory	2
Chem. 212 — Intro. Quantitative Analysis	4
Chem. 416 — Instrumental Chem. Analysis	4
Chem. 331-332 — Physical Chemistry	6
Chem. 333-334 — Physical Chemistry Lab	2
Chem. 425 — Organic Qualtitative Analysis	3
Chem. 491-492 — Seminar (as seniors)	0-2
Math. 200-201-202 — Calculus	12
Phys. 103-104 — College Physics	8
or	
Phys. 211-212 — General Physics	8

REQUIREMENTS FOR B.S. DEGREE WITH A MAJOR IN CHEMISTRY

1. Complete the general requirements for a B.S. degree listed on page 31.
2. Complete the Chemistry courses required for a B.A. degree with a major in Chemistry as listed above.*
3. Complete the following additional Chemistry courses:

Chem. 402 — Adv. Inorganic Chemistry	3 Credits
Chem. 421 — Adv. Organic Chemistry	3
or	
Chem. 431 — Adv. Physical Chemistry	3
or	
Chem. 451 — General Biochemistry	4
Chem. 495-496 — Research	4-8
Germ. 101-102 — Elementary German	10
or	
Russ. 101-102 — Elementary Russian	10

*Except: Physics 211-212 is required.
Chem. 491-492 must be taken during both junior and senior years.

SUGGESTED CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN CHEMISTRY

FALL SEMESTER		SPRING SEMESTER	
First Year	**16 or 16½ Credits**		**16 or 16½ Credits**
Chem. 101 — Gen. Chem. & Intro. Qualitative Analysis	.4	Chem. 102 — General Chem. & Intro. Qualitative Analysis	.4
or		or	
Chem. 201 — General & Quantitative Chemistry	.4	Chem. 202 — General & Quantitative Chemistry	.4
Math. 200 — Calculus	.4	Math. 201 — Calculus	.4
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
*Social Science Elective	.4	*Social Science Elective	.4
Second Year	**16 or 16½ Credits**		**16 or 16½ Credits**
Chem. 212 — Intro. Quant. Analysis	.4	Chem. 322 — Organic Chemistry	.3
Chem. 321 — Organic Chemistry	.3	Chem. 324 — Organic Laboratory	.2
Math. 202 — Calculus	.4	Phys. 212 — Gen. Physics	.4
Phys. 211 — Gen. Physics	.4	P.E. or Mil. Sci.	.1 or 1½
P.E. or Mil. Sci.	.1 or 1½	*Electives	.6
Third Year	**16 or 17 Credits**		**16 or 18 Credits**
Chem. 331 — Physical Chemistry	.3	Chem. 332 — Physical Chemistry	.3
Chem. 333 — Physical Chem. Lab.	.1	Chem. 334 — Physical Chem. Lab.	.1
Chem. 425 — Org. Qual. Analysis	.3	Chem. 416 — Inst. Chem. Analysis	.4
German or Russian 101	.5	or	
Chem. 491 — Seminar	.0	Chem. 402 — Adv. Inorganic Chem.	.3
*Electives	4 or 5	German or Russsian 102	.5
		Chem. 492 — Seminar	.0
		* Electives	4 or 5
Fourth Year	**16 or 18 Credits**		**16 or 18 Credits**
**Chem. 421 — Adv. Organic Chem	.3	Chem. 416 — Inst. Chem. Analysis	.4
or		or	
** Chem. 431 — Adv. Physical Chem.	.3	Chem. 402 — Adv. Inorganic Chem.	.3
or		Chem. 492 — Seminar	.1
** Chem. 451 — Gen. Biochemistry	.4	Chem. 496 — Research	2-4
Chem. 491 — Seminar	.1	*Electives	7-12
Chem. 495 — Research	2-4		
* Electives	7-10		

*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.

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

A MINOR IN CHEMISTRY REQUIRES 12 CREDITS ABOVE THE FOUNDATION COURSES (CHEM. 101-102 OR CHEM. 201-202) APPROVED BY THE HEAD OF THE CHEMISTRY DEPARTMENT.

REQUIREMENTS FOR M.A. OR M.S. DEGREE IN CHEMISTRY

1. A minimum of 30 credits of approved courses including Chem. 697, Thesis.
2. Completion of the general graduate degree requirements listed on page 33.

Graduate students 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.

REQUIREMENTS FOR M.A.T. DEGREE

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

CHEMICAL ENGINEERING DEPARTMENT

G. WARREN SMITH — DEPARTMENT HEAD

Chemical engineering is concerned with the development and application of manufacturing processes in which physical or chemical changes of materials are involved. The chemical engineer is primarily concerned with the development, design, and operation of equipment and processes for bringing out those desired changes on an industrial scale and at a profit. Chemical engineers find opportunities with manufacturers of all the numerous chemical products of commerce such as the heavy and fine chemicals, pulp and paper, plastics, drugs, dyes, soap and mineral products; with atomic energy, missile and satellite programs; with petroleum refineries; with the mineral industry; with the food industries and with many other industries. These opportunities may involve research, design, control, operation, and technical sales.

The university does not offer a full four-year curriculum in chemical engineering but hopes to do so in the future. The first two years of the curriculum for the B.S. degree with a major in chemistry will, in general, prepare a student to transfer into chemical engineering at other institutions. However, it would be wise for students to consult the catalogs of institutions to which they might transfer and plan their two years at the University of Alaska to conform to their requirements.

CIVIL ENGINEERING DEPARTMENT

JOHN L. BURDICK — DEPARTMENT HEAD

DEGREES — BACHELOR OF SCIENCE (ENGINEERING SCIENCE), MASTER OF CIVIL ENGINEERING, MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES:

B.S. — 130 CREDITS
M.S. — 30 ADDITIONAL CREDITS
M.C.E. — 160 CREDITS

Engineering embraces the wide range of cultural and professional subjects having to do with the planning, design, and construction of works necessary for civilization. Civil engineering in particular 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 pass a comprehensive examination in their general field.

Students will enter the fifth year in one of two programs: those whose goal is broad professional practice will ordinarily choose the curriculum leading to the degree Master of Civil Engineering; those whose interests or background favor a highly specialized program, with emphasis on research and/or advanced specialized study, will ordinarily select the Master of Science in Civil Engineering degree.

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE (ENGINEERING SCIENCE) WITH A MAJOR IN CIVIL ENGINEERING

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	17 or 17½ Credits		16 or 16½ Credits
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Math. 106 — Algebra & Trig.	.5	Math. 200 — Calculus	.4
E.S. 101 — Graphics	.2	E.S. 102 — Graphics	.2
E.S. 111 — Engineering Science	.3	C.E. 112 — Elementary Surveying	.3
Econ. 121 — Principles of Econ.	.3	P.E. or Mil. Sci.	1 or 1½
P.E. or Mil. Sci.	1 or 1½	Social Science Elective	.3
SECOND YEAR	16 or 16½ Credits		17 or 17½ Credits
Math. 201 — Calculus	.4	Math. 202 — Calculus	.4
Phys. 211 — Gen. Physics	.4	Phys. 212 — General Physics	.4
E.S. 207 — Measurements	.3	E.S. 208 — Mechanics	.4
Chem. 201 — Gen. & Quant. Chem.	.4	Chem. 202 — Gen. & Quant. Chem.	.4
P.E. or Mil.Sci.	1 or 1½	P.E. or Mil. Sci.	1 or 1½
THIRD YEAR	17 Credits		17 Credits
E.S. 331 — Mech. of Materials	.3	C.E. 334 — Phys. Prop. of Mat.	.3
Math. 302 — Differential Equations	.3	E.S. 346 — Basic Thermodynamics	.3
E.S. 341 — Fluid Mechanics	.4	E.E. 314 — Elem. of Electr. Engr.	.3
E.E. 313 — Elem. of Elect. Engr.	.3	Engl. 213 — Advanced Exposition	.3
Geol. 101 — General Geology	.4	C.E. 344 — Hydrology	.2
		Math. 312 — Num. Meth. for Engrs.	.3
FOURTH YEAR	16 Credits		14 Credits
C.E. 435 — Soil Mechanics	.3	E.S. 450 — Engr. Mgt. & Oper.	.3
C.E. 441 — Sanitary Engineering	.3	C.E. 432 — Structural Design	.4
C.E. 431 — Structural Analysis	.4	C.E. 402 — Transportation Engr.	.2
C.E. 415 — Surveying	.3	C.E. 422 — Foundation Engineering	.2
Sp. 111 — Public Speaking I	.3	Social Science Elective	.3

REQUIREMENTS FOR THE MASTER OF CIVIL ENGINEERING DEGREE

Students entering the Master of Civil Engineering program should have completed a bachelor's degree in engineering.

A student will elect a civil engineering program approved by his graduate committee. Thirty semester 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.

REQUIREMENTS FOR THE M.S. DEGREE IN CIVIL ENGINEERING

A student selecting this program will meet the general requirements for the Master's degree (page 33.) plus the following:

Thirty semester hours of credit approved by his graduate committee, of which six to twelve hours will be C.E. 697, 698 — Thesis.

ELECTRICAL ENGINEERING DEPARTMENT

THOMAS D. ROBERTS — DEPARTMENT HEAD

DEGREES — BACHELOR OF SCIENCE (ENGINEERING SCIENCE), MASTER OF SCIENCE, MASTER OF ELECTRICAL ENGINEERING

MINIMUM REQUIREMENTS FOR DEGREES:

B.S. — 130 CREDITS
M.S. — 30 ADDITIONAL CREDITS
M.E.E. — 162 CREDITS

Electrical engineering is concerned with the practical application of electricity and magnetism. Electrical engineers develop, design, and operate equipment for generating and utilizing power, for instrumentation, for automatic control, and for information processing.

The program emphasizes the study of electronic devices and circuits, with particular reference to instrumentation and communication systems. Due attention is given to power, control, and information processing. Also, each senior is expected to take the State Engineer-In-Training Examination.

Students entering the fifth year may choose one of two programs: those whose goal is broad professional practice will ordinarily choose the curriculum leading to the Master of Electrical Engineering degree; those whose interests or background favor a highly specialized program with emphasis on research and/or advanced specialized study will usually select the Master of Science degree, with a major in electrical engineering. In addition to the general requirements for graduate study, a candidate for the M.E.E. degree is expected to qualify and register as an engineer-in-training.

REQUIREMENTS AND CURRICULUM FOR B.S.E.S. DEGREE (ELECTRICAL)

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	17 or 17½ Credits		16 or 16½ Credits
Engl. 101 — Comp. & Modes of Lit.	3	Engl. 102 — Comp. & Modes of Lit.	3
Math. 106 — Algebra & Trig.	5	Math. 200 — Calculus	4
E.E. 102 — Intro. to Elec. Engr.	2	E.S. 122 — Engin. Design	3
E.S. 111 — Engin. Science	3	*Social Science Elective	3
Econ. 121 — Prin. of Econ.	3	P.E. or Mil. Sci.	1 or 1½
P.E. or Mil. Sci.	1 or 1½	*Elective	2

SECOND YEAR	16 or 16½ Credits		17 or 17½ Credits
Math. 201 — Calculus	4	Math. 202 — Calculus	4
Phys. 211 — Gen. Physics	4	Phys. 212 — Gen. Physics	4
E.E. 203 — Fund. of Elect. Engr.	4	E.E. 204 — Fund. of Elect. Engr.	4
E.S. 207 — Measurements	3	E.S. 208 — Mechanics	4
P.E. or Mil. Sci.	1 or 1½	P.E. or Mil. Sci.	1 or 1½

THIRD YEAR	17 Credits		17 Credits
Math. 302 — Diff. Equations	3	*Math. 312 — Numerical Methods	3
Chem. 201 — Gen. & Quant. Chem.	4	Chem. 202 — Gen. & Quant. Chem.	4
E.E. 333 — Electronics	3	E.E. 334 — Elec. Circuits	3
E.E. 353 — Circuit Theory	3	Engl. 213 — Adv. Exposition	3
E.E. 323 — Elect. Engr. Lab.I	1	E.E. 324 — Elect. Engr. Lab.II	1
E.S. 331 — Mech. of Materials	3	E.E. 372 — Feedback & Control Syst.	3

FOURTH YEAR	17 Credits		13 Credits
E.S. 341 — Fluid Mechanics	4	E.S. 346 — Basic Thermodynamics	3
E.E. 403 — Elect. Pwr. Engr.I	4	E.S. 450 — Engr. Manag. & Op.	3
Phys. 331 — Elect. & Magnetism	3	E.E. 492 — Seminar	1
*Social Science Elective	3	*Electives	6
*English Elective	3		

*Electives must have the approval of the department.

REQUIREMENTS FOR THE MASTER OF ELECTRICAL ENGINEERING

Students selecting the Master of Electrical Engineering program will meet the general requirements of the university for the master's degree, be guided in course work and an engineering project by a personal advisor, and accumulate a total of 32 semester hours of approved courses.

REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN ELECTRICAL ENGINEERING

A candidate for the Master of Science degree will meet the university's general requirements plus the following:

Thirty semester hours of credit approved by his graduate committee, of which six to twelve semester hours will be E.E. 697,698 — Thesis.

ENGINEERING MANAGEMENT DEPARTMENT

JOHN M. HILPERT — DEPARTMENT HEAD

DEGREE — MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREE:

30 CREDITS (BEYOND A BACHELOR'S DEGREE IN ONE OF THE RECOGNIZED BRANCHES OF ENGINEERING)

The engineering management curriculum is designed for graduate engineers who will hold executive or managerial positions in engineering, construction, or industrial organization. It includes financial, legal, human relations, economic, and technical subjects which are useful to solve problems of management.

The curriculum will include graduate level core courses, business law, and additional course work either directed toward special problems such as arctic engineering, or in one of the more general fields of engineering through projects or research in the application of engineering management principles. Candidates should have had on-the-job experience working as an engineer, not merely prior academic training.

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
B.A. 331 — Business Law	3	B.A. 332 — Business Law	3
E.M. 611 — Engr. Management	3	E.M. 612 — Engr. Management	3
E.M. 605 — Advanced Engr. Econ.	3	E.M. 613 — Engr. Management	3
*Electives	6	Project or Research	3
		*Elective	3

Other courses may be substituted for business law if a student shows evidence of satisfactory completion of subject matter of B.A. 331 and 332 at the B grade level.

* Electives must have the approval of the department.

GENERAL SCIENCE DEPARTMENT

WILLIAM S. WILSON — DEPARTMENT HEAD

DEGREES — BACHELOR OF SCIENCE, MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES:

B.S. — 130 CREDITS
M.S. — 30 ADDITIONAL CREDITS

Man's insatiable curiosity and his desire to understand the world about him have led to the study of natural science and to the scientific method. Progress in this study has been fruitful and is so rapid now that the new discoveries in science are affecting our everyday lives, and most certainly will continue to do so in our lifetime. Consequently, every educated citizen needs a knowledge and appreciation of the philosophy and structure of science. It is generally agreed that the best method for achieving this is by direct study of a natural science, and all the curricula at the University of Alaska reflect this fact in their requirements.

Traditionally, the role of mathematics has been to simplify, interpret, and extend the boundaries of science. The fact that mathematics still includes, as well as transcends, this function makes it a necessary study.

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 border between the older sciences provide excellent opportunity for research. An acquaintance with the fundamentals of all of 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 degrees.

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN GENERAL SCIENCE

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	17 or 17½ Credits		16 or 16½ Credits
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Biol. 105 — Fund. of Biology	.4	Biol. 106 — Fund. of Biol.	.4
Math. 106 — Algebra & Trig.	.5	Math. 200 — Calculus	.4
Chem. 101 — General Chem.	.4	Chem. 102 — General Ghemistry	.4
or		or	
Phys. 103 — College Physics	.4	Phys. 104 — College Physics	.4
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
SECOND YEAR	17 or 18½ Credits		17 or 18½ Credits
Phys. 103 — College Physics	.3	Phys. 104 — College Physics	.4
or		or	
Chem. 101 — General Chemistry	.4	Chem. 102 — General Chemistry	.4
Econ. 121 — Prin. of Econ.	.3	Anth. 101 — The Study of Man	.3
Geol. 101 — General Geology	.4	For. Lang. or Dept. Elect.	7 or 6
For. Lang. or Dept. Elect.	6 or 5	P.E. or Mil. Sci.	.1 or 1½
P.E. or Mil. Sci.	.1 or 1½	Elective	.3

THIRD AND FOURTH YEARS

By the beginning of his 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, makes out a program for his third and fourth years of study.

Directions for making out the program:

1. Include the following courses:

   Dept. Elec. or For. Lang. .5
   Engl. 213 — Adv. Exposition or selected literature .3
   Social Science Elective .3
   Dept. Elec. or For. Lang. .6
   Engl. 314 — Scholarly and Tech. Writing or selected lit. .3

2. The major field must comprise a minimum of 20 credits above the foundation courses included in this curriculum. The courses scheduled must be approved in writing by the head of the major department. A major may be elected in anthropology, biological sciences, chemistry, geology, geophysics, mathematics, or physics.

3. The electives must include either two minors of at least 12 credits each above the foundation courses included in this curriculum, or a second major. Minors may be selected in any of the major departments listed or in the fields of economics, education (minimum 16 credits), English, French, German, Russian, history, or political science.

4. All prerequisites of courses elected must be met, preferably by inclusion in the major.

5. One year of German, French, or Russian is required in the general science curriculum. If the foreign language is postponed to the third year, the program described under third and fourth year must be made out at the beginning of the second year.

6. Advanced exposition is required unless written work in all courses indicate a good writing technique.

7. Courses selected to complete the requirements in the social sciences must be chosen from the following: anthropology except Anth. 402 and archaeology; sociology; economics; history; and political science.

REQUIREMENTS FOR M.S. DEGREE IN GENERAL SCIENCE

1. Minimum of 30 credits of approved courses.
2. Completion of the general graduate degree requirements listed on page 33.

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 "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 but each course should contribute to the specific aim of the candidate, and the thesis or project should reflect this aim.

MATHEMATICS DEPARTMENT

ROBERT W. BROWN — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE, MASTER OF ARTS IN TEACHING, MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
B.S. — 130 CREDITS
M.A.T. — 30 ADDITIONAL CREDITS
M.S. — 30 ADDITIONAL CREDITS

The Department of Mathematics offers service courses to all the colleges of the university. In addition, the department offers courses for students who major in mathematics. The number of positions available for trained mathematicians grows annually, and currently exceeds the supply.

A digital computer, installed in the spring, 1966, has improved the department's capacity to train mathematicians, scientists, and engineers.

In addition to meeting all the general requirements for the specific degree, certain mathematics courses are required by all mathematics majors. All electives must be approved by the Mathematics Department. Students preparing to teach mathematics in secondary schools must take the education courses necessary to obtain an Alaskan Teaching Certificate.

REQUIREMENTS FOR B.A. DEGREE WITH A MAJOR IN MATHEMATICS

1. Complete the general requirements for a B.A. degree as listed on page 30.
2. Complete the calculus sequence Math. 200, 201, 202.
3. Complete 15 approved credits in mathematics at the 300 level or above, at least six of which must be at the 400 level.

A MINOR IN MATHEMATICS REQUIRES COMPLETION OF MATH. 200, 201, 202 IN ADDITION TO SIX APPROVED CREDITS IN MATHEMATICS AT THE 300 LEVEL OR ABOVE.

REQUIREMENTS FOR B.S. DEGREE WITH A MAJOR IN MATHEMATICS

1. Complete the general requirements for a B.S. degree as listed on page 31.
2. Complete the calculus sequence Math. 200, 201, 202.
3. Complete Phys. 211-212 and six additional approved credits in upper division science courses.
4. Complete 18 approved credits in Mathematics at the 300 level or above, at least six of which must be at the 400 level.

SUGGESTED CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN MATHEMATICS

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	17 or 17½ Credits		16 or 16½ Credits
Engl. 101 — Comp. & Modes in Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Math. 106 — Algebra & Trig.	.5	Math. 200 — Calculus	.4
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
Foreign Language	.5	Foreign Language	.5
Social Science Elec.	.3	Social Science Elective	.3
SECOND YEAR	17 or 17½ Credits		17 or 17½ Credits
Math. 201 — Calculus	.4	Math. 202 — Calculus	.4
Math. 293 — Special Topics	.1	Math. 294 — Special Topics	.1
Phys. 211 — General Physics	.4	Phys. 212 — General Physics	.4
Chem. 201 — Gen. & Quant. Chem.	.4	Chem. 202 — Gen. & Quant. Chem.	.4
or		or	
Biol. 105 — Fund. of Biology	.4	Biol. 106 — Fund. of Biology	.4
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
Approved Elective	.3	Approved Elective	.3
THIRD YEAR	17 Credits		17 Credits
Math. 302 — Differential Equations	.3	Math. 417 — Differential Geom.	.3
Math. 303 — Intro. to Mod. Algebra	.3	Math. 304 — Intro. to Mod. Algebra	.3
Physics Elective	.3	Physics Elective	.3
English Elective	.3	English Elective	.3
Approved Electives	.5	Approved Electives	.5
FOURTH YEAR	17 Credits		17 Credits
Math. 401 — Adv. Calculus	.3	Math. 402 — Advanced Calculus	.3
Math. 491 — Seminar	.2	Math. 492 — Seminar	.2
Social Science Elective	.3	Approved Electives	.12
Approved Electives	.9		

REQUIREMENTS FOR M.A.T. DEGREE WITH A MAJOR IN MATHEMATICS

1. Complete the general requirements for a M.A.T. degree as listed on page 95.
2. Complete 30 credits in courses approved by the student's graduate committee.

REQUIREMENTS FOR M.S. DEGREE WITH A MAJOR IN MATHEMATICS

1. Complete the general requirements for a master's degree as listed on page 33.

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 graduate committee.

MECHANICAL ENGINEERING DEPARTMENT

JAMES B. TIEDEMANN — DEPARTMENT HEAD

DEGREES — BACHELOR OF SCIENCE (ENGINEERING SCIENCE), MASTER OF MECHANICAL ENGINEERING, MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREES:

B.S. 130 CREDITS
M.M.E. 162 CREDITS
M.S. 160 CREDITS

Mechanical engineering includes the design of vehicles, engines, heating and power plants, and a wide variety of machines. Special emphasis is placed on transportation, heating and power generation systems suited to the environment of Alaska.

Candidates for the Bachelor of Science degree are expected to take the State of Alaska Engineer-in-Training examination during their fourth year of study.

Students whose goal is broad professional practice should enter their fifth year in the Master of Mechanical Engineering program. Those who desire a specialized program to prepare for research or advanced study should choose the Master of Science in Mechanical Engineering.

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	16 or 16½ Credits		16 or 16½ Credits
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Math. 200 — Calculus	.4	Math. 201 — Calculus	.4
E.S. 101 — Graphics	.2	E.S. 102 — Graphics	.2
E.S. 111 — Engineering Science	.3	E.S. 122 — Design	.3
Econ. 121 — Principles of Econ.	.3	Social Science Elective	.3
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
SECOND YEAR	16 or 16½ Credits		16 or 16½ Credits
Math. 202 — Calculus	.4	E.S. 202 — Engineering Analysis	.3
Phys. 211 — General Physics	.4	Phys. 212 — General Physics	.4
E.S. 201 — Computer Techniques	.3	E.S. 208 — Mechanics	.4
Chem. 201 — Gen. & Quant, Chem.	.4	Chem. 202 — Gen. & Quant, Chem.	.4
P.E. or Mil. Sci.	.1 or 1½	P.E. or Mil. Sci	.1 or 1½
THIRD YEAR	17 Credits		15 Credits
E.S. 301 — Engineering Analysis	.3	E.S. 346 — Thermodynamics	.3
E.S. 331 — Mech. of Materials	.3	E.S. 308 — Instrumentation	.3
E.S. 341 — Fluid Mechanics	.4	Met. 304 — Metallurgy	.3
E.E. 307 — Int. to Elect. Eng.	.4	Engl. 213 — Advanced Exposition	.3
M.E. 321 — Industrial Processes	.3	M.E. 302 — Kinematics	.3

FOURTH YEAR	17 Credits		17 Credits
M.E. 401 — Machine Design	.4	M.E. 402 — Dynamics of Machines	.4
M.E. 413 — Appl'd Thermodynamics	3	M.E. 414 — Thermal Systems	.3
M.E. 441 — Mass & Energy Transfer	.3	E.S. 450 — Management	.3
Social Science Elective	.3	English Elective	.3
Technical Elective	.3	Technical Elective	.3
M.E. 491 — Seminar	.1	M.E. 492 Seminar	.1

REQUIREMENTS FOR THE DEGREE MASTER OF MECHANICAL ENGINEERING

Each fifth year student under this program will be guided by a personal advisor and shall accumulate 32 semester hours of approved courses. M.E. students may alternatively enroll in engineering management under the requirements of that program.

REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE

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

PHYSICS DEPARTMENT

J. ROGER SHERIDAN — DEPARTMENT HEAD

DEGREES — BACHELOR OF ARTS, BACHELOR OF SCIENCE, MASTER OF SCIENCE, MASTER OF ARTS IN TEACHING, DOCTOR OF PHILOSOPHY

MINIMUM REQUIREMENTS FOR DEGREES:

B.A. — 130 CREDITS
B.S. — 130 CREDITS
M.S. — 30 ADDITIONAL CREDITS
M.A.T. — 30 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, geology, and marine science.

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 offer 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 and ionospheric physics, geomagnetism and earth currents, radio wave propagation and scattering, solar radio astromony and solar-terrestrial relations, polar meteorology and glaciology, seismology and solid earth physics, and laboratory studies of atomic and molecular interactions.

A graduate student may designate his major field as physics or geophysics. He will pursue his studies under the supervision of an advisory committee consisting of his major professor (chairman), two approved faculty members, and the department head (ex officio). The committee advises on the course of study to be followed and determines the background courses (mathematics, physics, astronomy, chemistry, geophysics) necessary to support the major field.

The graduate course offerings include the basic material generally required for research and teaching in physics or related fields, and specialized courses in the research areas mentioned above.

REQUIREMENTS FOR B.A. DEGREE WITH A MAJOR IN PHYSICS

1. Complete the general requirements for a B.A. degree listed on page 30.
2. Complete the following foundation courses:
   Phys. 103-104 — College Physics 8
3. Complete a minor in Mathematics, which includes Math. 200, 201, 202, and six credits at the 300 level or above.
4. Complete 20 credits of approved courses in Physics.

A MINOR IN PHYSICS REQUIRES 12-16 CREDITS.

REQUIREMENTS AND CURRICULUM FOR B.S. DEGREE WITH A MAJOR IN PHYSICS

FALL SEMESTER		SPRING SEMESTER	
FIRST YEAR	**16 or 16½ Credits**		**16 or 16½ Credits**
Engl. 101 — Comp. & Modes of Lit.	.3	Engl. 102 — Comp. & Modes of Lit.	.3
Phys. 103 — College Physics	.4	Phys. 104 — College Physics	.4
Math. 106 — Algebra and Trig.	.5	Math. 200 — Calculus	.4
P.E. or Mil. Sci	.1 or 1½	P.E. or Mil. Sci.	.1 or 1½
* Approved Electives	.3	* Approved Electives	.4
SECOND YEAR	**16 or 16½ Credits**		**16 or 16½ Credits**
Math. 201 — Calculus	.4	Math. 202 — Calculus	.4
Phys. 211 — General Physics	.4	Phys. 212 — General Physics	.4
Foreign Language	3 or5	Foreign Language	.3 or 5
P.E. or Mil. Sci	.1 or 1½	P.E. or Mil. Sci	.1 or 1½
* Approved Electives	.4 or 2	* Approved Electives	.4 or 2
THIRD YEAR	**17 Credits**		**17 Credits**
Math. 302 — Differential Equations	.3	Math. 314 — Linear Algebra	.3
Phys. 311 — Classical Physics	.4	Phys. 312 — Classical Physics	.4
Phys. 331 — Electricity and Magnet	.3	Phys. 332 — Electricity and Magnet	.3
* Approved Electives	.7	* Approved Electives	.7
FOURTH YEAR	**17 Credits**		**17 Credits**
† Math. 405 — Applied Math.	.3	† Math. 406 — Applied Math.	.3
Phys. 411 — Modern Physics	.4	Phys. 412 — Modern Physics	.4
Phys. 481 — Advanced Physics Lab.	.2	Phys. 482 — Advanced Physics Lab.	.2
Phys. 445 — Solid State Physics and Physical Electronics	.3	Phys. 313 — Classical Physics	.4
* Approved Electives	.5	* Approved Electives	.4

*Nine credits of electives must be social science, six must be English, and eight must be chemistry.

†or approved elective.

REQUIREMENTS FOR M.S. DEGREE IN PHYSICS OR GEOPHYSICS

1. A minimum of 30 credits of approved courses, including Phys. 697 or 698, Thesis.
2. Completion of the general requirements for a graduate degree listed on page 33.

REQUIREMENTS FOR M.A.T. DEGREE

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

REQUIREMENTS FOR PH.D. DEGREE IN PHYSICS OR GEOPHYSICS

Completion of the requirements for the doctoral degree set forth on page 35.

ELECTRONICS TECHNOLOGY PROGRAM

FOYE L. GENTRY — PROGRAM HEAD

DEGREE — ASSOCIATE IN ELECTRONICS TECHNOLOGY WITH SPECIALTIES IN ELECTRONICS OR ELECTRO-MECHANICS

MINIMUM REQUIREMENTS FOR DEGREE: A.E.T. — 65 CREDITS

The program in electronics technology prepares people to maintain, install, and operate complex electronic and mechanical equipment.

Students specializing in electronics will have emphasis placed on equipment such as broadcast transmitters, airways control equipment, carrier telephone systems, telemetry systems, and digital computers.

Students specializing in electro-mechanics will have emphasis placed on precision and high speed electro-mechanical devices and systems, such as high speed printers, office machines, servo systems, fluid power systems, industrial control systems, etc.

The program is not introductory electrical or mechanical engineering, which emphasizes design; it is electronics technology, which emphasizes maintenance.

Enrollment is limited. Write to the department head for information on admission to this program.

REQUIREMENTS AND CURRICULUM FOR AN ASSOCIATE DEGREE IN ELECTRONICS TECHNOLOGY

FIRST YEAR FOR SPECIALTIES IN ELECTRONICS OR ELECTRO-MECHANICS

Fall and Spring Semesters — 16 Credits	Spring and Summer Semesters — 17 Credits
E.T.51 — DC Circuits 4	E.T. 61 — Tubes and Semiconductors 4
E.T.T. 52 — AC Circuits 4	E.T. 62 — Electronic Circuits I 3
E.T. 55 — Electronics Practice 3	E.T. 63 Electronic Systems I 4
E.T. 59 — Math. for Electronics 5	E.T. 66 — Electronic Practice II 3
	Engl. 67 — Elementary Exposition ..3

SECOND YEAR FOR SPECIALTY IN ELECTRONICS

Summer and Fall Semesters — 17 Credits	Fall and Spring Semesters — 15 Credits
E.T. 71 — Electronic Circuits II 5	E.T. 81 — Telemetry 4
E.T. 72 — Electronic Circuits III 4	E.T. 84 — Digital Computer Theory and Application 5
E.T. 75 — Microwave Electronics ...4	B.A. 165 — B.A. for Tech. 3
E.T. 78 — Solid State Electronics ...4	P.S. 68 — Soc. Sci. for Tech. 3

SECOND YEAR FOR SPECIALTY IN ELECTRO-MECHANICS

Summer and Fall Semesters	17 Credits	Fall and Spring Semesters	14 Credits
E-M.T. 73 — Mechanics I	.5	E-M.T. 85 — Mechanics II	.5
E-M.T. 74 — Storage Principles	.4	E-M.T. 86 — Vacuum Technique Proc	3
E-M.T. 76 — E-M Ind. Control Dev.	.4	B.A. 165 — B.A. for Tech.	.3
E-M.T. 79 — Fluid Power Systems	.4	P.S. 68 — Soc. Sci. for Tech.	.3

ENVIRONMENTAL HEALTH ENGINEERING PROGRAM

R. SAGE MURPHY — PROGRAM HEAD

DEGREE — MASTER OF SCIENCE

MINIMUM REQUIREMENTS FOR DEGREE: 30 CREDITS (Beyond a Bachelor's Degree)

The environmental health engineering curriculum is designed for graduate engineers, chemists, and biologists who will pursue a career in the areas of water supply, treatment, and distribution; waste treatment, stream pollution, air pollution, and solid wastes disposal. Graduates will hold positions in federal, state, and municipal organizations as well as consulting engineering offices.

REQUIREMENTS FOR M.S. DEGREE IN ENVIRONMENTAL HEALTH ENGINEERING

1. A minimum of 30 credits of approved and required courses, including a six-credit thesis.
2. Completion of the general requirements for a graduate degree listed on page 33.
3. The following required courses:

FALL SEMESTER	15 Credits	SPRING SEMESTER	15 Credits
E.H.E. 605 — Water Treatment	.3	E.H.E. 601 — Water Quality Control	.2
E.H.E. 606 — Waste Treatment	.3	E.H.E. 608 — E.H.E. Unit Processes	.2
Biol. 341 — Mibrobiology	.4	E.H.E. 610 — Arctic E.H.E. Design	.2
*Electives and Research	.5	*Electives and Research	.9

*Electives must have the approval of the department.

OCEANOGRAPHY & OCEAN ENGINEERING PROGRAM

JOHN J. GOERING — PROGRAM CHAIRMAN

DEGREES — MASTER OF SCIENCE (INTERDISCIPLINARY DEGREES)
DOCTOR OF PHILOSOPHY (INTERDISCIPLINARY DEGREE)

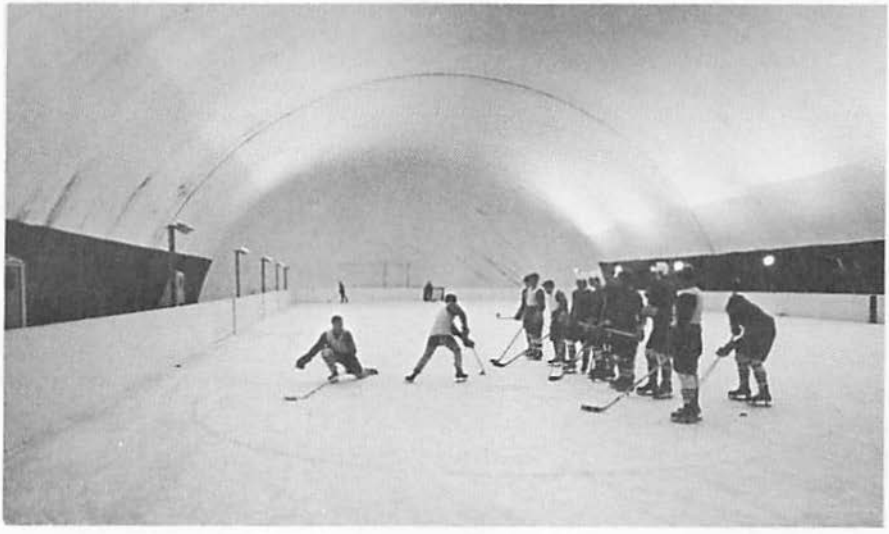
The purpose of the program in oceanography and ocean engineering is to train ocean engineers at the M.S. level and oceanographers at the M.S. and Ph.D. levels. The program in oceanography and ocean engineering is coordinated by an interdisciplinary committee of the university composed of selected staff members from the academic colleges and research institutes involved in these areas of graduate training.

Graduate students for this program are selected on the basis of their backgrounds and on the basis of the university's capabilities to meet the selected needs of the individual student. Each student's application for admission to

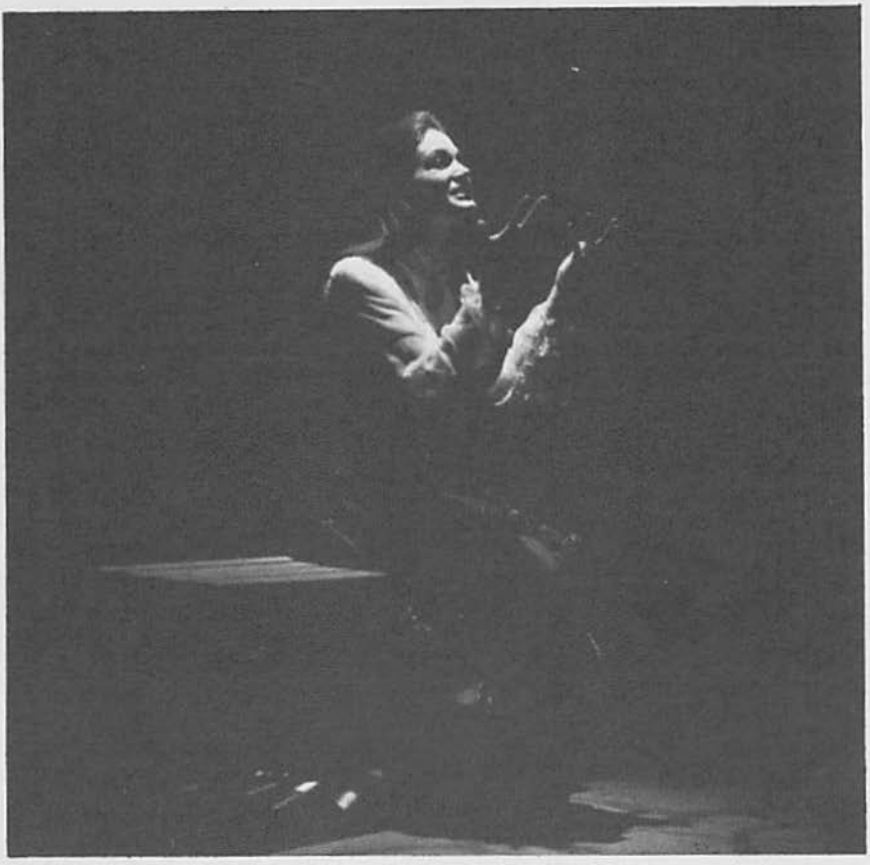
graduate study must be approved by an admission committee selected from members of the program's coordinating committee.

Excellent graduate training opportunities in oceanography and ocean engineering are offered by the university through the Institute of Marine Science, and the instructional colleges of the university. The Institute of Marine Science has a staff of scientists and engineers actively engaged in oceanographic research work progressing at the main campus of the university in College, at the Marine Station in Douglas, and on research vessels at sea. The departments of chemistry, physics, geology, biological sciences, electrical engineering, civil engineering, engineering management, and mathematics, contribute academic courses to this program.

At the M.S. level, the program emphasizes ocean related course work in both the oceanography and ocean engineering areas. However, additional graduate courses are recommended in the area of the student's undergraduate training to assure a high level of competence in his primary subject.



Indoor and outdoor sport facilities provide students with a variety of energy-releasing activities.



University dramatic productions are backdropped by new theater facilities located in the Library, Fine Arts and Humanities complex.

Course Descriptions

Courses offered by the university are listed alphabetically by department.

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. 101 is given for first-year students and Engl. 342 is given for third-year students.

1-49—Non-credit courses.

50-99—Courses designed for associate degree or a technical certificate; they are not applicable to the baccalaureate requirements.

300-499—Upper division courses. Freshmen and sophomores must petition the Academic Council for permission to take these groupings unless such courses are required in the first two years of their curriculum as printed in this catalog.

93, 94, 193, 194, 293, 294, 393, 394—Special Topics courses in certain departments.

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. 491-492 and 681-692 indicate seminars, 493-494 and 693-694 indicate special topics, and 695-698 indicate thesis or dissertation in those departments where listed.

COURSE CREDITS—One credit (or one hour) represents satisfactory completion of one hour of work a week for one semester. This requirement may be met by attendance at one lecture, or by three fifty-minute periods of laboratory work a week, or the equivalent.

Following the title of each course, the figures in parentheses indicate the number of lecture and laboratory hours the class meets. The first figure indicates lecture hours; the second, laboratory. For example (2+3) indicates that a class has two hours of lecture and three of laboratory work.

The number of credits listed is for each semester. Thus "Three Credits" means three credits may be earned.

COURSE CLASSIFICATIONS—Subjects and courses are classified as below:

Natural Sciences	Social Sciences	Humanities
Anthropology 402	Anthropology	Art
Biological Sciences	Business Administration 331, 332	English
Chemistry	Economics	Foreign Language and Literature
Geography 105, 316, and 401	Geography except 105, 316, and 401	Journalism
Geology	History	Linguistics
Mathematics	Home Economics 236, 351	Music
Physics	Political Science	Philosophy
	Psychology	Speech and Drama
	Sociology	

ACCOUNTING

Acc. 51 Introduction to Accounting I (3+0) 3 Credits Fall Spring

This course is designed for the general business student for whom it may be the final study in accounting; or, for the accounting major who intends to continue the study of accounting. This course covers the fundamental accounting processes dealing with the book-keeping and accounting functions for a sole proprietorship. It is an introduction to the theory and principles of accounting as applied to the modern business field. (Offered only at Anchorage Community College.)

Acc. 52 Introduction to Accounting II (3+0) 3 Credits Fall Spring

A continuation of Accounting I. It familiarizes the student with partnership and corporate accounting. Special emphasis is directed to contemporary interest and subject matter including analysis of cash-flow and fund-flow and certain other supplementary financial statement presentations. (Offered only at Anchorage Community College.)

Acc. 71 Introduction to Accounting III (3+0) 3 Credits Fall Spring

This course is designed for the accounting major and prepares the student to analyze and interpret the full product of accounting. Emphasis is devoted to current accounting principles and postulates, data processing and contemporary financial statement practices and forms. (Offered only at Anchorage Community College.)

Acc. 83 Accounting — Case Studies (3+0) 3 Credits Fall Spring

Case studies of selected accounting systems and problems—small municipality, non-profit corporation, sole proprietorship, partnership, small corporation. (Offered only at Anchorage Community College.)

Acc. 84 Accounting for Small Cities and Municipalities (3+0) 3 Credits Fall Spring

An introductory course for the accounting student concerning the accounting principles involved with municipal and governmental accounting. Budgetary processes, fund accounting and governmental financial statement presentation are the basic subject matter. In addition, the student is introduced to accounting processes currently in use relating to non-profit organizations such as lodges, churches and charitable organizations. (Offered only at Anchorage Community College.)

Acc. 85 Tax Accounting (3+0) 3 Credits Fall Spring

An introductory course for the accounting major relating to federal and state income taxes as applied to individuals. Social security, unemployment taxes and other miscellaneous business taxes are covered relating both to employee and employer.

Acc. 94 Internship in Accounting (3+0) 3 Credits Fall Spring

Placement with appropriate agency or business to familiarize the second year student with practical experience in the field of accounting. (Offered only at Anchorage Community College.)

Acc. 101 Elementary Accounting (3+0) 3 Credits Fall

An introduction course in accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor. (Prerequisite: completion of all required remedial courses.)

Acc. 102 Elementary Accounting (3+0) 3 Credits Spring

A continuation of introductory accounting concepts and procedures emphasizing the problems of businesses organized as partnerships or corporations and performing manufacturing operations. (Prerequisite: Acc. 101.)

Acc. 201 Elementary Accounting (5+0) 5 Credits Fall

An introductory course in accounting covering in one semester the subject matter of Acc. 101 and 102. (Prerequisite: limited to accounting majors of sophomore standing or higher. No more than 6 credits can be allowed for any combination of Acc. 101, 102, and 201.)

Acc. 210 Income Tax (3+0) 3 Credits Spring

A study of federal and state income taxes relating primarily to the individual citizen of Alaska with emphasis on the preparation of tax returns, tax planning, and the analysis of selected tax problems. (Prerequisite: Acc. 101 or 201.)

Acc. 252 Introduction to Cost Accounting (3+0) 3 Credits Fall

An introductory course in cost accounting for manufacturing operations with thorough treatment of job order cost accounting and process cost accounting. (Prerequisite: Acc. 101 or 201.)

Acc. 301 Intermediate Accounting (5+0) 5 Credits Fall

A treatment in depth of the balance sheet accounts and procedures for their analysis and correction. (Prerequisites: Acc. 102 or 201. If scheduling permits, the student should take Acc. 210 and 252 before Acc. 301.)

Acc. 302 Advanced Accounting (5+0) 5 Credits Spring

A thorough study of the accounting for partnerships, fiduciaries, governments, and parent-subsidiary relationships with a brief treatment of applied actuarial science. (Prerequisites: Acc. 102 or 201. If scheduling permits, the student should take Acc. 210, 252, 301 before 302.)

Acc. 315 Analysis of Financial Statements (3+0) 3 Credits Fall

Interpretation of financial statements and analysis of accounting data for business planning, investment and evaluation purposes. Course not available for credit toward a B.B.A. degree with a major in accounting. (Prerequisite: Acc. 102.)

Acc. 351 Advanced Cost Accounting (3+0) 3 Credits Spring

A study of analytical processes and cost control procedures for decision making and policy implementation in manufacturing businesses. (Prerequisite: Acc. 252.)

Acc. 403 Advanced Income Taxes (3+0) 3 Credits Spring

A study of federal and state income taxes relating primarily to partnerships, trusts and corporations with emphasis on the preparation of tax returns, tax planning and selected tax problems. Also, social security taxes, sales taxes, gift, and estate taxes. (Prerequisite: Acc. 210.)

Acc. 452 Auditing (3+0) 3 Credits Fall

A study of the procedures for verification of financial data and the professional standards applicable to the auditors examination of financial statements and his expression of opinion relative to them. (Prerequisites: Acc. 301 and 302.)

Acc. 454 Accounting Internship 3 Credits Spring

Work experience in an approved position with supervision and training in various phases of accounting. (Prerequisites: advanced standing as an accounting major and permission of the head of the department.)

Acc. 462 C. P. A. Review — 0 Credit — Fall and Spring

Preparation for the Uniform Certified Public Accountant Examination. (Prerequisites: advanced standing in accounting and permission of the head of the department.)

Acc. 493	**Special Studies in Accounting**	Credits Arr.	Fall
494		Credits Arr.	Spring

AGRICULTURAL SCIENCE

Ag. 301 Agricultural Prices (3+0) — 3 Credits — Fall

Analysis and interpretation of factors affecting agricultural prices; study of price movements; price policy. (Prerequisites: Econ. 121, 122. Offered as demand warrants.)

Ag. 310 Animal Husbandry (2+3) — 3 Credits — Spring

Origin, history, and economic significance of major breeds of dairy and beef cattle, swine, sheep, and poultry. Introduction to management, with special reference to Alaska. (Offered as demand warrants.)

Ag. 382 Horticulture (2+3) — 3 Credits — Spring

Survey; principles of propagation, culture and use; soil, light, and water requirements; planting and harvesting; insect, weed, and disease control. (Prerequisites: Biol. 105, 106. Offered as demand warrants.)

Ag. 404 Agricultural Marketing (3+0) — 3 Credits — Spring

Principles and practices of agricultural marketing; prices, and costs; case studies. (Prerequisite: Econ. 121. Offered as demand warrants.)

Ag. 491	**Seminar**	Credits Arr.	Fall
492		Credits Arr.	Spring

Unique problems in agricultural development of Alaska, the role of agriculture in Alaska's economy, and recent research advances in the state. Subject matter fields; economics, agronomy, animal industry, soils, horticulture, and agricultural engineering. (Offered as demand warrants.)

Ag. 493	**Special Topics**	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects studied principally through directed reading and supervised projects. (Offered as demand warrants.)

ANTHROPOLOGY

Anth. 101 The Study of Man (3+0) 3 Credits Fall

Introduction to anthropology, including the physical and cultural aspects of man.

Anth. 202 Cultural Anthropology (3+0) 3 Credits Spring

Basic theories and current concepts of cultural anthropology regarding the social, political, and aesthetic life of primitive societies.

Anth. 203 World Ethnography (3+0) 3 Credits Fall

A descriptive study of peoples of the world: Europe, Asia, and Africa.

Anth. 204 World Ethnography (3+0) 3 Credits Spring

A descriptive study of peoples of the world: the New World and the Pacific.

Anth. 205 Physical Anthropology (3+0) 3 Credits Fall

An introduction to physical anthropology dealing with the general physical history of man, the distribution of races, and the physical study of populations.

Anth. 214 Archaeology (3+3) 4 Credits Fall

The history of archaeology and a study of its methods. (Prerequisite: Anth. 101.)

Anth. 303 Culture History (3+0) 3 Credits Spring

The inventions of man and the spread of civilization in the Old and New World. (Prerequisites: Anth. 101 or 203 or 204, or permission of the instructor.)

Anth. 304 Africa (3+0) 3 Credits Fall or Spring

Peoples and cultures of Africa. (Prerequisite: Anth. 101.)

Anth. 306 Oceania (3+0) 3 Credits Spring

Ethnic groups and cultures of Indonesia, Micronesia, Melanesia, Polynesia, and Australia. (Prerequisite: Anth. 101.)

Anth. 312 North American Archaeology (3+0) 3 Credits Fall or Spring

Prehistoric cultures north of Mexico. Archaeological methods peculiar to America and problems related to the prehistory of the Arctic Regions. (Prerequisite: Anth. 314.)

Anth. 326 Arctic Ethnology (3+0) 3 Credits Spring

Ethnic groups and cultures of the circumpolar area. (Prerequisites: Anth. 101 or 203 or 204.)

Anth. 328 Arctic Archaeology (2+3) 3 Credits Spring

Problems of the prehistory of the Arctic. (Prerequisite: Anth. 214.)

Anth. 329 Peoples of Central and Northern Asia (3+0) 3 Credits Fall

Native peoples of Siberia and adjoining regions. (Prerequisite: Anth. 101.)

Anth. 335 North American Ethnology (3+0) 3 Credits Fall

Tribal life of American Indians north of Mexico. (Prerequisites: Anth. 101 or 203 or 204.)

Anth. 336 Ethnology of Central and South America (3+0) 3 Credits Spring

Racial distribution, material, and social cultures of peoples of Central and South America. (Prerequisite: Anth. 101.)

Anth. 342 Anthropology of the Natives of Alaska (3+0) 3 Credits Spring

Indians and Eskimos of Alaska. Social organization, social customs, and problems of acculturation. Primarily for students who expect to teach in Alaska. (Prerequisites: Anth. 101, Hist. 341 or junior standing.)

Anth. 402 Human Biology (3+3) 4 Credits Fall

The study of fossil man, evolution and the implications for the development of culture. (Prerequisite: Anth. 205 or permission of the instructor.)

Anth. 423 Social Structure (3+0) 3 Credits Fall

The social systems of native peoples. (Prerequisites: Anth. 101 or 203 or 204 and junior standing.)

Anth. 424 Primitive Religion (3+0) 3 Credits Spring

Descriptive and comparative study of religious belief in native societies.

Anth. 425 Primitive Arts (3+0) 3 Credits Spring

The visual, literary, and musical arts of native people. (Prerequisites: Anth. 101 and junior standing.)

Anth. 427 Contemporary Problems (3+0) 3 Credits Fall

Analysis of the contemporary problems of the native populations, emphasizing the peoples of Alaska. (Prerequisite: permission of the instructor.)

Anth. 428 Psychological Anthropology (3+0) 3 Credits Spring

The relationship between culture and personal behavior patterns. (Prerequisites: Anth. 202, Psy. 101 and junior standing.)

Anth. 429 Language in Culture (3+0) — 3 Credits — Fall

The study of language in its relation to culture. (Prerequisites: Anth. 202 and junior standing.)

Anth. 430 Anthropological Field Methods (3+0) — 3 Credits — Spring

Lectures to prepare the student for field work and inform him of recently developed techniques of collecting field data. (Prerequisites: junior standing and permission of the instructor. Offered as demand warrants.)

Anth. 491	Seminar	Credits Arr.	As demand warrants
492		Credits Arr.	As demand warrants

Topics in anthropology.

Anth. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects studied in special fields on anthropology. (Prerequisite: senior standing or permission of the instructor.)

Anth. 495	Research	Credits Arr.	Fall
496		Credits Arr.	Spring

Supervised research in the fields of anthropology represented in the department program. (Prerequisite: permission of the instructor.)

Anth. 497	Thesis or Project	Credits Arr.	Fall
498		Credits Arr.	Spring

Advanced students who have shown special aptitude for individual study or research may elect thesis or project work. (Prerequisite: permission of the head of the department.)

Anth. 601 History of Anthropology (3+0) — 3 Credits — Fall

A chronological study of the development of the science of anthropology, stressing the leaders in the field and the theories developed.

Anth. 610 Human Ecology (3+0) — 3 Credits — Fall

The adaptation of man to his environment, both natural and social. The course concerns itself with the total aspect of a society in its internal group relationship, as well as in the natural environment on which its economy is based.

Anth. 630 Anthropological Field Methods — Credits Arr. — Spring

An opportunity for the graduate student to learn the techniques of field work and practice them.

Anth. 691	Seminar	Credits Arr.	Fall
692		Credits Arr.	Spring

Topics include physical and social anthropology, comparative archaeology, ethnological theory. (Admission by arrangement.)

Anth. 693	Special Topics	Credits Arr.	Fall
694		Credits Arr.	Spring

Various subjects studied, principally by directed study, discussion, and research. (Admission by arrangement.)

Anth. 695	Research	Credits Arr.	As demand warrants
696		Credits Arr.	As demand warrants

Supervised research. Credit to be arranged. (Prerequisites: graduate standing and permission of the instructor. Can be repeated.)

Anth. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

Offered as demand warrants.

ART

Art	55	Elementary Drawing (0+4)	2 Credits	Fall
	56		2 Credits	Spring

Line drawing, shading, layout, and design.

Art	57	Elementary Printmaking (0+4)	2 Credits	Fall
	58		2 Credits	Spring

Blockprinting, etching, and engraving.

Art	59	Elementary Metalcraft (0+4)	3 Credits	Fall
	60		3 Credits	Spring

Metalcraft techniques. Designing, annealing, and soldering.

Art	61	Elementary Sculpture (0+6)	3 Credits	Fall
	62		3 Credits	Spring

Clay modeling, stone carving, and woodcarving.

Art	63	Elementary Oil Painting (0+6)	3 Credits	Fall
	64		3 Credits	Spring

Characteristics of pigments, preparation of canvas, layout, and design painting.

Art	65	Elementary History of World Art (3+0)	3 Credits	Fall
	66		3 Credits	Spring

Artistic endeavors throughout the history of Western man.

Art	101	Beginning Ceramics (0+6)	3 Credits	Fall
	102		3 Credits	Spring

Introduction to the making and firing of clay objects. Study of clays, methods of forming decorations, glazing and firing. (Offered only at Anchorage Community College.)

Art	105	Freehand Drawing (0+4)	2 Credits	Fall
	106		2 Credits	Spring

Pictorial design, life drawing, landscape drawing, using varied techniques and media.

Art	161	Design and Color Theory (1+3)	2 Credits	Fall
	162		2 Credits	Spring

Creative designing and rendering. Emphasis on mass-space relationships and composition, value transitions and hues, colorwheel, color, and intensity movements.

Art	205	Life Drawing and Composition	2 Credits	Fall
	206		2 Credits	Spring

Problems in drawing from life, exploring possibilities in pictorial design, and composition, still life, anatomy, and perspective. (Prerequisite: Art 106 or permission of the instructor.)

Art	207	Beginning Printmaking (0+4)	2 Credits	Fall
	208		2 Credits	Spring

Various intaglio and relief printing media, engraving, etching, woodcut, and other graphic media. (Prerequisite: Art 106 or permission of the instructor.)

Art	209	Beginning Metalcraft (0+4)	3 Credits	Fall
	210		3 Credits	Spring

Material processes and techniques for silver jewelry and silversmithing. (Prerequisite: Art 161 or permission of the instructor.)

Art	211	Beginning Sculpture (0+6)	3 Credits	Fall
	212		3 Credits	Spring

Original, creative studies in clay, wood, and stone sculpture. Emphasis on mastery of techniques and material processes.

Art	213	Beginning Oil Painting (0+6)	3 Credits	Fall
	214		3 Credits	Spring

Basic investigation of materials and their use in expressing the students' ideas. (Prerequisites: Art 106, 162 or permission of the instructor.)

Art	261	History of World Art (3+0)	3 Credits	Fall
	262		3 Credits	Spring

Origins of art and its progressive development from the beginning to contemporary art; emphasis on change and progress. (Prerequisite: sophomore standing. Term paper required each semester.)

Art	305	Advanced Drawing and Anatomy (0+4)	2 Credits	Fall
	306		2 Credits	Spring

Creative approach, including a comprehensive study of functional human anatomy, with the human figure as an art motif. (Prerequisite: Art 206 or permission of the instructor.)

Art	307	Intermediate Printmaking (0+4)	2 Credits	Fall
	308		2 Credits	Spring

Additional study and experimentation in intaglio, relief, and planographic printing techniques, including lithography, serigraphy, and color printing. (Prerequisite: Art 208 or permission of the instructor.)

Art	309	Intermediate Metalcraft (0+4)	3 Credits	Fall
	310		3 Credits	Spring

Material processes and techniques for silver jewelry and silversmithing; creating problems in artistic design. (Prerequisite: Art 210 or permission of the instructor.)

Art	311	Intermediate Sculpture (0+6)	3 Credits	Fall
	312		3 Credits	Spring

Creative studies in welding, plaster casting, concrete casting, sand-casting, clay modeling, wood carving, and stone carving. (Prerequisite: Art 212 or permission of the instructor.)

Art	313	Intermediate Oil Painting (0+4)	2 Credits	Fall
	314		2 Credits	Spring

Creating pictorial problems in oil painting techniques, still life, composition, and figure painting. (Prerequisite: Art 214 or permission of the instructor.)

Art	407	Advanced Printmaking (0+4)	2 Credits	Fall
	408		2 Credits	Spring

Advanced study in all printing media. (Prerequisite: Art 308 or permission of the instructor.)

Art	409	Advanced Metalcraft (0+4)	3 Credits	Fall
	410		3 Credits	Spring

Continued investigation and experimentation of intermediate metalcraft. (Prerequisite: Art 310 or permission of the instructor.)

Art	411	Advanced Sculpture (0+6)	3 Credits	Fall
	412		3 Credits	Spring

Styrofoam burn-out, aluminum, bronze casting, steel welding, repousse sculpture, plastics, inlay, and architectural sculpture. (Prerequisite: Art 312 or permission of the instructor.)

Art	413	Advanced Oil Painting (0+4)	2 Credits	Fall
	414		2 Credits	Spring

Exploration and development of the creative approach to various techniques involved in figure, landscape, abstract and non-objective painting, and pictorial design. (Prerequisite: Art 314 or permission of the instructor.)

Art	419	History of Northern Renaissance Art (3+0)	3 Credits	Fall
	420		3 Credits	Spring

Pre-Renaissance painting, sculpture, architecture, and minor arts of the Netherlands through the Netherlandish Renaissance; Renaissance painting in France and Germany; the humanist and reformative influences on artistic developments.

Art	493	Special Topics	Credits Arr.	Fall
	494		Credits Arr.	Spring

Various subjects in art. (Admission by arrangement.)

Art	691	Art Seminar	Credits Arr.	As demand warrants
	692		Credits Arr.	As demand warrants

Art	693	Special Topics	Credits Arr.	Fall
	694		Credits Arr.	Spring

Various subjects, principally by directed study, discussion, and research.

Art	695	Research	Credits Arr.	Fall
	696		Credits Arr.	Spring

Art	697	Thesis	Credits Arr.	Fall
	698		Credits Arr.	Spring

BEHAVIORAL SCIENCES

B.S. 101 Field Observation (2+3) — 3 Credits — As demand warrants

Observation experience within a series of three agencies in which an awareness of intake procedures, services provided, and follow-up will be discussed. (Also offered at Anchorage Community College.)

B.S. 201 Field Practice (2+3) — 3 Credits — As demand warrants

Practical experience within an agency, under the guidance of field supervisors, collecting and interpreting client information. Ways of relating to clients in a therapeutic manner will be developed in the training experience. (Also offered at Anchorage Community College.)

B.S. 251 Research Principles (2+3) — 3 Credits — As demand warrants

Basic principles of scientific methods, its application to behavioral and social science statistics. The implication of systematic assessment, experimentation and survey methods for empirical conclusions concerning social and behavioral functions and causes. (Also offered at Anchorage Community College.)

BIOLOGY

Biol. 105 Fundamentals of Biology (3+3) — 4 Credits — Fall
106 — 4 Credits — Spring

An introductory course open to students in all curricula.
Fall semester: basic principles of living systems: chemical and structural bases; major metabolic mechanisms; reproduction and development; genetics; evolution, and diversity; environmental relationships; and mechanisms for stability of cells, organisms, and populations.
Spring semester: plant and animal kingdoms; emphasis on structure and function of vertebrate animals and vascular plants.
(Prerequisite for Biol. 106: Biol. 105 or permission of the instructor.)

Biol. 201 Elements of Vertebrate Anatomy (2+3) — 3 Credits — Fall

Anatomy and histology of the vetebrate body with emphasis on human and other mammals. (Prerequisite: Biol. 105.)

Biol. 203 Invertebrate Zoology (3+3) 4 Credits Fall

Structure, function, classification, evolution, and life histories of invertebrate animals. Several all day field trips. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 206 Introduction to Bird Study (1+3) 2 Credits Spring

Natural history and identification of birds. Early morning field trips. No credit allowed if credit received for Biol. 310. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing, or permission of the instructor. Offered alternate years; next offered 1971.)

Biol. 208 Organic Evolution (2+0) 3 Credits Spring

Evidences, mechanisms, and directive forces. (Prerequisite: Biol. 105 with a grade of B or better, or sophomore standing. Offered alternate years; next offered 1972.)

Biol. 210 General Physiology (3+3) 4 Credits Spring

Physiology of organisms at the molecular, cellular, organ, and system levels. Examples will be drawn from both the plant and animal kingdoms. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing; Chem. 101 or 104.)

Biol. 217 Comparative Anatomy of Vertebrates (2+6) 4 Credits Spring

Anatomy, phylogeny, and evolution of the vertebrates. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 239 Plant Form and Function (3+3) 4 Credits Fall

Structure, function, ecology, and evolutionary patterns of the major groups of plants. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 302 Genetics (3+0) 3 Credits Spring

Principles of inheritance in plants and animals; the physico-chemical properties of genetic systems. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 303 Principles of Ecology (3+0) 3 Credits Fall or Spring

Relationships between organisms and their environments. Communities, environmental factors affecting plants and animals, population structure, and reaction of organisms. Field trips. (Prerequisites: Biol. 105 with a grade of B or better, or Biol. 105 and sophomore standing.)

Biol. 307 Parasitology (2+3) — 3 Credits — Fall

Classification, morphology, life history, and ecology of parasites of animals. (Prerequisite: Biol. 105. Offered alternate years; next offered 1970.)

Biol. 309 Biology of the Vertebrates (3+3) — 4 Credits — Fall
310 — 4 Credits — Spring

Classification, evolution, morphology, ecology, and distribution of the vertebrates. Field trips, including early morning trips in Biol. 310. (Prerequisites: for Biol. 309, Biol. 105 and a course in anatomy or permission of the instructor. For Biol. 310, 309 or permission of the instructor.)

Biol. 318 Vertebrate Developmental Anatomy (2+6) — 4 Credits — Spring

Morphogenesis of the vertebrates and introduction to the causal analysis of development. (Prerequisite: Biol. 217.)

Biol. 331 Systematic Botany (2+6) — 4 Credits — Fall

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 required to insure preparation of individual plant collections prior to registration. (Prerequisite: Biol. 239, or permission of the instructor.)

Biol. 333 Morphology of the Non-Vascular Plants (2+3) — 3 Credits — Fall

Comparative study of structure, development, phylogenetic trends, and life histories of the major groups of algae, fungi, and bryophytes. (Prerequisite: Biol. 239. Offered alternate years; next offered 1970.)

Biol. 334 Morphology and Anatomy of Vascular Plants (3+3) — 4 Credits — Spring

Comparative study of morphology, developmental anatomy, phylogenetic trends, and life histories of the major groups of vascular plants. (Prerequisite: Biol. 239. Offered alternate years; next offered 1971.)

Biol. 341 General Microbiology (2+6) — 4 Credits — Fall
342 — 4 Credits — Spring

Morphology, physiology, and ecology of micro-organisms. Isolation, cultivation, and identification. Disease, sources and modes of infection, sterilization. Micro-organisms in food, soil, and water. Laboratory includes isolation and identification of representative groups of micro-organisms and experiments on their physiological and biochemical characteristics. (Prerequisites: Biol. 105, Chem. 105 or 321, or permission of the instructor.)

Biol. 361	**Cell Biology (3+3)**	**4 Credits**	**Fall**
362		**4 Credits**	**Spring**

Detailed structure, including ultrastructure, and function of the cell; isolation, composition, and biochemical properties of cell organelles and their integration and genetic control.
Fall Semester: structure, biochemistry of cell constituents, enzymes, electron transport, photosynthesis, and respiration.
Spring Semester: intermediary metabolism, genetic control and regulation, and specialized cellular functions such as membrane transport, membrane potentials, motility, etc. (Prerequisites: for Biol. 361, a year each of college chemistry and biology; for Biol. 362, Biol. 361.)

Biol. 401	**Medical Technology**	**30 Credits**	**Fall**

Twelve-month medical technology internship at an affiliated hospital school, including work in clinical chemistry, hematology, microbiology, serology, parasitology, and histologic technique. (Prerequisites: senior standing in medical technology curriculum with the prior two semesters having been in residence at the University of Alaska; acceptance by an affiliated school of medical technology.)

Biol. 414	**Comparative Physiology (3+3)**	**4 Credits**	**Spring**

Water, ion, and nitrogen balance; temperature regulation; circulatory, muscle, hormone, and nervous systems in the various animal phyla. (Prerequisites: Biol. 210, Chem. 102; Chem. 223 or 321 and Biol. 361-362 recommended.)

Biol. 416	**Plant Physiology (2+3)**	**3 Credits**	**Spring**

Functions of the vascular plants: plant-soil-water relations; synthesis and metabolism of organic compounds; growth and development. (Prerequisites: Biol. 210, Chem. 102, Chem 223 or 321 and Biol. 361-362 recommended. Offered alternate years; next offered 1972.)

Biol. 491	**Seminar**	**Credits Arr.**	**Fall**
492		**Credits Arr.**	**Spring**

Topics in biological sciences.

Biol. 493	**Special Topics**	**Credits Arr.**	**Fall**
494		**Credits Arr.**	**Spring**

Special fields in biological sciences. (Prerequisite: senior standing or permission of the instructor. Offered as demand warrants.)

Biol. 495	**Research**	**Credits Arr.**	**Fall**
496		**Credits Arr.**	**Spring**

Guided investigation, either laboratory or field, for qualified seniors. (Admission by arrangement.)

Biol. 608 Parasite Ecology (2+3) 3 Credits Spring

Ecology of animal parasites. (Prerequisites: Biol. 307 and permission of the instructor. Offered as demand warrants.)

Biol. 615 History of Biology (1+0) 1 Credit Fall

The progress of biological thought and philosophy from ancient to modern times. (Offered as demand warrants.)

Biol. 616 Principles and Methods of Taxonomy (2+3) 3 Credits Spring

Modern taxonomic ideas and their application to zoological and botanical problems. (Offered alternate years; next offered 1971.)

Biol. 618 Biogeography (2+0) 2 Credits Spring

Spatial and temporal geography of plant and animal groups; emphasis on environmental and historical features controlling present patterns of distribution. (Offered alternate years; next offered 1972.)

Biol. 624 Plant Ecology (2+3) 3 Credits Spring

Occurrence, abundance, and productivity of plant species; structure, composition, and variation in time and space of plant communities; related environmental aspects. Current concepts and controversies; methods of analysis. (Prerequisites: Biol. 303, 331, 334 or 416; and permission of the instructor. W.M. 325 strongly recommended. Offered alternate years; next offered 1971.)

Biol. 627 Physiological Ecology (2+3) 3 Credits Fall

Interaction between organisms and their environment with emphasis on the function of the organism as affected by physical stimuli such as light, heat, water, ions, and biotic stimuli such as competition. Each environmental factor is considered at the molecular, cellular, organismic, population, and community levels. (Prerequisites: a physiology course and Biol. 303.)

Biol. 629 Animal Behavior (3+0) 3 Credits Fall

Principles of the behavior, causal factors, functional consequences, developmental, and evolutionary histories of behavioral patterns. (Prerequisites: Biol. 303; 414 and permission of the instructor. Offered alternate years; next offered 1972.)

Biol. 637 Modern Evolutionary Theory (2+0) 2 Credits Fall

Contemporary ideas and problems of the mechanics of evolution.

Biol. 641 Microbial Physiology (2+3) — 3 Credits — Fall

The principal types of autotrophic and heterotrophic microbial metabolism. Photosynthesis, nitrogen fixation, metabolism of iron and sulfur bacteria. Fermentation, respiration, biosynthetic pathways. (Prerequisites: Biol. 341, 342; Chem. 452, or permission of the instructor. Offered as demand warrants.)

Biol. 652 Marine Ecology (3+0) — 3 Credits — Spring

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. 303, Chem. 212, 322; Geol. 411 or permission of the instructor. Offered alternate years; next offered 1971.)

Biol. 691 Seminar — Credits Arr. — Fall
692 — Credits Arr. — Spring

Topics in biological sciences. (Offered as demand warrants.)

Biol. 693 Special Topics — Credits Arr. — Fall
694 — Credits Arr. — Spring

Various subjects, including advanced studies in ecology, evolution, taxonomy, biogeography, physiology, animal behavior, etc. (Admission by arrangement.)

Biol. 695 Research — Credits Arr. — Fall
696 — Credits Arr. — Spring

Investigation, either field or laboratory, of a problem of lesser scope than the thesis, or supplementary to the thesis. (Admission by arrangement.)

Biol. 697 Thesis — Credits Arr. — Fall
698 — Credits Arr. — Spring

(Admission by arrangement.)

BUSINESS ADMINISTRATION

B.A. 165 Business Administration for Technicians — 3-4 Credits — Fall or Spring
166 — 3-4 Credits — Fall or Spring

A survey of core areas of business administration with particular emphasis upon organization and operation of small and middle-scale businesses. Business law, personal finance, manufacturing, marketing and finance at the introductory level. An introduction to business enterprise for non-business majors. (Prerequisites: Associate degree or freshman standing, except that credit may not be counted toward the four-year degrees in business and economics.)

B.A. 223 Real Estate Law (3+0) — 3 Credits — Fall, Spring

A practical course surveying the various kinds of deeds and conveyances, mortgages, liens, rentals, appraisals, and other transactions in the field of real estate and the law. (Offered only at Anchorage Community College.)

B.A. 292 Introduction to Data Processing (3+0) — 3 Credits — Spring

(Same as O.A. 292)
Introduction to data processing. Related management.

B.A. 325 Financial Management (3+0) — 3 Credits — Fall or Spring

Intensive analysis of the methods of financial planning and control, asset management, and other functions performed by the financial executive.

B.A. 331 Business Law (3+0) — 3 Credits — Fall
332 — 3 Credits — Spring

Survey of the legal aspects of business problems; basic principles, institutions, and administration of law.
Fall semester: contracts, agency, employment, negotiable instruments, and personal property sales.
Spring semester: insurance, suretyship, partnerships, corporations, real property, trusts, wills, bankruptcy, torts, and business crimes.
(Prerequisite: junior standing.)

B.A. 343 Marketing (3+0) — 3 Credits — Fall

Fundamental problems; simulation exercises; interrelations of marketing with other business activities; conceptual and quantitative sciences in marketing. (Prerequisite: Econ. 121, 122.)

B.A. 359 Regulation of Industry (3+0) — 3 Credits — Fall or Spring

Effects of government regulation, economic policy, and executive policy on private and public enterprise.

B.A. 360 Production Management (3+0) — 3 Credits — Spring

Basic manufacturing management. Survey of models and representative problems including scheduling machine set-up, plant layout, capital budgeting, and production control. (Prerequisite: junior standing.)

B.A. 361 Industrial Relations (3+0) — 3 Credits — Fall or Spring

Personnel practice in industry; analysis of labor-management problems; methods and administrations of recruiting, selecting, training and compensating employees; labor laws and their applications. (Prerequisite: B.A. 360.)

B.A. 371 Business Data Processing 3 Credits Fall

An introductory analysis of computer based management information systems. Required for all business administration majors.

B.A. 372 Business Simulation 3 Credits Spring

Realistic exercises in management decision-making using computer simulated models. Required for all business administration majors. (Prerequisite: B.A. 371, or equivalent programing background, and junior standing.)

B.A. 423 Investment Management (3+0) 3 Credits Fall or Spring

Management securities, portfolios of individuals and institutions; basic security analysis; investment policies of banks, insurance companies, investment companies, and fiduciaries.

B.A. 424 Managerial Economics (3+0) 3 Credits Spring

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. (Prerequisite: Econ. 324.)

B.A. 425 Advanced Corporate Financial Problems (3+0) 3 Credits Fall or Spring

A consideration of corporate financial problems, planning and controls, and major functions performed by corporate financial managers. (Prerequisite: B.A. 325.)

B.A. 442 Marketing Institutions and Channels (3+0) 3 Credits Spring

Analysis of industry and firm operations as marketing institutions; evolution of distribution channels; and contemporary marketing problems.

B.A. 443 Marketing Theory and Analysis of Market Change (3+0) 3 Credits Fall or Spring

Factors influencing behavior of consumer and business units; behavior change. The construction and use of mathematical models in marketing; application of digital computers in marketing system analysis and control. (Prerequisites: B.A. 343, completion of behavioral science requirements, and statistics.)

B.A. 462 Administrative Policy (3+0) 3 Credits Spring

Organization role in a dynamic society; decision problems in varying social, economic, and political environments.

B.A. 480 Organization Theory (3+0) — 3 Credits — Fall or Spring

Literature of organizational theory; emphasis on theoretical concepts, social science research techniques and organizational behavior. (Prerequisites: junior standing, completion of behavioral science requirements, or permission of the instructor.)

B.A. 490 Social Responsibilities of Business (3+0) — 3 Credits — Spring

A study of the rights and duties of businessmen in specific fields in the light of those principles which have graced the perennial moral tradition of our Western world. Dilemmas caused by the apparent conflict of such values as family well-being, personal integrity and career advancement. Business involvement in urban problems.

B.A. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

B.A. 648 Mathematical Method and Computers Workshop (3+0) — 3 Credits — Fall or Spring

Selected topics in the use of mathematical models, econometric techniques, and computers in marketing; individual research projects. (Prerequisite: permission of the instructor.)

B.A. 690 Seminar in Finance (3+0) — 3 Credits — Spring

Survey of financial institutions and markets with emphasis upon theory and practice of central banking and actual operation of monetary policy. Current problems in finance. (Prerequisites: post-graduate or graduate standing. Approval of graduate student's advisory committee or the department head.)

B.A. 691 Seminar in Marketing (3+0) — 3 Credits — Fall

A survey of marketing institutions, systems, policies and practices. Review of marketing constituents in economic development, marketing theory, and current problems. (Prerequisites: post-graduate or graduate standing. Approval of graduate student's advisory committee or the department head.)

B.A. 692 Seminar in Production (3+0) — 3 Credits — Fall or Spring

A survey of conceptual framework and selected mathematical models applicable in production management. A review of classical problems in simplex method, waiting line theory, Monte Carlo analysis, queuing theory. Selected current problems and topics. (Prerequisites: post-graduate or graduate standing. Approval of graduate student's advisory committee or the department head.)

B.A. 693 Special Topics — Credits Arr. — Fall
694 — Credits Arr. — Spring

B.A. 696 Orientation to Research (3+0) — 3 Credits — Spring

Review of statistical tools representative of the field quantitative analysis in business and economics. Survey of selected research methods in social sciences. Graduate topics in managerial economics, including advanced statistical methods, Bayesian statistics and their interpretation. Preparation and organization of the thesis. Current problems. (Prerequisites: post-graduate or graduate standing. Approval of graduate student's advisory committee or the department head. Normally taken the last semester prior to the thesis requirement.)

B.A. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

CHEMISTRY

Chem.	101	General Chemistry (3+3)	4 Credits	Fall
	102	General Chemistry & Introductory Qual. Analysis (3+3)	4 Credits	Spring

General chemistry and introductory qualitative analysis have one hour of recitation, three hours of lecture and three hours of laboratory per week.
Fall semester: general principles, chemistry of the non-metals.
Spring semester: chemistry of the metals and qualitative analysis.

Chem.	103	Contemporary Chemistry (3+3)	4 Credits	Fall
	104		4 Credits	Spring

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 chemistry in a modern economic, social and biological context.

Chem.	201	General and Quantitative Chemistry (3+3)	4 Credits	Fall
	202		4 Credits	Spring

Classical principles of chemistry, atomic structures, and the periodic table; molecular structure, the states of matter. For students in engineering. (Prerequisites: Math. 200, high school chemistry or Chem. 104, Chem. 101 recommended.)

Chem.	212	Introductory Quantitative Analysis (2+6)	4 Credits	Fall
				Spring

General principles of chemical analysis; introduction to volumetric and gravimetric methods. Theory, problems, and laboratory. (Prerequisites: Chem. 102 or 202, Math. 106 or equivalent.)

Chem. 223 Introductory Organic Chemistry (4+0) — 4 Credits — Fall

For students in curricula requiring a one-semester terminal course in organic chemistry. (Prerequisite: Chem. 102 or 202.)

Chem. 321 Organic Chemistry (3+0) — 3 Credits — Fall
322 — 3 Credits — Spring

Organic chemistry; preparation and properties of simple aliphatic and aromatic compounds. For chemistry, chemical engineering, premedical, biochemistry, science, etc. (Prerequisite: Chem. 102 or 202 for Chem. 321; Chem. 321 for Chem. 322.)

Chem. 324 Organic Laboratory (0+6) — 2 Credits — Spring

An introduction to modern laboratory techniques for the separation, purification and analysis of organic compounds as these are applied to problems of natural products, of reaction kinetics, and of organic synthesis. (Prerequisites: Chem. 223 or 321 or consent of the instructor.)

Chem. 331 Physical Chemistry (3+0) — 3 Credits — Fall
332 — 3 Credits — Spring

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: for Chem. 331, Chem. 102 or 202; Math 200, 201, 202; Phys. 103,104 or 211, 212 or permission of the instructor. For Chem. 332, Chem. 331.)

Chem. 333 Physical Chemistry Lab (0+3) — 1 Credit — Fall
334 — 1 Credit — Spring

Fall semester: three states of matter, principles of heat and thermodynamics, and applications; solutions, colloids.
Spring semester: thermochemistry, second and third laws of thermodynamics, equilibria, chemical kinetics, electrical phenomena, atomic structure, molecular structure, photochemistry.
(Prerequisites or corequisites: for Chem. 333, Chem. 331; for Chem. 334, Chem. 332.)

Chem. 362 Scientific Glassworking (0+3) — 1 Credit — Spring

Construction of scientific glassware. (Prerequisite: junior standing in chemistry or permission of the instructor.)

Chem. 402 Inorganic Chemistry (3+0) — 3 Credits — Spring

Systematic application of the theories of atomic structure and chemical bonding to the elements as they appear in the Periodic System. (Prerequisites: Chem. 331 with Chem. 332 at least corequisite.)

Chem. 416 Instrumental Chemical Analysis (2+6) 4 Credits Spring

Introduction to modern physical methods of analysis. (Prerequisites: Chem. 212, 331, 333 and Chem. 332, 334 at least corequisite.)

Chem. 421 Advanced Organic Chemistry (3+0) 3 Credits Fall

Emphasis on the theoretical interpretation of structure and reactions. (Prerequisites: Chem. 321, 322, 331, 332. Offered in alternate years; next offered in 1970.)

Chem. 425 Organic Qualitative Analysis (1+6) 3 Credits Fall

Identification of pure organic compounds and mixtures. (Prerequisite: Chem. 322. Offered as demand warrants.)

Chem. 431 Advanced Physical Chemistry (3+0) 3 Credits Fall

Nuclear and atomic structure, spectroscopy, homogeneous reaction kinetics, photochemistry, solid state. (Prerequisites: Chem. 331, 332, 333, 334.)

Chem.	**451**	**General Biochemistry (3+3)**	**4 Credits**	**Fall**
	452		**4 Credits**	**Spring**

General principles of biochemistry. Chemistry and metabolism of carbohydrates, lipids, and proteins together with a consideration of enzymes, vitamins, hormones, and other biocatalysts; chemistry and physiology of living tissues, blood, and urine. (Prerequisites: Chem. 321, 322, and a familiarity with thermodynamics and reaction kinetics, and permission of the instructor.)

Chem.	**491**	**Seminar (1+0)**	**0 or 1 Credit**	**Fall**
	492		**0 or 1 Credit**	**Spring**

Discussion of current literature.

Chem.	**493**	**Special Topics**	**Credits Arr.**	**Fall**
	494		**Credits Arr.**	**Spring**

Various subjects studied including advanced organic chemistry, advanced physical chemistry, advanced analytical chemistry, history and literature of chemistry, industrial chemistry, instrumental analysis, chemistry of radioactivity and isotopes, petroleum chemistry spectroscopy. (Prerequisites: junior standing and three semesters (or 12 credits) of college chemistry with a grade of C or better.)

Chem.	**495**	**Research**	**Credits Arr.**	**Fall**
	496		**Credits Arr.**	**Spring**

Introduction to research at the undergraduate level. (Admission is by permission of the department head.)

Chem. 602 Advanced Inorganic Chemistry (3+0) 3 Credits Spring

Advanced topics in inorganic chemistry. (Prerequisite: Chem. 402 or 431.)

Chem. 612 Advanced Analytical Chemistry (3+0) 3 Credits Fall

Applications of equilibria and statistics to analytical methods. Prerequisites: Chem. 212, 416, 331, 332. (Offered in alternate years; next offered in 1972.)

Chem. 622 Advanced Organic Chemistry II (3+0) 3 Credits Spring

Modern interpretations of organic chemical reactions based on structure, kinetics, and energetics. (Prerequisites: Chem. 321, 322, 331, 332, 421. Offered in alternate years; next offered in 1971.)

Chem. 632 Advanced Physical Chemistry II (3+0) 3 Credits Spring

Applications of quantum mechanics to molecular bonding. (Prerequisite: Chem. 431.)

Chem. 633 Spectroscopy and Molecular Structure (3+0) 3 Credits Spring

Introduction to the rotational, vibrational, and electronic spectra of polyatomic molecules. (Prerequisite: Chem. 431.)

Chem. 651 Selected Topics in Biochemistry (2+0) 2 Credits Fall
652 2 Credits Spring

Topic areas: vitamins and hormones, carbohydrates, physical biochemistry, nucleic acids, lipids, enzymes, protein chemistry; intermediary metabolism, oxidate enzyme systems, pathways of metabolism, biochemistry of the cell nucleus, etc. (Prerequisite: one year of biochemistry or one year of organic chemistry or permission of the instructor.)

Chem. 661 Chemical Oceanography I (3+0) 3 Credits Fall or Spring

(Same as OCN 661)
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.)

Chem. 663 Chemical Oceanography II (3+0) 3 Credits Fall or Spring

(Same as OCN 663)
Selected topics in chemical oceanography, including stable isotope chemistry; chemical equilibria; chemistry of marine biota and their products; interaction of sediments and water; material exchange through sea air interface; marine photosynthesis and special topics of marine biochemistry; chemical technology as applied to oceanography; raw materials and industrial utilization. (Prerequisite: Chem. 661, or permission of the instructor. Offered in alternate years.)

Chem. 665 Cellular Biochemistry (2+0) — 2 Credits — Fall or Spring

Chemistry structure and metabolism of microorganisms including growth kinetics and entergetics, transport and control processes. (Prerequisite: Chem. 452 or equivalent. Offered in alternate years.)

Chem. 691	**Seminar (1+0)**	1 Credit	Fall
692		1 Credit	Spring

Reviews of current research.

Chem. 693	**Special Topics**	Credits Arr.	Fall
694		Credits Arr.	Spring

Various subjects, including kinetics, thermodynamics, statistical mechanics, photochemistry, colloid chemistry, nuclear chemistry, etc.

Chem. 695	**Research**	Credits Arr.	Fall
696		Credits Arr.	Spring

Research which is not directly connected with thesis work. (Admission by arrangement and permission of the department head.)

Chem. 697	**Thesis**	Credits Arr.	Fall
698		Credits Arr.	Spring

CIVIL ENGINEERING

C.E. 112 Elementary Surveying (2+3) — 3 Credits — Spring

Use of transit, level and plane table, traverses, stadia, circular curves, elementary theory of measurement.

C.E. 116 Mapping (2+3) — 3 Credits — Spring

Maps and scales, projections, U.S. Public Land System, aerial photos with special applications to forestry and wildlife management. Plane tables, compasses, stadia, levels, transits, traverses. Intended primarily for students in wildlife management. (Prerequisite: junior standing or permission of the instructor. Offered in alternate years, 1971, 1973.)

C.E. 334 Properties of Materials (1+6) — 3 Credits — Spring

Introduction to the properties of engineering materials. Bonding, crystal, and amorphous structures. Relationships between microstructure and engineering properties. Modification of properties and environmental serviceability. (Prerequisite: E.S. 331.)

C.E. 344 Hydrology (2+0) 2 Credits Spring

Relationship between precipitation and runoff. Infiltration, evaporation, aufeis, permafrost. Flood hydrographs and unit hydrographs. Flood routing. Statistical analyses. (Prerequisite: E.S. 341.)

C.E. 402 Transportation Engineering (2+0) 2 Credits Spring

Administration, economics, location, design, construction and maintenance of highways, railways, airports and other transportation facilities. (Prerequisite: C.E. 435.)

C.E. 412 Elements of Photogrammetry (2+3) 3 Credits Spring

Elementary study of aerial and terrestrial photographs as applied to surveying and mapping. (Prerequisite: permission of the instructor.)

C.E. 415 Surveying (1+6) 3 Credits Fall

Traverses, curves, field astronomy, state coordinate systems, adjustments. (Prerequisite: C.E. 112.)

C.E. 422 Foundation Engineering (2+0) 2 Credits Spring

Principles of foundation action, spread footings, mats, pile foundations, retaining walls and bulkheads, bridge piers, cofferdams and abutments. (Prerequisite: C.E. 435.)

C.E. 431 Structural Analysis (3+3) 4 Credits Spring

Statically determinate structures. Loadings. Graphical and analytical solutions for stresses and deflections. Indeterminate structures. Influence lines. (Prerequisite: E.S. 331.)

C.E. 432 Structural Design (3+3) 4 Credits Spring

Planning of structural systems, detail connections. Reinforced concrete. Introduction to ultimate load theory. Prestressing. Composite action. (Prerequisite: C.E. 431.)

C.E. 435 Soil Mechanics (2+3) 3 Credits Fall

Identification, description, and physical properties of soils. Subsurface exploration, frost action. Entire soil mass surveyed for effect on substructure design. (Prerequisite: E.S. 331.)

C.E. 441 Sanitary Engineering (3+0) 3 Credits Fall

Theory of works for conservation, collection, treatment, and distribution of water for domestic and industrial use, and theory of wastewater treatment and disposal. (Prerequisite: C.E. 334 or permission of the instructor.)

C.E. 491 Seminar — Credits Arr. — Fall or Spring

C.E. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

C.E. 499 Advanced Engineering Problems (1+0) — 1 Credit — Fall

General problems drawn from science and engineering. This course is preparation for registration in professional Engineer-in-Training.

C.E. 603 Arctic Engineering (3+0) — 3 Credits — Fall

Application of engineering fundamentals or problems of advancing civilization in polar regions. Logistics, foundations on frozen ground and ice, thermal aspects of structures and materials; transport and communications; heating and ventilating.

C.E. 611 Transportation Engineering (3+0) — 3 Credits — Fall
612 — 3 Credits — Spring

Land, air, and marine transportation, facilities, design, utilization, planning, and administration.

C.E. 615 Transportation Design (1+6) — 3 Credits — Fall

Primarily a laboratory course in pavement and embankment design.

C.E. 618 Transportation Planning (3+0) — 3 Credits — Fall or Spring

Future design problems with special emphasis on mass transit and mode interconnection.

C.E. 620 Civil Engineering Construction (3+0) — 3 Credits — Fall

Construction equipment and methods, construction management and accounting, construction estimates and costs. (Prerequisites: E.S. 450 or equivalent and graduate standing.)

C.E. 631 Advanced Structural Analysis (3+0) — 3 Credits — Fall

Continuation of C.E. 431. Continuity in structure. Elastic and plastic theories. Arches and shells. Tall frames. (Prerequisite: C.E. 431.)

C.E. 632 Advanced Structural Design (2+3) — 3 Credits — Spring

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. 631.)

C.E. 644 Hydraulic Engineering (2+3) — 3 Credits — Spring

Study and design of hydraulic power projects, structures, and machines; reclamation and drainage; canals and reservoirs. (Prerequisite: E.S. 341.)

C.E. 645 Advanced Sanitary Engineering (3+0) — 3 Credits — Fall
646 — 3 Credits — Spring

Continuation of C.E. 441; emphasizes polar problems involving water supply, sanitation, waste disposal, water and air pollution abatement.

C.E. 649 City and Regional Planning (3+0) — 3 Credits — Fall or Spring

Elements of city and regional planning for engineers. Demography, land use, physical planning techniques.

C.E. 670 Waves and Tides (2+1) — 3 Credits — Spring

(Same as OCE 670)
Generation and propagation of waves at sea, theory of waves, wave spectra and forecasting, observation and recording of ocean waves, tsunamis, tides, internal waves.

C.E. 674 Environmental Hydrodynamics (2+1) — 3 Credits — Spring

(Same as OCE 674 and Phys. 674)
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.

C.E. 676 Coastal Engineering (2+1) — 3 Credits — Fall

(Same as OCE 676)
Review of deep and shallow water waves, littoral drift, coastal structures, pollution problems, harbor seiches. (Prerequisite: C.E. 670.)

C.E. 691 Graduate Seminar (1+0) — 1 Credit — Fall
692 — 1 Credit — Spring

Reports and papers on engineering topics. Practice in public speaking. (Prerequisite: permission of the instructor.)

C.E. 693 Special Topics — Credits Arr. — Fall
694 — Credits Arr. — Spring

Various subjects. (Prerequisite: permission of the instructor.)

C.E. 697 Thesis — Credits Arr. — Fall
698 — Credits Arr. — Spring

Individual study or research for students of special aptitude.

ECONOMICS

Econ. 121 Principles of Economics I (3+0) 3 Credits Fall

Introduction to economics; analysis and theory of national income; money and banking; public finance and taxation; economic systems.

Econ. 122 Principles of Economics II (3+0) 3 Credits Spring

Theory of prices and markets; income distribution; contemporary problems of labor, agriculture, public utilities, international economic relations.

Econ. 221 Interpretation of Economic and Business Data 3 Credits Fall

Problems in economics and business translated into statistical terms. Organizing of data; identifying of populations and their parameters; sample selection and use of sample data; linear correlations; time series analysis; index numbers. (Prerequisite: Math. 122 or Math. 106.)

Econ. 232 Economic History of the United States (3+0) 3 Credits Spring

History of the U.S. economy with special emphasis on the process of economic growth.

Econ. 321 Price and Allocation Theory (3+0) 3 Credits Fall

Analysis of demand and supply under various market forms; cost and theory of production; factor pricing and theory of distribution; survey of welfare economics. (Prerequisites: Econ. 121, 122.)

Econ. 324 Income and Employment (3+0) 3 Credits Spring

Concepts and measurement of income; analysis of aggregate demand and supply, and their relation to prices, employment and growth.

Econ. 337 Economic Development (3+0) 3 Credits Fall or Spring

Theories of growth and development; problems of economic development illustrated with case studies; analysis of major policy issues. (Prerequisites: Econ. 321; 324 or 350; or permission of the instructor. Offered as demand warrants.)

Econ. 350 Monetary Economics (3+0) 3 Credits Spring

Sources and uses of money and credit in modern society; regulation of money and credit and their impact on the economic welfare of the United States. (Prerequisites: Econ. 121, 122, 232.)

Econ. 351 Public Finance and Taxation (3+0) 3 Credits Fall or Spring

Government taxation, borrowing and spending; economic effects of taxation; influence of fiscal policy on economic activity. (Prerequisites: Econ. 121, 122. Offered in alternate years.)

Econ. 420 Labor Economics (3+0) 3 Credits Spring

Labor market analysis; employment and unemployment, wage rates, structure and composition of the labor force; economic aspects of unionism, labor legislation, social insurance. (Prerequisites: Econ. 121, 122, 232.)

Econ. 423 Comparative Economies (3+0) 3 Credits Fall

Contrasts structure, institutions, and dynamics of selected private enterprise, collectivist, and underdeveloped economies. (Prerequisites: Econ. 321; 324, or Econ. 350; or permission of the instructor.)

Econ. 425 History of Economic Thought (3+0) 3 Credits Fall or Spring

Economic thought from the physiocrats to the present, classical and neoclassical theory, exponents and critics; contemporary development in economic theory. (Prerequisites: Econ. 121, 122 and three credits of upper division courses in economic or other social sciences. Offered as demand warrants.)

Econ. 429 Business Fluctuations (3+0) 3 Credits Fall

Analysis of fluctuations in economic activity; theories of business fluctuation; methods of control and forecasting. (Prerequisites: Econ. 221, 321, 324, 350; or permission of the instructor.)

Econ. 435 Economics of Resources (3+0) 3 Credits Fall

Concepts of resources; interaction among resources, industrialization and economic development; theories and problems of conservation; emphasis on Alaska. (Prerequisites: Econ. 121, 122; or permission of the instructor.)

Econ. 463 International Economics (3+0) 3 Credits Fall

Pure theory of international trade; comparative cost, terms of trade, and factor movements. International disequilibrium; balance of payments and its impacts on national economy, capital movement, economic development through international trade. (Prerequisites: Econ. 321, 324 or 350; or permission of the instructor.)

Econ. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Econ.	495	Research	Credits Arr.	Fall
	496		Credits Arr.	Spring

Readings and research on individually assigned topics; formal paper required on assigned topic.

Econ.	687	Seminar In Economic Development and Planning (3+0)	3 Credits	Fall or Spring

Economic growth, development and planning; sociocultural aspects; policy implications. Population, foreign investment, aid and inflation. (Prerequisite: Econ. 337 or permission of instructor.)

Econ.	691	Seminar in Economic Theory	Credits Arr.	Fall
	692		Credits Arr.	Spring
Econ.	693	Special Topics	Credits Arr.	Fall
	694		Credits Arr.	Spring
Econ.	695	Seminar in Economic Research	1-3 Credits	Fall
	696		1-3 Credits	Spring

Methods of economic research used in analyzing specific, assigned topics. Discussion of problems encountered, results obtained. Report and formal paper required. (Prerequisites: graduate standing and permission of the instructor.)

EDUCATION

Ed.	201	Orientation to Education (2+3)	3 Credits	Fall Spring

Designed to acquaint the prospective 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. Open to all students. Recommended for students majoring or minoring in education.

Ed.	301	Social Studies for Elementary Teachers (3+0)	3 Credits	Fall

Methods and materials adaptable to modern curriculum in elementary social studies. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed.	302	Language Arts for Elementary Teachers (3+0)	3 Credits	Spring

Definition; role of language in children's learning; specific language skills to be taught in grades one through eight; methods and materials for effective teaching; organization for instruction; all aspects of the language arts, except reading. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 304 Literature for Children (3+0) 3 Credits Spring

Criteria for evaluating children's books and application of criteria to books selected by student; history of children's literature; study of outstanding authors, illustrators and content of specific categories of literature; book selection aids and effective use of literature to promote learning. (Prerequisite: Psy. 351 or permission of the instructor.)

Ed. 306 Teaching of Science in Elementary Schools (3+0) 3 Credits Fall

Modern concepts, methods and materials of teaching science. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 307 Teaching of Arithmetic (3+0) 3 Credits Spring

Present day concepts, methods and materials. (Prerequisites: Math. 121, Ed. 313 and prerequisites thereto. In-service teachers may substitute Math. 345 for the mathematics prerequisites.)

Ed. 308 Physical Education for the Elementary School (2+3) 3 Credits Spring

(Same as P.E. 308)
Philosophy, source materials, games, rhythmics, group activities and program planning; participation required to gain skills and techniques of teaching activities for elementary grade children. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 309 Elementary School Music Methods (3+0) 3 Credits Fall or Spring

(Same as Mus. 309)
Principles, procedures, and materials for teaching music to children at the elementary level. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 311 Audio-Visual Methods and Materials (3+2) 3 Credits Spring

Selection and use of audio-visual materials in teaching and learning at all levels of education. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 313 Educational Psychology (3+0) 3 Credits Fall and Spring

Application of principles of psychology to classroom teaching and learning. (Prerequisites: Psy. 101, 351 or 352.)

Ed. 332 Tests and Measurements (3+0) 3 Credits Fall and Spring

Theory and practice of educational evaluation; emphasis on testing aspects most applicable for classroom teachers; construction of teacher-made tests; interpretation of teacher-made and standardized instruments emphasized. Not open to students having credit in Psy. 373. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 345 Sociology of Education (3+0) 3 Credits Fall

(Same as Soc. 345)
Impact of culture on schools. Examination of contemporary social trends and relationships among church, school, government, and family. (Prerequisite: Soc. 101.)

Ed. 348 History of Education (3+0) 3 Credits Spring

Development of education in Western civilization and its implications for American education. (Prerequisites: History 101, 102 or History 131, 132.)

Ed. 351 Workshop on Alaska 1 Credit Summer

A workshop consisting of lectures and demonstrations by authorities in anthropology, biology, education, geography, mining, geology, history, literature, art, wildlife, and various other teaching fields.

Ed. 402 Methods of Teaching (3+0) 3 Credits Fall and Spring

Principles and methods of teaching management, routine, daily programs, etc. (Prerequisites: Ed. 332 and prerequisites thereto. Must be taken concurrently with Ed. 452.)

Ed. 404 Methods of Teaching Foreign Languages (3+0) 3 Credits As demand warrants

Discussion of the particular problems related to the teaching of foreign languages in the secondary schools,evaluation of teaching aids, audio-visual equipment and the language laboratory, and methods such as "grammar-translation," "direct," "audio-lingual"; recent research on the subject. (Prerequisites' 100 semester hours, Ed. 332 and prerequisites thereto.)

Ed. 405 Methods of Teaching Music (3+0) 3 Credits As demand warrants

(Same as Mus. 405)
Methods and problems of teaching music in junior and senior high schools, with emphasis on the general music program. (Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto, and Mus. 232, or permission of the instructor.)

Ed. 406 Methods of Teaching Physical Education (3+0) 3 Credits As demand warrants

Selection of materials and presentation methods for secondary school physical education. (Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

Ed. 407 Methods of Teaching Home Economics (3+0) 3 Credits As demand warrants

Problems and methods in selecting and organizing materials for instruction; comparison and evaluation of methods, laboratory techniques, supplies, equipment; economy of time and materials. (Admission by arrangement. Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

Ed. 408 Methods of Teaching Business Education (3+0) 3 Credits As demand warrants

Organization and content of high school business education courses; equipping a business education department, including selection, care, and maintenance; methods in teaching bookkeeping, typewriting, shorthand, and transcription. (Admission by arrangement. Prerequisites: 100 semester hours, Ed. 332 and prerequisites thereto.)

Ed. 409 The Teaching of Reading (3+0) 3 Credits Fall

Importance and nature of reading. Specific steps involved in the teaching of reading, word analysis, comprehension, interpretation, reading rate; new developments in reading instruction emphasizing appropriate materials. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 421 Secondary Education (3+0) 3 Credits Fall

Development of a working concept of secondary education in the U.S., its history, objectives, curriculum, organization, practices, and consideration of current issues. (Prerequisites: Ed. 313 and prerequisites thereto.)

Ed. 422 Philosophy of Education (3+0) 3 Credits Fall

Basic philosophic concepts and their historical development; philosophy applied to education and related issues and problems; examinations of contributions of outstanding educators. (Prerequisite: Phil. 101.)

Ed. 426 Principles and Practices of Guidance (3+0) 3 Credits Fall

Introduction to the philosophies; organization, patterns, tools, and techniques that aid teachers and guidance personnel in preparing students for responsible decision-making in modern society. (Prerequisites: Ed. 332 and prerequisites thereto.)

Ed. 446 Public School Organization, Control, and Support (3+0) 3 Credits As demand warrants

Fundamentals of public school organization, control, and support. Relation of federal, state, and local agencies. Problems incident to public school organization, control, and support in Alaska. (Prerequisite: senior standing in education. Not open to students who took Ed. 442, 542 before it was abolished.)

Ed. 452 Student Teaching (0+18) — 6 Credits — Fall and Spring

Supervised teaching in elementary or secondary schools of Fairbanks or in a school approved by the Department of Education. The department may limit registration, determine assignments, prescribe the number of teaching hours required, and cancel the registration of students doing unsatisfactory work. (Prerequisite: see page 94 for requirements for admission to student teaching. May be taken concurrently with Ed. 402.)

Ed. 461 Research — Credits Arr. — As demand warrants

On approval of the head of the Education Department, fourth year students who show outstanding ability for individual study in education may undertake research during their final year.

Ed. 480 Education of Culturally Different Youth (3+0) — 3 Credits — Spring

Interdisciplinary study of problems encountered by teachers in educating culturally atypical pupils. Consideration of psychological and social factors inherent in the educational process. Specific attention given to curricular improvement and teaching strategies appropriate for culturally different students. (Prerequisites: Ed. 313 and prerequisites thereto and junior standing.)

Ed. 491 Seminar — Credits Arr. — As demand warrants

492 — Credits Arr. — As demand warrants

Current topics in education. (Prerequisite: permission of the head of the department.)

Ed. 493 Special Topics — Credits Arr. — Fall

494 — Credits Arr. — Spring

Various subjects; principally directed study, discussion, and research.

Ed. 601 Master of Arts in Teaching Seminar (3+0) — 3 Credits — Fall or Spring

Expectations, concerns, and questions regarding elementary and secondary classroom teaching today. Selected major trends, problems, and issues in elementary and secondary education and the profession of elementary and secondary teaching. (Prerequisite: admission to Master of Arts in Teaching program or permission of the instructor.)

Ed. 604 Diagnosis and Correction of Reading Deficiencies (3+0) — 3 Credits — As demand warrants

Nature of the reading process; emphasis on psychology involved in teaching reading difficulties; testing programs to ascertain specific disabilities in readiness, vocabulary, word-attack, comprehension, speed, and accuracy; specific suggestions for their correction; newer approaches to teaching reading. (Prerequisites: Ed. 409 and experience in the teaching of reading.)

Ed. 608 The Improvement of Elementary Teaching (3+0) — 3 Credits — As demand warrants

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. (Prerequisite: graduate standing in education and elementary teaching experience.)

Ed. 620 Curriculum Development (3+0) — 3 Credits — As demand warrants

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. 313 and graduate standing in education.)

Ed. 623 Principles of Individual Counseling (3+0) — 3 Credits — As demand warrants

(Same as Psy. 623)
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, Psy. 338 or 406 and permission of the instructor.)

Ed. 624 Group Counseling (3+0) — 3 Credits — As demand warrants

(Same as Psy. 624)
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. 627 Education Research (3+0) — 3 Credits — Fall

Techniques on education research; selection of topics and problems, data gathering, interpretation and preparation of reports. (Prerequisite: graduate standing in education.)

Ed. 628 Analysis of the Individual (3+0) — 3 Credits — As demand warrants

(Same as Psy. 628)
Means of acquiring data pertinent to the individual. Interpreting data and formulating case reports conducive to greater understanding. (Prerequisite: Ed. 426.)

Ed. 629 Individual Tests of Intelligence (3+0) — 3 Credits — As demand warrants

(Same as Psy. 629)
Individual intelligence tests with emphasis on the Revised Stanford-Binet Intelligence Scale and the Wechsler Intelligence Scales. (Prerequisites: Ed. 332 and permission of the instructor.)

Ed. 630 Laboratory in Individual Tests of Intelligence (0+9) — 3 Credits — As demand warrants

(Same as Psy. 630)
Provides laboratory experience in administration of the Revised Stanford-Binet Intelligence Scale or the Wechsler Intelligence Scales. (Prerequisites: Ed. 629 and permission of the instructor.)

Ed. 631 Advanced Educational Psychology: Developmental (3+0) — 3 Credits — As demand warrants

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. 632 Occupational Information (3+0) — 3 Credits — As demand warrants

(Same as Psy. 632)
Principles and practices of vocational guidance. Explains process of choosing a vocation, theories of vocational choice, sources and dissemination of occupational information. (Prerequisites: graduate standing, Ed. 426, and permission of the instructor.)

Ed. 633 Organization, Administration, and Supervision of Guidance (2+0) — 2 Credits — As demand warrants

For administrators, guidance personnel, and others interested in developing or evaluating a guidance program; selection procedures and supervision of guidance personnel are considered. (Prerequisite: Ed. 426.)

Ed. 634 Counseling Practicum — 1 to 3 Credits Arr. — Fall Spring

(Same as Psy. 634)
Provides supervised field experience, including preparatory activities in an educational and agency setting. (Prerequisite: Approval of instructor. May be repeated for a maximum of six credits.)

Ed. 636 Advanced Public School Administration: Cases and Concepts (2+0) — 2 Credits — As demand warrants

Case study approach to public school administration; identification and analysis of basic issues and problems; identification of pertinent data and possible solutions. (Prerequisite: first course in public school administration.)

Ed. 637 Public School Administration (3+0) — 3 Credits — As demand warrants

Responsibility pertaining to the organization of a school and the direction of personnel. Functions of instructional leadership. Public school administration as a career. Problems incident to public school administration in Alaska. (Prerequisites: Ed. 446 and graduate standing in education.)

Ed. 638 Supervision and Improvement of Instruction (3+0) — 3 Credits — As demand warrants

Development, purpose, organization of supervisory programs; special attention to current in-service education programs. (Prerequisite: graduate standing in education.)

Ed. 639 Public School Finance (3+0) — 3 Credits — As demand warrants

Contemporary basis for raising and distributing federal, state and local education funds; problems of school financing in Alaska. (Prerequisite: graduate standing in education.)

Ed. 641 School Law (3+0) — 3 Credits — As demand warrants

Rights and responsibilities of teachers and pupils; rulings of the Attorney General; decisions of the courts, regulations of the State Board of Education. (Prerequisite: graduate standing in education.)

Ed. 660 Internship — 6 Credits — As demand warrants

Field work in an appropriate educational or agency setting. Each student will complete an approved field study project. (Prerequisite: approval of student's advisory committee and admission to candidacy for the Ed.S. degree.)

Ed. 691 Education Seminar — Credits Arr. — As demand warrants

692 — Credits Arr. — As demand warrants

Current topics in education. Maximum credit allowed toward advanced degrees: four credits. (Admission by arrangement.)

Ed.	693	Special Topics	Credits Arr.	Fall
	694		Credits Arr.	Spring

Various subjects, principally by directed study, discussion, and research. (Admission by arrangement. Prerequisite: Ed. 627 when taken as independent project in lieu of thesis.)

Ed.	695	Research Education	Credits Arr.	Fall
	696		Credits Arr.	Spring

Independent project in lieu of thesis. (Admission by arrangement. Prerequisite: Ed. 627.)

Ed.	697	Thesis	Credits Arr.	Fall
	698		Credits Arr.	Spring

(Offered as demand warrants. Prerequisite: Ed. 627.)

ELECTRICAL ENGINEERING

E.E.	102	Introduction to Electrical Engineering (0+6)	2 Credits	Fall

Basic modern devices concepts, technical skills, and instruments of electrical engineering.

E.E.	203	Electrical Engineering Fundamentals	4 Credits	Fall
	204	(3+3)	4 Credits	Spring

Analysis of alternating-current circuits using complex notation and phasor diagrams; resonance; transformers; Fourier analysis; the complex frequency plane; three-phase circuits. (Prerequisite: Math. 200.)

E.E.	313	Elements of Electrical Engineering	3 Credits	Fall
	314	(2+3)	3 Credits	Spring

Primarily for students of civil, mining, mechanical, and chemical engineering. Circuits, machines, electronics, instrumentation. (Prerequisite: Phys. 212.)

E.E.	323	Electrical Engineering Lab I (0+3)	1 Credit	Fall
	324		1 Credit	Spring

Laboratory problems emphasizing measurement techniques, laboratory procedures, and operation principles of basic instruments. Laboratory exercises basically in circuits, electronics, and control. Semester design problems. (Corequisites: E.E. 333, 334, 353, 372 or permission of the instructor.)

E.E.	333	Electronics (3+0)	3 Credits	Fall

Precise description of electronic functional units; properties of basic circuits; electronic systems; use of the computer in system design. (Prerequisite: E.E. 204.)

E.E. 334 Electronic Circuit Design (3+0) 3 Credits Spring

Analysis of the common circuits used in computation, control, and communications; stability considerations; worst case design of functional units.(Prerequisite: E.E. 333.)

E.E. 353 Circuit Theory (3+0) 3 Credits Fall

Transient analysis by Laplace transform, state variable, and Fourier methods; filter networks, computer aided analysis. (Prerequisite: E.E. 204.)

E.E. 372 Feedback and Control Systems (3+0) 3 Credits Spring

Theory and practice of automatic control systems; signal flow graphs, system modeling; stability criterion; Bode, Nyquist, Nichols, root locus analysis; introduction to Z-transform. (Prerequisites: E.E. 353, Math. 302 or permission of the instructor.)

E.E. 403 Electrical Power Engineering I (3+3) 4 Credits Fall

Characteristics and applications of electric motors, generators and transformers; multiphase circuit applications; transients, fault currents, and system stability; power systems. (Prerequisites: E.E. 372, 334.)

E.E. 404 Electrical Power Engineering II (3+3) 4 Credits Spring

Topics in generation, power system operation and management, and distribution which include selection of energy source, plant layout and construction, rate structures, customer relations, and power regulation and relaying. (Prerequisite: E.E. 403.)

E.E. 432 Fields, Lines, and Antennas (3+3) 4 Credits Spring

Use of Maxwell's equations in the analysis of waveguides, cavity resonators, and transmission lines; retarded potentials; antennas for radio and microwave frequencies. (Prerequisites: Math. 302, Phys. 331.)

E.E. 442 Digital Computers (4+0) 4 Credits Fall

Design functioning of digital computers; system organization, programming, computer arithmetic, combinational and sequential circuits, methods of control, electronic circuitry. (Prerequisite: junior standing in electrical engineering, mathematics or physics, or permission of the instructor.)

E.E. 462 Communication Systems (3+3) 4 Credits Fall

Theory and practice of communications systems; essentials of information theory; operation and maintenance of typical equipment. (Prerequisite: credit or registration in E.E. 334, 432.)

E.E. 474 Instrumentation and Measurement (3+0) 3 Credits Fall

Instrumentation theory and concepts; devices, transducers; data sensing, transmission, recording, display, instrumentation systems; remote sensing; hostile environmental conditions. (Prerequisites: E.S. 207, E.E. 314, or permission of the instructor.)

E.E. 476 Instrumentation Lab (0+3) 1 Credit Fall

Primarily for students not familiar with operation of electronic instruments. Operation, accuracy, utility of electronic instruments and transducers. (Corequisite: E.E. 474.)

E.E. 484 Design of Electrical Systems(1+6) 3 Credits Spring

The design process; class will design a simple system with attention to capability, reliability, cost. (Prerequisite: junior standing.)

E.E. 491 Seminar (1+0) 1 Credit Fall
492 1 Credit Spring

Current topics. Students will have an opportunity to present papers. (Prerequisite: senior standing in electrical engineering.)

E.E. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects studied.

E.E. 635 Advanced Electronic Circuit Design (3+0) 3 Credits Fall

Low noise, low level design; networks for extraction of signals from noise; environmental design; signal conditioning networks. (Prerequisite: E.E. 334 or permission of the instructor.)

E.E. 662 Communication Theory (3+0) 3 Credits Spring

Generalized harmonic analysis, probability in communication systems, random variables, power spectral density, characterization of signals, sampling theory, detection, optimum filtering, coded systems, channel models. (Prerequisite: Math. 302.)

E.E. 672 Underwater Acoustics (3+0) 3 Credits Fall

(Same as OCE 672)
Nature of sound, units and standards, sound-related characteristics of sea water, transmission and transmission losses, effect and discontinuities, reverberation, measurement techniques.

E.E. 674 Instrumentation Systems (3+0) 3 Credits Spring

Design of complete engineering and scientific instrumentation systems; test methodology; cost, reliability, and accuracy considerations; environmental hazards; space applications. (Prerequisite: E.E. 474.)

E.E. 676 Instrumentation Lab II (0+3) 1 Credit Spring

Building and testing systems designed in E.E. 674 (Fee $20) (Corequisite: E.E. 674.)

E.E. 691	Seminar	Credits Arr.	Fall
692		Credits Arr.	Spring

Current topics at an advanced level. Presentation of student papers.

E.E. 693	Special Topics	Credits Arr.	Fall
694		Credits Arr.	Spring
E.E. 697	Thesis	Credits Arr.	Fall
698			Spring

Individual study and research.

ELECTRONICS TECHNOLOGY

E.T. 51 DC Circuits (5+12) 4 Credits Fall-Spring

The first course in electricity for electronics technicians. Basic physics, electrical terms and units, meters and their use, resistance, Ohms' law, simple circuits, magnetic fundamentals, batteries, Kirchoffs' laws, DC circuit analysis, inductance, and capacitance.

E.T. 52 AC Circuits (5+12) 4 Credits Fall-Spring

Principles of alternating current, vectors, phase relationships, inductive and capacitative reactance and impedance, AC circuit analysis, series and parallel resonant circuits, transformers, and Thevenin's equivalent circuit.

E.T. 55 Electronics Practice (0+12) 3 Credits Fall-Spring

Electronic drawings, soldering, electrical connections, use of hand tools, preparation for license examinations, layout and assembly of audio-frequency equipment, operation transmitters and receivers, troubleshooting, and practical aspects of electronics.

E.T. 59 Mathematics for Electronics (5+3) 5 Credits Fall-Spring

Review of arithmetic. Selected topics in algebra, trigonometry, slide-rule computation, graphs, analytical geometry, waveform analysis, decibel calculations, and applications to electronics. (Prerequisite: high school mathematics.)

E.T. 61 Tubes and Semiconductors (3+6) 4 Credits Spring-Summer

Vacuum tubes, semiconductors, transistors. Fundamentals, construction, characteristics, parameters, and specifications. (Prerequisites: E.T. 51, 52, 59.)

E.T. 62 Electronic Circuits I (4+3) 3 Credits Spring-Summer

Power supplies, basic amplifiers, loud speakers, microphones and pickups, and basic oscillators. (Prerequisites: E.T. 51, 52, 59.)

E.T. 63 Electronic Systems I (3+3) 4 Credits Spring-Summer

The radio transmitter, transmission, reception, and detection of radio waves, antennas and transmission lines; the radio receiver; special receiver circuits; frequency modulated transmitters and receiver; transistor applications; single side-band and communications. (Prerequisites: E.T. 51, 52, 59.)

E.T. 66 Electronic Practice II (0+12) 3 Credits Spring-Summer

Layout and assembly of radio-frequency equipment, practical aspects of electronics, alignment and repair procedures, practical experience in electronics, use of test equipment, and preparation for license examinations. (Prerequisite: E.T. 55.)

E.T. 71	**Electronic Circuits II**	**5 Credits**	**Summer-Fall**
72	**Electronic Circuits III (10+12)**	**4 Credits**	**Summer-Fall**
75	**Microwave Electronics**	**4 Credits**	**Summer-Fall**

Nonsinusoidal waveshapes, multivibrators, blocking and shock-excited oscillators, wave-shaping, circuits, limiters, clampers, counters, sweep-generator circuits, special power supplies, systems, transistor applications, television transmitters, and receivers. Microwaves; microwave oscillators, transmitters, duplexers, antennas, amplifiers, mixers, receivers, and multiplexing. (Prerequisites: E.T. 61, 62, 63.)

E.T. 78 Solid State Electronics (3+9) 4 Credits Summer-Fall

Basic solid state theory and application including laboratory work in the following areas: methods of circuit analysis, circuit aspects of field effect transistors, integrated circuits, and silicon controlled rectifiers. (Prerequisites: E T. 61, 62, 63.)

E.T. 81 Telemetry (3+6) 4 Credits Fall-Spring

Telemetry techniques including signal conditioning, frequency division telemetry, data sampling, pulse amplitude modulation, pulse duration modulation, pulse code modulated telemetry, subcarrier discriminators. PAM/PDM decommutation, and real time monitoring. (Prerequisites: E.T. 71, 72, 75, 78.)

E.T. 84 Digital Computer Theory and Application (3+9) 5 Credits Fall-Spring

Theory, organization, functioning and maintenance of large digital computer systems. (Prerequisites: E.T. 72, 75, 78.)

E.T. 85 Navigational Ground Equipment (4+0) 4 Credits Fall-Spring

Analysis of ground navigational aids such as ILS, GCA, Tacan, radar and telemetry. Theory, application and circuitry of transmitters, receivers, and antennas. (Offered only at Anchorage Community College.)

E.T. 86 Basic Aircraft Systems II (4+0) 4 Credits Fall-Spring

Theory, organization, function, and maintenance of large aircraft electrical systems; DC, AC, power control and distribution. Control systems; fire detection, deicing, brakes and warning systems. (Offered only at Anchorage Community College.)

E.T. 88 Avionics Systems III (4+0) 4 Credits Fall-Spring

Theory, organization, function, and maintenance of aircraft navigational systems; ADF, VOR, DME, Weather and Doppler Radar, autopilot, and flight director systems. Communications systems: LF, HF, VHF, UHF equipment. (Offered only at Anchorage Community College.)

E.T. 91 Semiconductor Theory and Application 5 Credits Spring

Physics review, semiconductors, physical action of transistors, the transistor as a circuit element, small signal amplifiers, power amplifiers, cascade amplifiers, bias equations and bias stability, feedback noise, transistor oscillators, negative impedance devices, digital switching circuits, high frequency description of transistors, and circuit aspects of field effect transistors. (Prerequisite: permission of the instructor.)

ELECTRO-MECHANICS TECHNOLOGY

E-M.T. 73 Mechanics I (3+9) 5 Credits Summer-Fall

Study of the mechanical elements and mechanical systems used in data processing equipment. The functional principles of the mechanics will be studied. The characteristics of mechanical systems are analyzed and related to application requirements. Mechanics studied include power input, power transmission devices, inductors, calculators, feeders, punches, accumulators, and printers. Emphasis is placed on the maintenance of the above.

E-M.T. 74 Storage Principles (2+6) 4 Credits Summer-Fall

Theory and field application of industrial and geophysical electro-mechanical storage devices.

E-M.T. 76 Electro-Mechanical Industrial Control Devices (3+6) 4 Credits Summer-Fall

An introduction to the theory and application and transducer sensor devices, continuous-balance strip-chart recorders, magnetic amplifiers, analog computers, synchro-control systems, and gas-tube switching and timing circuits. Introduction to automatic-control principles.

E-M.T. 79 Fluid Power Systems (2+6) 4 Credits Summer-Fall

Hydraulics and fluid mechanics with mathematical equations to solve some of the common problems of application.

E-M.T. 85 Mechanics II (3+9) 5 Credits Fall-Spring

Continuation of Mechanics I.

E-M.T. 86 Vacuum Technique Processes (2+6) 3 Credits Fall-Spring

Vacuum systems maintenance, leak detection, low-pressure measurements of gas flow, special low-pressure techniques, and vacuum evaporation systems.

ENGINEERING MANAGEMENT

E.M. 401 Construction Cost Estimating and Bid Preparation (3+0) Credits Arr. Fall

Compilation and analysis of the many items that influence and contribute to the cost of projects to be constructed. Preparation of cost proposals and study of bidding procedures. May be offered for graduate credit.

E.M. 605 Advanced Engineering Economy (3+0) 3 Credits Fall

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.M. 611 Engineering Management (3+0) 3 Credits Fall

Review of accounting principles; industrial accounting including cost accounting; business organization; business finance; emphasis on use of data in management rather than its generation.

E.M. 612 Engineering Management (3+0) 3 Credits Spring

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.M. 605, 611.)

E.M. 613 Engineering Management (3+0) 3 Credits Spring

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.M. 621 Operations Research (3+0) — 3 Credits — Fall or Spring

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.M. 623 Computer Programming for Engineering Managers (3+0) — 3 Credits — Fall or Spring

A course in basic FORTRAN programming, with applications to engineering management problems.

E.M. 691	**Seminar**	Credits Arr.	Fall
692		Credits Arr.	Spring
E.M. 693	**Special Topics**	Credits Arr.	Fall
694		Credits Arr.	Spring

ENGINEERING SCIENCE

E.S. 101	**Graphics (0+6)**	2 Credits	Fall
102		2 Credits	Spring

Fall semester: orthographic projection, pictorial drawing, sketching, lettering, geometric construction. Charts, graphs, and diagrams.
Spring semester: descriptive geometry; graphic solution of three dimensional problems.

E.S. 111 Engineering Science (2+3) — 3 Credits — Fall

Engineering problems solving with emphasis on the statics, kinematics, and dynamics of engineering systems. Conservation laws, fluid mechanics, and heat. (Prerequisite: credit or registration in Math. 106.)

E.S. 112 Engineering Science (2+3) — 3 Credits — Fall, Spring

Fall Semester: Engineering problem solving with emphasis on trigonometry and the statics and dynamics of engineering systems. (Prerequisite: Math. 101.)
Spring Semester: Engineering problem solving with emphasis on heat, sound, electricity and geometric optics. (Offered only at Juneau-Douglas Community College.)

E.S. 122 Engineering Design (1+6) 3 Credits Spring

Student engineering companies will design useful new devices and in so doing practice the techniques of creative engineering; study of need, design, and testing; cost and market analysis; scheduling, budgeting, and organization; written and oral presentation. (Prerequisite: E.S. 111 or permission of the instructor.)

E.S. 207 Measurements (2+3) 3 Credits Fall

Theory of measurement, precision, dispersion, distribution of error; with practice problems taken from various fields of engineering. (Prerequisite: E.S. 111.)

E.S. 208 Mechanics (3+3) 4 Credits Spring

Statics, kinematics, dynamics. Both classical and vector methods are used. Graphical solutions, work and energy, impulse and momentum, virtual work. (Prerequisites: E.S. 111, Math. 200.)

E.S. 331 Mechanics of Materials (2+3) 3 Credits Fall

Stress-strain relationships, shear and moment diagrams, design of beams, columns, rivet, bolt, and weld connections, indeterminate beams. (Prerequisites: E.S. 208, Math. 201.)

E.S. 341 Fluid Mechanics (3+3) 4 Credits Fall

Statics and dynamics of fluids. Basic equations of hydrodynamics, dimensional analysis, simple hydraulic machinery. (Prerequisites: E.S. 208, Math. 201.)

E.S. 346 Basic Thermodynamics (3+0) 3 Credits Spring

Systems, properties, processes, and cycles. Fundamental principles of thermodynamics (first and second laws), elementary applications. (Prerequisites: Math. 202, Phys. 212.)

E.S. 450 Engineering Management and Operations (3+0) 3 Credits Spring

Fundamentals of engineering economy; contracts, specifications, legal and ethical principles, management. (Prerequisite: senior standing or permission of the instructor.)

E.S. 491 Engineering Seminar Credits Arr. Fall or Spring
492 Credits Arr. Fall or Spring

Oral and written exposition on current engineering topics.

ENGLISH

Engl. 1	**Elementary English (3+0)**	**0 Credit**	**Fall-Spring**

For students inadequately prepared for Engl. 101. Intensive practice in written and oral comprehension. Frequent writing assignments.

Engl. 3	**Laboratory in Usage (1+2-4)**	**0 Credit**	**Fall or Spring**

Engl. 57	**Developmental and Oral English (0+9-18)**	**Credits Arr.**	**Fall**
58		**Credits Arr.**	**Spring**

Individual and group tutoring in oral and written English for foreign students and others with special language problems. May be taken for a total of 12 credits.

Engl. 61	**Analytical Reading (2+0)**	**2 Credits**	**Fall Spring**

Group and individual instruction in techniques for improving reading rate and comprehension. Development of advanced assimilative reading skills and expansion of vocabulary. Practice in critical reading skills demanded by college courses. Attention focused on study habits and library skills. (Offered only at Anchorage Community College.)

Engl. 67	**Elementary Exposition**	**3 Credits**	**Fall**
68		**3 Credits**	**Spring**

Training in oral and written communication.

Engl. 89	**Introduction to Report Writing (3+0)**	**3 Credits**	**Fall Spring**

Problems of general communication; communicating technical work results; types and functions of technical reports. Basic technical report preparation including organizing and selecting data, determining scope and sequence or organization of report and report style and format. (Offered only at Anchorage Community College.)

Engl. 101	**Composition and Modes of Literature (3+0)**	**3 Credits**	**Fall or Spring**
102		**3 Credits**	**Fall or Spring**

Intensive instruction in orderly thought, clear expression and analysis of creative literature.

Engl. 201 Masterpieces of World Literature (3+0) — 3 Credits — Fall-Spring
202 — 3 Credits — Fall-Spring

Masterworks of literature, studies to acquire a broad background and develop standards of literary judgment. (Prerequisites: Engl. 101, 102.)

Engl. 213 Advanced Exposition (2+½) — 3 Credits — Fall or Spring

Clarity and vigor in written communication of facts and ideas. Principles of style and methods of exposition. Students write for individual weekly conferences. (Prerequisite: Engl. 102.)

Engl. 239 Forms and Techniques of Poetry (3+0) — 3 Credits — Fall Spring

Devices, esthetic, and criticism of verse composition. (Prerequisite: Engl. 101-102. Offered only at Juneau-Douglas Community College.)

Engl. 240 Forms and Techniques of Fiction (3+0) — 3 Credits — Fall Spring

Devices, esthetic, and criticism of verse composition. (Prerequisite: Engl. 101-102. Offered only at Juneau-Douglas Community College.)

EDITORS NOTE: EXCEPT WHERE OTHERWISE INDICATED, PREREQUISITES FOR 300 AND 400 LEVEL COURSES ARE ENGL. 201 AND 202, OR PERMISSION OF THE INSTRUCTOR.

Engl. 314 Research Writing (2+½) — 3 Credits — Spring

Organizing reports, documenting research, language and style in scholarly articles. Papers in students' fields prepared for conference and class. (Prerequisite: Engl. 213 or permission of the instructor.)

Engl. 318 Modern Grammar (3+0) — 3 Credits — Spring

The linguistic approaches to the study of grammar with emphasis on structural and transformational (generative) grammars. Recommended for all students majoring in elementary education and for all students with a teaching major or minor in English.

Engl. 321 The Renaissance (3+0) — 3 Credits — Fall

Poetry and prose of the sixteenth century. (Next offered in 1972.)

Engl. 322 Neoclassical Age (3+0) — 3 Credits — Spring

Poetry and prose from John Dryden through Samuel Johnson. (Next offered in 1973.)

Engl. 323 Romantic Period (3+0) 3 Credits Fall

Poetry and prose from the late 1700's to 1830. (Next offered 1971.)

Engl. 324 Victorian Period (3+0) 3 Credits Spring

Poetry and non-fictional prose, 1830-1902. (Next offered 1972.)

Engl. 327 Colonial American Writing (3+0) 3 Credits Fall

A survey of American literary productions — history, sermons, theology, journals, diaries, autobiography, poetry, fiction, and drama — from the earliest days of colonialization to ca. 1800.

Engl. 328 19th Century American Prose and Poetry (3+0) 3 Credits Spring

A survey of American literature and related criticism from Bryant and Poe through Robinson and James, including some major novels.

Engl. 336 20th Century American Prose (3+0) 1-3 Credits Fall or Spring

The major fiction of Lewis, Fitzgerald, Hemingway, Faulkner, and Steinbeck.

Engl. 337 20th Century American Poetry (3+0) 3 Credits Fall

The poetry of Whitman, Dickinson, Robinson, Frost, Stevens, Roethke, and others. (Next offered 1971.)

Engl. 341 20th Century British Literature (3+0) 3 Credits Fall

Major achievements of modern British poetry and prose. (Next offered 1971.)

Engl. 342 20th Century Drama (3+0) 3 Credits Spring

From Chekhov to Ionesco, the major dramatists and their achievements. (Next offered 1972.)

Engl. 352 The British Novel to 1900 (3+0) 3 Credits Spring

Origin and development of the novel with concentration on Richardson, Fielding, Austen, E. Bronte, Dickens, Conrad, and Hardy. (Next offered 1972.)

Engl. 381 Craft of Poetry (3+0) 3 Credits Fall

An intensive study of the forms and techniques used by poets.

Engl. 382 Craft of Fiction (3+0) 3 Credits Spring

An intensive study of the forms and techniques used by prose writers.

Engl. 383 Craft of Drama (3+0) 3 Credits Fall or Spring

An intensive study of the forms and techniques used by dramatists. A close analysis of criticism from Aristotle to Bertolt Brecht.

Engl. 413 Old and Middle English Literature (3+0) 3 Credits Fall

Old English literature in translation; representative Middle English texts exclusive of Chaucer. (Next offered 1972.)

Engl. 421 Chaucer 3 Credits Fall

Chaucer's poetry, with emphasis on *The Canterbury Tales.*

Engl. 423 Elizabethan and Jacobean Drama (3+0) 3 Credits Fall

Major plays of Elizabethan and Jacobean dramatists.

Engl. 424 Shakespeare (3+0) 3 Credits Spring

Major works, emphasis on the later plays and review of Shakespearian criticism.

Engl. 426 Milton (3+0) 3 Credits Spring

The poetry, selected prose, and survey of the criticism of Milton.

Engl. 431 Creative Writers Workshop (3+0) 1-3 Credits Fall
432 1-3 Credits Spring

Writing fiction and poetry. Critique of student productions.

Engl. 443 Greek and Roman Literature (3+0) 3 Credits Fall

Greek and Roman literature in English translation. (Next offered 1971.)

Engl. 444 European Literature (3+0) 3 Credits Fall or Spring

Studies in major European writers and periods. (Next offered 1972.)

Engl. 472 History of English Language (3+0) 3 Credits Spring

Origin and development of the English language; modern syntax and usage.

Engl. 493 Special Topics (3+0) 3 Credits Fall
494 3 Credits Spring

Various subjects in American, British, and comparative literature.

Engl. 600	**Teaching College English (3+0)**	**3 Credits**	**Fall**

A survey of theories of literature, bibliographical studies, and methods of teaching English in the college or university. Required of all entering graduate students in English.

Engl. 605	**Studies in Drama (3+0)**	**3 Credits**	**Fall**
Engl. 610	**Studies in Fiction (3+0)**	**3 Credits**	**Spring**
Engl. 615	**Studies in Poetry (3+0)**	**3 Credits**	**Fall**
Engl. 620	**Studies in Criticism (3+0)**	**3 Credits**	**Spring**
Engl. 625	**Studies in Middle English Literature (3+0)**	**3 Credits**	**Fall**
Engl. 630	**Studies in Literature of the English Renaissance (3+0)**	**3 Credits**	**Spring**
Engl. 635	**Studies in 17th Century English Literature (3+0)**	**3 Credits**	**Fall**
Engl. 640	**Studies in 18th Century English Literature (3+0)**	**3 Credits**	**Spring**
Engl. 645	**Studies in the Literature of the British Romantic Period (3+0)**	**3 Credits**	**Fall**
Engl. 650	**Studies in the Literature of the Victorian Period (3+0)**	**3 Credits**	**Spring**
Engl. 655	**Studies in 20th Century British Literature (3+0)**	**3 Credits**	**Fall**
Engl. 660	**Studies in 20th Century American Literature (3+0)**	**3 Credits**	**Spring**
Engl. 665	**Studies in 19th Century American Literature (3+0)**	**3 Credits**	**Fall**
Engl. 670	**Studies in Comparative Literature (3+0)**	**3 Credits**	**Spring**
Engl. 683	**Directed Reading (3+0)**	**3 Credits**	**Fall**

Intensive reading for the M.F.A. candidate.

Engl. 691	**Seminar**	**Credits Arr.**	**Fall**
692		**Credits Arr.**	**Spring**

Various topics. (Admission by arrangement.)

Engl. 693	Special Topics	Credits Arr.	Fall
694		Credits Arr.	Spring
Engl. 695	Research	Credits Arr.	Fall
696		Credits Arr.	Spring
Engl. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

WRITER'S WORKSHOP

Engl. 675	Writing Drama	Credits Arr.	Fall or Spring
Engl. 681	Writing Fiction	Credits Arr.	Fall or Spring
Engl. 685	Writing Verse	Credits Arr.	Fall or Spring

ENVIRONMENTAL HEALTH ENGINEERING

E.H.E. 401 Environmental Health Engineering Measurements (2+3) — 3 Credits — Fall

Theory and laboratory procedures for determining safety of water supplies, natural water quality, pollution loads, and treatment plant parameters. (Prerequisite: registration in C.E. 441.)

E.H.E. 601 Water Quality Control (2+0) — 2 Credits — Spring

Stream and estuarine analysis, limnology of streams and lakes, ocean disposal systems, and waste management in relation to the ultimate disposal of waste products discharged into them. (Prerequisites: Biol. 341, E.H.E. 606.)

E.H.E. 605 Advanced Water Treatment (3+0) — 3 Credits — Fall

The theory of chemical coagulation, precipitation, ion exchange, corrosion and stabilization, filtration, and disinfection. Deviations from theory caused by the arctic climate, and/or natural waters of the north will be emphasized. (Prerequisite: graduate standing.)

E.H.E. 606 Advanced Waste Treatment (3+0) — 3 Credits — Fall

The physical, chemical and biological methods utilized for waste treatment. Domestic and industrial wastes common to arctic and sub-arctic areas will be studied from the unit process approach. Units for individual and small populations. (Prerequisite: registration in Biol. 341.)

E.H.E. 608 Environmental Health Unit Processes (0+6) — 2 Credits — Spring

A laboratory course in which processes studied in theory will be examined by laboratory and field studies. Experiments in sedimentation — flotation, coagulation, ion exchange, activated-sludge kinetics, steam analysis, and advanced laboratory techniques. (Prerequisites: E.H.E. 605, 606 and registration in E.H.E. 601.)

E.H.E. 610 Arctic Environmental Health Engineering Design (1+3) — 2 Credits — Spring

Application of environmental engineering principles to the design of those facilities in arctic and sub-arctic areas. Designs in water supply, treatment, and distribution, waste collection and disposal systems, and refuse handling and disposal. (Prerequisite: registration in E.H.E. 608.)

E.H.E. 691	Seminar	Credits Arr.	Fall
692		Credits Arr.	Spring

E.H.E. 693	Special Topics	Credits Arr.	Fall
694		Credits Arr.	Spring

Various subjects including air pollution, solid wastes, tertiary treatment, radiological health, industrial wastes, aquatic biology, etc. (Prerequisite: permission of the instructor.)

E.H.E. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

ESKIMO

Esk. 101	Elementary Eskimo (5+0)	5 Credits	Fall
102		5 Credits	Spring

Analysis of the living language with native speaker in the classroom. Learning to read and write the language. (Admission by arrangement.)

Esk. 201	Intermediate Eskimo (3+0)	3 Credits	Fall
202		3 Credits	Spring

Continuation of Eskimo 101/102. Includes linguistic analysis of folklore material. (Admission by arrangement.)

Esk. 485	Eskimo Language Workshop	Credits Arr.	Fall
486		Credits Arr.	Spring

Advanced work in Eskimo, including creative writing, transcription of texts, study of comparative Eskimo dialectology, Aleut, preparation of materials for radio broadcasts, and publication. (Prerequisite: Eskimo 101/102, 201/202, or speaking knowledge of Eskimo and permission of the instructor. Offered as demand warrants.)

FRENCH

Fren. 101	Elementary French (5+0)	5 Credits	Fall
102		5 Credits	Spring

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary.

Fren. 105	Elementary French (3+0)	3 Credits	Fall
106			Spring
107			Spring

Same course content as Fren. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Fren. 108	French for Reading Ability (3+0)	3 Credits	Spring

Rapid acquisition of reading knowledge with attention to needs in apecialized fields. Credit not applicable toward degree language requirements. (Offered as demand warrants.)

Fren. 201	Intermediate French (3+0)	3 Credits	Fall
202		3 Credits	Spring

Continuation of Fren. 102. Increasing emphasis on reading ability and cultural material. Conducted in French. (Prerequisite: Fren. 102 or two years of high school French.)

Fren. 203	Composition and Conversation (2+0)	2 Credits	Fall
204		2 Credits	Spring

Supplements Fren. 201 or 202, stressing written and oral practice. Conducted in French. (Concurrent enrollment in Fren. 201 or 202 recommended. Prerequisite: Fren. 102 or equivalent.)

Fren. 301	Advanced French (3+0)	3 Credits	Fall
302		3 Credits	Spring

Discussions and essays on more difficult subjects or texts; translations, stylistic exercises, special grammatical problems, systematic vocabulary building. Conducted in French. (Prerequisite: Fren. 202 or equivalent. Next offered 1970.)

Fren. 321	Studies in French Literature (3+0)	3 Credits	Fall
322		3 Credits	Spring

Choice of authors, genres, or periods of French literature for intensive study. Conducted in French. (Prerequisite: Fren. 202 or equivalent. Students may repeat course for credit when topic varies. Next offered 1970-71.)

Fren. 323	Survey of French Literature (3+0)	3 Credits	Fall
324		3 Credits	Spring

Reading of texts representative of literary currents, genres, authors, epochs. Conducted in French. (Prerequisite: Fren. 202. Concurrent or previous enrollment in Fren. 301 or 302 recommended. Next offered 1971-72.)

Fren. 404	Advanced Syntax and Oral Expression (3+0)	3 Credits	Spring

Continuation of Fren. 301 or 302. Analysis of difficult aspects of syntax and phonetics and practice in speaking and writing. Conducted in French. (Next offered 1971.)

Fren. 439	Literature of the Classical Age (3+0)	3 Credits	Fall

Close study of outstanding literary works of different genres. Conducted in French. (Next offered 1971.)

Fren. 452	The French Novel of the 20th Century (3+0)	3 Credits	Spring

Representative novelists and their works. Conducted in French. (Next offered 1972.)

Fren. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects for advanced students. (Admission by arrangement. Offered as demand warrants.)

Fren. 608	History of the French Language (3+0)	3 Credits	Spring

Study of the historical evolution of French, supplemented by an analysis of documentary texts from the main literary periods. Conducted in French. (Offered as demand warrants.)

Fren. 635 The Renaissance (3+0) 3 Credits Fall

Analysis of outstanding literary works and, in general, of texts representative of the main literary forces prevalent during the 16th century. Conducted in French. (Offered as demand warrants.)

Fren. 641 The Age of Enlightenment (3+0) 3 Credits Fall

A critical study of a variety of texts, philosophical as well as literary. Conducted in French. (Offered as demand warrants.)

Fren. 646 The 19th Century Novel (3+0) 3 Credits Spring

Analysis of novels ranging from romanticism to naturalism. Conducted in French. (Offered as demand warrants.)

Fren. 691	**Seminar**	**Credits Arr.**	**Fall**
692		**Credits Arr.**	**Spring**

Various topics. (Offered as demand warrants.)

Fren. 693	**Special Topics**	**Credits Arr.**	**Fall**
694		**Credits Arr.**	**Spring**
Fren. 695	**Research**	**Credits Arr.**	**Fall**
696		**Credits Arr.**	**Spring**
Fren. 697	**Thesis**	**Credits Arr.**	**Fall**
698		**Credits Arr.**	**Spring**

GEOGRAPHY

NOTE: GEOGRAPHY 105, 316, AND 401 ARE NATURAL SCIENCE COURSES; ALL OTHERS ARE SOCIAL SCIENCE COURSES.

Geog. 101 Introductory Geography (3+0) 3 Credits Fall

World regions; an analysis of environment, with emphasis on the major culture realms.

Geog. 103 World Economic Geography (3+0) 3 Credits Fall or Spring

Study of the world's major economic activities; pastoralism, agriculture, fishing, forestry, mining, manufacturing, transportation and trade — and their significance in inter-regional and international development.

Geog. 105 Elements of Physical Geography (3+0) 3 Credits Spring

Description and analysis of physical environment including climate, landforms, soils, water, vegetation, and their world patterns.

Geog. 202 Geography of United States and Canada 3 Credits Spring

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 the significance of Anglo-America in current world economic and political geography.

Geog. 302 Geography of Alaska (3+0) 3 Credits Spring

Regional, physical, and economic geography of Alaska. (Prerequisite: Geog. 105, or permission of the instructor.)

Geog. 305 Geography of Europe (except U.S.S.R.) (3+0) 3 Credits Fall

Regional, physical, economic and cultural geography of Europe, except U.S.S.R. (Prerequisite: junior standing or permission of the instructor.)

Geog. 306 Geography of the Soviet Union (3+0) 3 Credits Spring

Regional, physical and cultural geography of the U.S.S.R. (Prerequisite: junior standing or permission of the instructor.)

Geog. 309 Cartography (1+6) 3 Credits Fall or Spring

Graphic techniques for presenting geographic data through the construction of maps, projections, and charts. (Admission by arrangement.)

Geog. 311 Geography of Asia (3+0) 3 Credits Fall or Spring

Regional geography of Asia, exclusive of the Soviet Union. A study of the physical framework, natural resources, peoples, major economic activities, and the characteristic landscape forms, patterns, and associations of the major regions of Japan, China, Southeast Asia, India-Pakistan, and the Asiatic countries of the Middle East. (Prerequisite: junior standing or permission of the instructor.)

Geog. 316 Pleistocene Environment (3+0) 3 Credits Spring

Principles of paleogeography and their application to the environments of the ice age and post-glacial times. (Prerequisite: Geog. 105 or permission of the instructor.)

Geog. 327 Cold Lands (3+0) — 3 Credits — Fall

Climate, natural resources, and man's adjustment to environment in cold lands. (Prerequisite: Permission of the instructor.)

Geog. 401 Weather and Climate (3+0) — 3 Credits — Fall or Spring

Introduction to the study of weather and classification of climates. (Prerequisite: Geog. 105.)

Geog. 402 Man and Nature (3+0) — 3 Credits — Spring

Detailed analysis of the interrelationships of man and environment with particular emphasis on the arctic. (Admission by arrangement.)

Geog. 491 Seminar — Credits Arr. — Fall
492 — Credits Arr. — Spring

Selected topics in geography. (Admission by arrangement.)

Geog. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

Various subjects studied. (Admission by arrangement.)

GEOLOGY

Geol. 101 General Geology (3+3) — 4 Credits — Fall

Introduction to physical geology; a study of the earth, its materials, and the processes that effect changes upon and within it. Laboratory training in the use of topographic maps and the recognition of common rocks and minerals.

Geol. 102 Historical Geology (3+3) — 4 Credits — Spring

Summary of the history of the earth from the earliest stages to the present; sequence of geologic events and succession of life forms. Laboratory work includes the reconstruction of geologic history of various regions through the use of geologic maps and structure sections. (Prerequisites: Geol. 101 or 111.)

Geol. 104 Elements of Geology (3+0) — 3 Credits — To be Arr.

A non-laboratory introduction to physical and historical geology; the earth, its origin, processes that affect it, sequence of events in its evolution and succession of life on it; appreciation of the modern landscape. Not acceptable toward a degree in geology or fulfilling a laboratory science requirement.

Geol. 111 Physical Geology (3+3) 4 Credits Fall

Study of earth materials with emphasis on hand specimen classification; introduction to earth structures and processes. (Field trips). (Prerequisite: science and engineering majors, or permission of the instructor.)

Geol. 213 Mineralogy (2+6) 4 Credits Fall

Introduction to mineral chemistry, atomic structure, elementary crystallography, and descriptive and determinative mineralogy. Includes introduction to instrumental determinative techniques (x-ray, spectograph), simple qualitative chemical tests. (Prerequisites: Math. 106, 200. Chem. 101, 102.)

Geol. 214 Optical Mineralogy (2+3) 3 Credits Spring

Theory and application of optical methods as applied to identification of minerals and rocks. Introduction to the use of the petrographic microscope and familiarization with the optical characteristics of common rock forming minerals. (Prerequisites: Geol. 111, 213.)

Geol. 304 Geomorphology (3+0) 3 Credits Fall

Study of landforms and the processes which create and modify them. (Prerequisite: Geol. 102.)

Geol. 314 Structural Geology (2+3) 3 Credits Spring

Origin and interpretation of primary and secondary geologic structures. Graphical solution of structural problems. (Field trips.) (Prerequisite: Geol. 111 or 101 by permission of the instructor, recommended Geol. 102, Phys. 103, or admission by arrangement.)

Geol. 315 Petrology (3+6) 5 Credits Fall

Mineralogy and chemical composition, genesis and identification of igneous, metamorphic and sedimentary rocks. Laboratory work is based on study of paired hand specimens and thin sections. (Prerequisites: Geol. 213, 214.)

Geol. 321 Principles of Sedimentation (2+3) 3 Credits Fall

Sources of materials, sedimentary and diagenetic processes, classification. (Prerequisite: Geol. 213.)

Geol. 351 Field Geology 8 Credits Summer

Practical experience in the procedures employed in collecting and presenting the basic data obtained from the field. Includes field mapping on topographic maps, aerial photographs, plane tables 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. (Prerequisite: junior standing in geology.)

Geol. 362 Engineering Geology (3+0) 3 Credits Spring

Application of geologic principles to engineering site exploration, foundation work, and structural design. Rocks and soils; their properties and use as construction material. Special emphasis on the arctic environment. (Prerequisites: Geol. 111, 314.)

Geol. 401 Invertebrate Paleontology (3+3) 4 Credits Fall

Paleontological theory and practice. Systematic study of fossil invertebrates. (Prerequisites: Geol. 111 or 101 or by permission of the instructor, Biol. 305 recommended.)

Geol. 402 Stratigraphic Paleontology (3+3) 4 Credits Spring

Principles of biostratigraphy, history of development of the Geologic Time Scale, and methods of correlation. Laboratory studies on invertebrate faunal assemblages. (Prerequisite: Geol. 401.)

Geol. 404 Economic Geology (2+3) 3 Credits Spring

The application of geology to the exploration, valuation, and exploitation of mineral deposits. (Prerequisites: Geol. 213, 214, 314, or permission of the instructor.)

Geol. 408 Map and Air Photo Interpretation (1+6) 3 Credits Spring

Use of topographic maps, geologic maps, and aerial photographs in the analysis of geologic structures and landforms. (Prerequisite: Geol. 304.)

Geol. 411 General Oceanography (3+0) 3 Credits Fall

(Same as OCN 411.)
Description of the oceans and ocean processes; inter-relationship of disciplinary sciences to the field; historical facts of oceanography, modern developments and trends in the field. (Prerequisites: senior or graduate standing in a disciplinary science, mathematics, or engineering.)

Geol. 413 Vertebrate Paleontology (2+3) 3 Credits Fall

Systematic study of the fossil vertebrate with emphasis on evolution, morphology, and ecology. (Field trips.) (Prerequisite: Geol. 102.)

Geol. 416 Introduction to Geochemistry (3+0) 3 Credits Spring

Introduction to chemistry of the earth. (Prerequisites: Chem. 101, 102.)

Geol. 421 Principles of Seismology (3+0) 3 Credits Fall

Historical introduction, observational seismology, seismometry, simple elastic wave propagation. (Admission by arrangement.)

Geol. 424 Ground Water Hydrology (3+0) — 3 Credits — Spring

Occurrence and distribution of ground water; geologic controls over its quality and amount of yield; methods of exploration and development. (Prerequisites: Geol. 111 or 101 by permission of the instructor, Geol. 314.)

Geol. 462 Glacial and Pleistocene Geology (3+0) — 3 Credits — Spring

Study of the geologic effects of glaciation and other environmental modifications resulting from Pleistocene climatic changes. Chronology of the Pleistocene epoch and techniques used in its reconstruction. (Prerequisite: Geol. 304.)

Geol. 491 Seminar in Geology — Credits Arr. — Fall
492 — Credits Arr. — Spring

Various subjects studied. (Admission by arrangement.)

Geol. 493 Special Topics — Problems in Various Fields of Geology — Credits Arr. — Fall
494 — Credits Arr. — Spring

Geology problems of the student's choice approved by instructor. Transportation expenses met by student. No more than three credits allowed per semester. (Admission by arrangement.)

Geol. 605 Glaciology I (2+3) — 3 Credits — Fall

Phase relations between solid, liquid, and vapor states; supercooling, nucleation, and freezing of water in all environments; lakes, rivers, oceans, atmosphere, soil, rock, and plant and animal tissue. Diagenetic processes in snow cover; densification of snow to glacier ice. Laboratory and field work. (Admission by arangement. Prerequisites: Math. 202, Phys. 212, or by permission of the instructor.)

Geol. 606 Glaciology II (2+3) — 3 Credits — Spring

Physical properties of ice from various environments including seasonal and perennially frozen ground. Glaciers, distribution, classification, heat and temperature relations and glacier flow. Glaciation-alpine and continental. Laboratory and field work. (Admission by arrangement. Prerequisite: Geol. 605, or by arrangement.)

Geol. 608 Pleistocene Environments (3+0) — 3 Credits — Fall

Physical and biological aspects of Pleistocene climatic changes and related events. Faculty panel representing geology, geography, biology, anthropology, and soil science. (Admission by arrangement.)

Geol. 610 Theories of Ore Deposition (3+0) 3 Credits Fall

Theories pertaining to the origin, concentration, transport, and deposition of ore elements. (Prerequisites: Geol. 404, 416 or permission of the instructor. Offered in alternate years; next offered 1971.)

Geol. 613 Marine Geology (3+0) 3 Credits Spring (On demand)

(Same as OCN 613.)
Survey of marine geology, structure of ocean basins and continental margins, chemical and physical properties of marine sediments, geological processes in the oceans. (Prerequisites: senior or graduate standing in geology or appropriate inter-disciplinary programs, or by permission of the instructor.)

Geol. 622 Advanced Metamorphic Petrology (2+6) 4 Credits Fall

(Prerequisites: Geol. 314, 315. Offered in alternate years; next offered 1971.)

Geol. 623 Advanced Petrology of the Intrusive Igneous Rocks (2+2) 4 Credits Fall

Geochemistry and petrology of igneous rocks which have crystallized at various depths in the earth's crust or mantle.

Geol. 624 Advanced Petrology of the Volcanic Rocks (2+6) 4 Credits Spring

(Prerequisites: Geol. 314, 315. Offered in alternate years; next offered 1971.)

Geol. 627 Geotectonics (3+0) 3 Credits Spring

Large scale structural features, time and place in orogenesis, theories of orogenesis. (Prerequisite: Geol. 314. Offered in alternate years; next offered 1971.)

Geol. 628 Structural Petrology (2+3) 3 Credits Spring

Structural petrology, mechanisms of folding, theoretical basis for mechanical behavior of rocks. (Prerequisites: Geol. 314, 315. Offered in alternate years; next offered 1971.)

Geol. 629 Crystal Chemistry (3+0) 3 Credits Spring

This course deals with the crystal chemistry of minerals. The course will include: a discussion of chemical bonding in solids, calculation of lattice energies, a systematic discussion of the various crystallo-chemical groups, classification of phase transformation in solids, defect crystals, an introductory treatment of the band theory of solids. (Prerequisites: physical chemistry, Geol. 416 or permission of the instructor.)

Geol. 630 Phase Equilibria of Oxide Systems (2+0) — 2 Credits — Fall

This course will treat the phase equilibria of important unary, binary, ternary, and quaternary oxide systems. A portion of the course will be devoted to a discussion of the heterogeneous equilibria of oxide systems under conditions of varying partial pressure of oxygen. The course will conclude with a general treatment of p-t-x systems. (Prerequisites: physical chemistry, Geol. 416 or permission of the instructor.)

Geol. 631 Marine Geochemistry (3+0) — 3 Credits — Fall (On demand)

Study of chemistry of elements in lithosphere, atmosphere, and hydrosphere with emphasis on the marine environment, and importance of glaciers in geochemical prochemical processes. (Prerequisites: Geol. 416; Chem. 332; Phys. 212; Math. 202; or permission of the instructor.)

Geol. 632 Thermodynamics of Geologic Systems (3+0) — 3 Credits — Spring

Demonstrates the use of thermodynamic calculations based upon experimental data from geologically important systems as a means of interpreting natural mineral assemblages. (Prerequisites: Geol. 416; Chem. 332, or permission of the instructor.)

Geol. 693 Special Topics — Credits Arr. — Fall
694 — Credits Arr. — Spring

Research in various fields.

Geol. 697 Thesis or Dissertation — Credits Arr. — Fall
698 — Credits Arr. — Spring

Transportation expenses met by the student. (Admission by arrangement.)

GERMAN

Ger. 101 Elementary German (5+0) — 5 Credits — Fall
102 — 5 Credits — Spring

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary.

Ger.	105	Elementary German (3+0)	3 Credits	Fall
	106		3 Credits	Spring
	107		3 Credits	Spring

Same course content as Ger. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Ger.	108	German for Reading Ability (3+0)	3 Credits	Spring

Rapid acquisition of reading knowledge with attention to needs in specialized fields. Credit not applicable toward degree language requirements. (Offered as demand warrants.)

Ger.	201	Intermediate German (3+0)	3 Credits	Fall
	202		3 Credits	Spring

Continuation of Ger. 102. Increasing emphasis on reading ability and cultural material. Conducted in German. (Prerequisite: Ger. 102 or two years of high school German.)

Ger.	203	Composition and Conversation (2+0)	2 Credits	Fall
	204		2 Credits	Spring

Supplements Ger. 201 or 202, stressing written and oral practice. Conducted in German. (Concurrent enrollment in Ger. 201 or 202 recommended. Prerequisite: Ger. 102 or equivalent.)

Ger.	321	Studies in German Literature (3+0)	3 Credits	Fall
	322		3 Credits	Spring

Choice of authors, genres, or periods of German literature for intensive study. Conducted in German. Students may repeat course for credit when topic varies. (Prerequisite: Ger. 202 or equivalent.)

Ger.	404	Advanced Syntax and Oral Expression (3+0)	3 Credits	Spring

Continuation of Ger. 301 or 302. Analysis of difficult aspects of syntax and phonetics and practice in speaking and writing. Conducted in German. (Next offered 1973.)

Ger.	493	Special Topics	Credits Arr.	Fall
	494		Credits Arr.	Spring

Various subjects for advanced students. (Admission by arrangement. Offered as demand warrants.)

HISTORY

Hist. 101 Western Civilization (3+0) — 3 Credits — Fall

The origins and major political, economic, social, and intellectual developments of western civilization to 1500.

Hist. 102 Western Civilization (3+0) — 3 Credits — Spring

Major political, economic, social, and intellectual developments of western civilization since 1500.

Hist. 131 History of the U.S. (3+0) — 3 Credits — Fall
132 — 3 Credits — Spring

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 English History (3+0) — 3 Credits — Fall
222 — 3 Credits — Spring

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. (Offered in alternate years.)

Hist. 225 Ancient History (3+0) — 3 Credits — As demand warrants

Political, social, economic, and cultural development of the ancient Near East, Greece, and Rome.

Hist. 254 History of Canada (3+0) — 3 Credits — Fall or Spring

The French foundation to the establishment of dominion status, relations with the U.S. and British Commonwealth of nations. (Offered as demand warrants.)

Hist. 261 Russian History (3+0) — 3 Credits — Fall

Origins of Russia, Kievan Russia. The Mongol era and the rise of Muscovy. Modern Russia to the twentieth century.

Hist. 302 The Old Regime, the Enlightment and the French Revolution (3+0) — 3 Credits — Fall

The political, social, and economic structure of the old regime; intellectual developments in the eighteenth century; the revolution and the Napoleonic period; influence of France upon European development in the eighteenth century. (Prerequisite: Hist. 102.)

Hist. 305 Europe: 1815 to 1870 (3+0) 3 Credits Fall or Spring

Political, economic, social, and intellectual history. Development of industrial revolution, romantic movement, and unification of Germany and Italy. (Prerequisite: Hist. 102. Offered in alternate years.)

Hist. 306 Europe: 1870 to 1914 (3+0) 3 Credits Fall or Spring

Continuation of Hist. 305. The rise of socialism, imperialism, outbreak of World War I. (Prerequisite: Hist. 101, 102. Offered in alternate years.)

Hist. 315 Contemporary Europe (3+0) 3 Credits Fall or Spring

Europe from 1914 to the present. (Prerequisites: Hist. 101, 102, or admission by arrangement. Offered in alternate years.)

Hist. 334 Diplomatic History of the United States (3+0) As demand warrants

A survey of foreign relations of the United States from 1775 to the present.

Hist. 341 History of Alaska (3+0) 3 Credits Fall

The Russian background; acquisition, settlement and development of Alaska as an American territory and the 49th state. (Prerequisite: junior standing.)

Hist. 344 Twentieth Century Russia (3+0) 3 Credits Fall

Origin and development of the Soviet Union from the Revolution of 1917 to the present day; stages of economic development; Soviet government and the Communist Party. (Prerequisites: Hist. 101,102. Offered in alternate years.)

Hist. 363 The Far East in Modern Times (3+0) 3 Credits Fall or Spring

Nations of Eastern Asia; their relations with the West since the early nineteenth century. (Admission by arrangement. Offered in alternate years.)

Hist. 375 History of the Northern Pacific (3+0) 3 Credits Fall or Spring

The historical development and inter-relationships and problems of the North Pacific (Siberia, Canada, Alaska) from the 18th century to the present.

Hist. 416 The Renaissance (3+0) 3 Credits Fall or Spring

Political, social, economic, and cultural developments in the age of the Renaissance. (Prerequisites: Hist. 101, 102. Offered in alternate years.)

Hist. 417 The Reformation (3+0) 3 Credits Fall or Spring

The Protestant and Catholic reformations. Political, economic, social, and religious conflicts, 1500-1600. (Prerequisites: Hist. 101, 102. Offered in alternate years.)

Hist. 430 American Colonial History (3+0) 3 Credits Fall or Spring

Early America; European settlement; economic and social development of the American community, establishment of political independence. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 435 Civil War and Reconstruction (3+0) 3 Credits Fall or Spring

Political, economic, social, and diplomatic history from 1860-77; disruption and re-establishment of the Union. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 440 The Westward Movement (3+0) 3 Credits Fall or Spring

Westward migration; establishment of new states and political institutions. Influences of the West. (Prerequisites: Hist. 131,132. Offered in alternate years.)

Hist. 450 Twentieth Century America (3+0) 3 Credits Fall or Spring

United States from the progressive movement to the present day, with emphasis on domestic developments. (Prerequisites: Hist. 131,132. Offered in alternate years.)

Hist. 461 American Intellectual and Cultural History (3+0) 3 Credits Spring

Lectures, readings, discussion. Examination of the development of American thought, including the transfer and modification of European ideas and the influence of American conditions on popular attitudes and culture. (Prerequisites: Hist. 131, 132. Offered in alternate years.)

Hist. 475 Introduction to Historical Method (3+0) 3 Credits Fall

Methods of historical research. Preparation and criticism of student research papers on selected topics. (Admission by arrangement.)

Hist. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Hist. 601 Historiography (3+0) 3 Credits Fall or Spring

History of historical writing. Study and analysis of works of selected major historians.

Hist. 691 Seminar in European History (3+0) 3 Credits Fall or Spring

Hist. 692 Seminar in American History (3+0) 3 Credits Fall or Spring

Hist. 693 Special Topics (3+0) Credits Arr. Fall
694 Credits Arr. Spring

Hist. 697 Thesis **Credits Arr.** **Fall**
698

HOME ECONOMICS

H.E. 102 Meal Management (2+3) **3 Credits** **Fall or Spring**

Planning, buying, preparing, and serving meals. Emphasis on management, cost, nutrition.

H.E. 113 Clothing Construction and Selection (1+6) **3 Credits** **Fall or Spring**

Fundamental sewing processes in garment construction, using modern techniques. Clothing selection and wardrobe study, and the psychological and social significance.

H.E. 131 Related Art (2+3) **3 Credits** **Fall**

Principles of design and color as related to the individual, the home and community. Opportunity for creative expression using various media and materials.

H.E. 211 Textiles (2+3) **3 Credits** **Fall**

Identification, structure, selection, use, care of fabrics.

H.E. 236 Marriage and Family Life (3+0) **3 Credits** **Fall or Spring**

Preparation for marriage and family life; personality development, dating, courtship, engagement, morality, reproduction, conflicts, money matters, crises, divorce, religion, parenthood, and other topics.

H.E. 241 Home Management (3+0) **3 Credits** **Fall or Spring**

Time, energy, finance, housing and other management problems in relation to family living. (Offered in alternate years.)

H.E. 242 Household Equipment (2+3) **3 Credits** **Fall or Spring**

Selection, operation, care, and efficient arrangement of household equipment for family use. (Offered as demand warrants.)

H.E. 302 Advanced Foods (2+3) **3 Credits** **Fall or Spring**

Food selection and preparation based on composition, nutrition, and basic scientific principles and comparison of methods. Food preservation. (Prerequisite: three hours of biology and three hours of chemistry.)

H.E. 304 Nutrition (3+0) 3 Credits Fall or Spring

Nutritional value of foods. Planning and evaluation of diets. Practical application to daily living.

H.E. 311 Costume Study: History and Design (2+3) 3 Credits Spring

Historic costume; suitability of color, fabric, and design; creative problems in costume design. (Prerequisite: H.E. 131 or admission by arrangement. Offered as demands warrants.)

H.E. 312 Advanced Clothing (1+6) 3 Credits Spring

Advanced clothing problems in selection, fitting, construction, fabrics, and design; modern construction techniques. (Prerequisite: H.E. 113 or admission by arrangement.)

H.E. 351 Child Development (2+9) 5 Credits Fall and Spring

(Same as Psy. 351)
Theory and laboratory of human mental, emotional, social, and physical development. (Prerequisites: Psy. 201, 45 semester hours, and permission of the instructor.)

H.E. 401 Consumer Buying (3+0) 3 Credits Fall or Spring

Problems of consumers in buying goods and services to satisfy wants and needs. (Offered as demand warrants.)

H.E. 402 Nursery School Laboratory (0+9) 3 Credits Fall or Spring

Observation, experience, participation in the guidance of young children. (Prerequisite: H.E. 351 or Psy. 351 and permission of the instructor.)

H.E. 404 Quantity Cookery (1+6) 3 Credits Fall or Spring

Cooking for large groups; institutional management. (Prerequisite: H.E. 302. Offered as demand warrants.)

H.E. 405 Camp Cookery (0+3) 1 Credit Fall or Spring

For men only. Preparation of nutritious meals from foods available in camps. (Offered as demand warrants.)

H.E. 406 Cafeteria Management (1+6) 3 Credits Fall or Spring

Buying and management for institutional feeding. (Prerequisite: H.E. 404. Offered as demand warrants.)

H.E. 412 Clothing Problems (0+6) — 2 Credits — Fall or Spring

Advanced work in clothing selection and construction. One freedom in the selection and execution of problems. (Prequisite: H.E. 312. Offered as demand warrants.)

H.E. 413 Pattern Drafting and Draping (1+6) — 3 Credits — Fall or Spring

Drafting of flat patterns; draping of fabrics for construction of student-designed garments. (Prerequisite: H.E. 312. Offered as demand warrants.)

H.E. 422	Weaving (0+3)	1 Credit	Fall
424		1 Credit	Spring

Hand weaving of textiles, including rugs. Several looms used. Laboratory time averages three hours per week. (Offered as demand warrants.)

H.E. 441 Family Health (1+3) — 2 Credits — Fall

Family and community health; home nursing, first aid. (Offered in alternate years.)

H.E. 445 Home Management Residence (3+0) — 3 Credits — Fall or Spring

Complete responsibility for a home with an opportunity to be creative and to experiment. (Prerequisites: H.E. 102, H.E. 241.)

H.E. 446 House Planning and Furnishing (1+6) — 3 Credits — Spring

Planning, building, furnishing, decorating a home. Field trips to homes. (Offered as demand warrants.)

H.E. 491	Seminar (1+0)	Credits Arr.	Fall
492		Credits Arr.	Spring

Selected topics in home economics.

H.E. 493	Special Topics (1+0)	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects studied, principally through directed reading and discussions. (Admission by arrangement.)

HUMANITIES

Hum. 211	Humanities (3+0)	3 Credits	Fall
212	Humanities	3 Credits	Spring

Integrated introduction to the fundamental principles of literature, music, arts, and philosophy. (Prerequisites: Eng. 101-102, Hist. 101-102 recommended. Sophomore standing. Offered only at Anchorage Community College.)

JAPANESE

Jap. 101 Elementary Japanese (5+0) — 5 Credits — Fall
102 — 5 Credits — Spring

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary. Romanized Japanese text for grammar and conversation and standard Japanese text for reading.

Jap. 201 Intermediate Japanese (3+0) — 3 Credits — Fall
202 — 3 Credits — Spring

Continuation of Jap. 102 with increasing emphasis on reading ability and cultural material. Standard Japanese texts for reading including selections from modern Japanese literature. (Prerequisite: Jap. 102 or equivalent.)

JOURNALISM

Jour. 201 Introduction to Journalism (2+3) — 3 Credits — Fall or Spring

Structure of news stories, various news leads and feature stories; gathering and evaluating information for simple news stories; writing stories. (Prerequisite: Engl. 102 or admission by arrangement. Ability to type is essential.)

Jour. 202 Reporting of Public Affairs (3+0) — 3 Credits — Spring

Study and writing of complex news stories, depth reporting; criticism and reviewing; interviews and features; covering government. (Prerequisite: Jour. 201.)

Jour. 203 Basic Photography (2+3) — 3 Credits — Fall or Spring

Theory and practice of picture-taking and processing; emphasis on the camera in the modern press.

Jour. 204 Journalism Laboratory (2+3) — 1 Credit — Fall or Spring

Credit arranged for students holding editorial or other positions on university publications or obtaining other similarly supervised experience in journalism practices. (May be repeated for maximum of three semesters.) (Prerequisite: Engl. 102 or permission of the instructor.)

Jour. 303 Advanced Photography (1+3) — 3 Credits — Fall or Spring

Continuation of the basic course, with emphasis on the picture story and free lance photography.

Jour. 311 Magazine Article Writing (3+0) — 3 Credits — Fall or Spring

Study and practice in writing articles for publication in national media. Students repeating the course limited to a total of six credits. (Admission by arrangement.)

Jour. 312 Editing (3+0) — 3 Credits — Spring

Editorial writing, editing copy, writing headlines; newspaper layout; general study of mechanical, circulation, editorial, and advertising departments. (Prerequisite: Jour. 201.)

Jour. 320 Journalism in Perspective (3+0) — 3 Credits — Fall

A survey of the history and principles of journalism examined in the light of today's problems and future goals.

Jour. 324 Newspaper Production, Advertising, and Typography (1+6) — 3 Credits — Fall

Total immersion into theory and practice of advertising, typographic design and layout, coupled with a study of the methods of printing production. Recommended for business administration and journalism majors.

Jour. 403 Cinematography (2+2) — 3 Credits — Fall or Spring

Filming and editing news and documentary movies for television and educational purposes. (Prerequisite: Jour. 203 or instructor's permission.)

Jour. 411 Advanced Magazine Arcticle Writing (3+0) — 3 Credits — Fall or Spring

Study and practice in writing advanced articles for publication in national and international media. (Prerequisite: Permission of instructor.)

Jour. 412 Advanced Editing (2+3) — 3 Credits — Spring

Special problems in editing, with emphasis on the practical experience of editing special features, newspaper sections. Students will work closely with Fairbanks newspapers. (Prerequisite: Jour. 312.)

Jour. 420 Biography (3+0) — 3 Credits — As demand warrants

Research and writing of biography and autobiography.

Jour. 493	**Special Topics**	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects in journalism. (Offered as demand warrants. Admission by arrangement.)

Jour. 691	**Journalism Seminar**	Credits Arr.	As demand warrants
692		Credits Arr.	As demand warrants
Jour. 693	**Special Topics**	Credits Arr.	Fall
694		Credits Arr.	Spring

Various subjects principally by directed study, discussion, and research.

Jour. 695	Research	Credits Arr.	Fall
696		Credits Arr.	Spring
Jour. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

LAND RESOURCES

Land Res. 101 Conservation of Natural Resources (2+0) — 2 Credits — Spring

Conservation of renewable and non-renewable natural resources, emphasizing the United States situation.

Land Res. 311 Soils (2+3) — 3 Credits — Spring

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. 101. Offered alternate years; next offered 1972.)

Land Res. 414 Principles of Outdoor Recreation Management (3+0) — 3 Credits — Spring

Theories, practices, economics, and problems fundamental to the use of land and related natural resources for recreation; relationship of wildland recreation in regional development. (Prerequisite: junior standing in biology or natural resources or permission of the instructor.)

Land Res. 491	Seminar	Credits Arr.	Fall
492		Credits Arr.	Spring

Topics in land resources. (Offered as demand warrants.)

Land Res. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring
Land Res. 692	Seminar	Credits Arr.	Fall
		Credits Arr.	Spring

Topics in land resources. (Offered as demand warrants.)

Land Res. 693	Special Topics	Credits Arr.	Fall
694		Credits Arr.	Spring
Land Res. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

(Admission by arrangement.)

LINGUISTICS

Ling. 381	Structural Linguistics and (3+0)	3 Credits	Fall
382	Linguistics Analysis	3 Credits	Spring

Introduction to the structure of language and practice in analysis, sound structure (phonetics and phonology); grammatical structure (morphology and syntax). Work with Alaskan native languages. (Offered as demand warrants.)

Ling. 388	Alaskan Athapascan (3+0)	3 Credits	Spring

Athapascan languages in general and Alaskan dialects in particular; dialect geography, comparative phonology; Eyak, Tlingit, Haida. (Admission by arrangement. Offered as demand warrants.)

Ling. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various languages and subjects in linguistics. (Admission by arrangement. Offered as demand warrants.)

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.	105	Intermediate Algebra (2+3)	3 Credits	Fall or Spring

Set theory, number systems, absolute value, inequalities, linear and quadratic equations, exponents and radicals, polynomials, and functions.

Math.	106	College Algebra and Trig. (5+0)	5 Credits	Fall or Spring

Review of high school algebra, determinants, matrices, topics in the theory of equations, systems of equations, inequalities, curve sketching, probability, and applications; plane trigonometry with emphasis on the analytical and periodic properties of trigonometric functions.

Math.	107	College Algebra (3+0)	3 Credits	Fall or Spring

Review of high school algebra, determinants, matrices, topics in the theory of equations, systems of equations, inequalities, curve sketching, probability, and applications. (Course not offered on main campus at College.)

Math.	108	Trigonometry (2+0)	2 Credits	Fall or Spring

Plane trigonometry with emphasis on the analytical and periodic properties of trigonometric functions. (Prerequisite: Math. 105 or equivalent.)

Math.	109	Analytic Geometry (3+0)	3 Credits	Fall or Spring

Rectangular coordinate system, the straight line, conic sections, transcendental curves, polar coordinates, parametric equations, and solid analytic geometry. (Course not offered on main campus at College. Prerequisite: high school trigonometry or Math. 108.)

Math. 110 Mathematics of Finance (3+0) 3 Credits Spring

Simple and compound interest, discount, annuities, amortization, sinking funds, depreciation, and capitalization. (Prerequisite: Math. 105, or admission by arrangement.)

Math. 111 Beginning Calculus (3+0) 3 Credits Fall or Spring

Sequences, limits, differentiation and applications, integration and applications, differentiation of algebraic and transcendental functions. (Course not offered on main campus at College. Prerequisite: Math. 109.)

Math.	**121**	**Introduction to Modern Algebra and Analysis (4+0)**	**4 Credits**	**Fall**
	122		**4 Credits**	**Spring**

First semester: sets, logic, groups and fields, vectors, analytic geometry, relations and functions.
Second semester: complex numbers, exponential functions, logarithmic functions, trigonometry.

Math.	**200**	**Calculus (4+0)**	**4 Credits**	**Fall or Spring**
	201		**4 Credits**	**Fall or Spring**
	202		**4 Credits**	**Fall or Spring**

Techniques and application of differential and integral calculus, vector analysis, partial derivatives, multiple integrals, and infinite series. (Prerequisites: Math. 106 or 122. Admission to Math. 201 is also possible on completion of Math. 111.)

Math. 204 Elementary Probability and Statistics (3+0) 3 Credits Spring

Descriptive statistics, frequency distributions, mean, median, mode, standard deviation; elementary probability; inferential statistics, estimation of population parameters, tests of hypothesis, including non parametric methods, correlation, linear regression, and analysis of variance. (Prerequisite: Math. 106 or 121.)

Math. 302 Differential Equations (3+0) 3 Credits Fall

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, applications. (Prerequisite: Math. 202.)

Math.	**303**	**Introduction to Modern Algebra (3+0)**	**3 Credits**	**Fall**
	304		**3 Credits**	**Spring**

Introduction to sets, groups, rings, fields, and Galois theory.

Math. 309 Programming of Digital Computers (3+0) 3 Credits Fall

Organization, function, and application of digital computers, with special reference to IBM 1620. Programming languages, including machine language, SPS and FORTRAN. Individual use of the IBM 1620. (Prerequisite: junior standing or permission of the instructor.)

Math. 310 Numerical Analysis (3+0) — 3 Credits — Spring

Finite differences, numerical solutions of differential equations, relaxation methods, interpolation, equations, and matrices. Error analysis. (Prerequisites: Math. 302, 309.)

Math. 312 Numerical Methods for Engineers (3+0) — 3 Credits — Spring

Numerical methods and computer programming designed for engineering students. FORTRAN language for IBM 1620; numerical approximations, solution of differential equations, nonlinear equations, iterative and direct methods for simultaneous linear equations. Individual use of computer parallels lecture topics. (Prerequisite: Math. 302 or concurrently with Math. 302.)

Math. 314 Linear Algebra (3+0) — 3 Credits — Spring

Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations, characteristic values. Inner product spaces.

Math. 345C Modern Math Concepts for the Elementary School — 3 Credits — Correspondence or upon demand

Includes a study of the historical development of numeral systems together with operations in various bases. Properties of numerals and numbers are discussed. A brief study of symbolic logic precedes an investigation of the structure of arithmetic, seeking basic principles underlying operations with various number and abstract systems. A survey of informal and intuitive geometry and its relationship with number systems is included.

Math. 371 Probability (3+0) — 3 Credits — Fall
372 — 3 Credits — Spring

Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions, and characteristic functions.

Math. 401 Advanced Calculus (3+0) — 3 Credits — Fall
402 — 3 Credits — Spring

Theory of Dedekind cuts, existence of bounds, sequences. Introduction to point set topology. Rigorous treatment of limits, continuity and differentiability of functions of one variable. Riemann integrals. Extensions to functions of several real variables. (Prerequisites: Math. 202 and senior standing or permission of the instructor.)

Math. 405 Applied Mathematics (3+0) — 3 Credits — Fall
406 — 3 Credits — Spring

Infinite series, functions of several variables, algebra and geometry of vectors, matrices, vector field theory, partial differential equations, complex variables. (Prerequisite: Math. 302 or permission of the instructor. To be offered in alternate years.)

Math.	407	Mathematical Statistics (3+0)	3 Credits	Fall
	408		3 Credits	Spring

Distributions of random variables and functions of random variables, interval estimation, point estimation, sufficient statistics, order statistics, text of hypotheses including criteria for goodness of test. (Prerequisite: Math. 372. Offered as demand warrants.)

Math.	415	Game Theory and Linear Programming (3+0)	3 Credits	Fall

Mathematical approach to game theory and linear programming with application to economics and operations research. (Prerequisite: Math. 314.)

Math.	417	Differential Geometry (3+0)	3 Credits	Fall
	418		3 Credits	Spring

Differential geometry of curves and space in Euclidean three-space and extensions to Riemannian n-space.

Math.	421	Vector and Tensor Analysis (3+0)	3 Credits	Fall

Fundamental operations on vectors and tensors, consideration of gradient, divergence, and cural; applications in physics and mechanics. (Offered as demand warrants.)

Math.	471	Stochastic Processes (3+0)	3 Credits	Fall

Elements of stochastic processes and their applications, the Winer process and the Poisson process, stationary and evolutionary processes, harmonic analysis, random walks, Markov Chains, and elementary queuing theory. (Prerequisite: Math. 372. Offered as demand warrants.)

Math.	491	Seminar	Credits Arr.	Fall
	492		Credits Arr.	Spring

Topics are selected according to needs and interests of the students to introduce them to independent study and research.

Math.	493	Special Topics	Credits Arr.	Fall
	494		Credits Arr.	Spring

Primarily for mathematics majors. Various topics studied.

Math.	601	Complex Function Theory (3+0)	3 Credits	Fall
	602		3 Credits	Spring

Analytic functions, singularities, analytic continuation, integration, Riemann surfaces, the logarithmic function, conformal representation. (Prerequisite: Math. 402 or admission by arrangement. Offered as demand warrants.)

Math.	605	Real Function Theory (3+0)	3 Credits	Fall
	606		3 Credits	Spring

The Lebesque integral on the line, metric spaces, Banach spaces, general theory of measure and integration. (Prerequisite: Math. 402 or admission by arrangement.)

Math.	608	Partial Differential Equations (3+0)	3 Credits	Spring

First and second order differential equations, boundary value problems, existence and uniqueness theorems. Green's functions, principal equations of mathematical physics. (Prerequisite: Math. 402 or admission by arrangement. Offered as demand warrants.)

Math.	609	Modern Algebra (3+0)	3 Credits	Fall
	610		3 Credits	Spring

Groups, rings, fields, Galois theory, additional selected topics. (Prerequiste: Math. 304 or admission by arrangement.)

Math.	611	Mathematics of Physics and Engineering (3+0)	3 Credits	Fall
	612		3 Credits	Spring

(Same as Phys. 611, 612)
Advanced consideration of such topics as transform methods, asymptotic methods, Green's function, Sturm-Liouville theory, conformed mapping and calculus of variations with applications to problems arising in physics. (Prerequisites: Math. 402 or 406 and permission of the instructor.)

Math.	691	Seminar	Credits Arr.	Fall
	692		Credits Arr.	Spring

Various topics. (Admission by arrangement.)

Math.	693	Special Topics	Credits Arr.	Fall
	694		Credits Arr.	Spring

Various subjects studied.

Math.	697	Thesis	Credits Arr.	Fall
	698		Credits Arr.	Spring

MECHANICAL ENGINEERING

M.E.	150	Aerodynamics for Pilots (1+1)	1 Credit	Fall or Spring

Nature of the atmosphere, elementary air foil 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 Kinematics of Machines (2+3) 3 Credits Spring

Velocity and acceleration analysis of mechanisms and machines; principles of transforming and transmitting motion, including linkages, cams, gears, belt, chains, and trains of mechanism; dimensional synthesis. (Prerequisites: Math. 202, E.S. 208.)

M.E. 321 Industrial Processes (3+0) 3 Credits Fall

Methods and equipment used in working, welding, casting, cutting, machining, and fabrication of materials.

M.E. 401 Machine Design (2+6) 3 Credits Fall

Design of machine elements, including allowances, tolerances, keys, shafts, couplings, spring, clutches, belts, brakes, flywheels, power screws, gears, bearing, lubrication, and stress analysis of components. (Prerequisites: E.S. 331, M.E. 302.)

M.E. 402 Dynamics of Machines (3+3) 4 Credits Spring

Vibration, balancing, gyroscopic effects, stability of rotors, closed loop systems, and man-machine interaction. (Prerequisite: M.E. 302.)

M.E. 413 Mechanical Engineering Thermodynamics (3+0) 3 Credits Fall

Continuation of E.S. 346, including vapor power cycles (Rankine, reheat, binary, and regenerative cycles); flow through nozzles and diffusers; gas power cycles; gas mixtures and psychrometrics; vapor compression refrigeration cycles. (Prerequisites: E.S. 341, 346.)

M.E. 414 Thermal Systems (3+0) 3 Credits Spring

Introduction to power and space conditioning systems. Energy conversion, electric power distribution, heating and ventilating, total energy systems. (Prerequisite: M.E. 413.)

M.E. 430 Instruments and Controls (2+3) 3 Credits Fall or Spring

Automatic control and instrumentation of equipment including mechanical, hydraulic, pneumatic, electric, and electronic systems. (Prerequisite: senior standing. Offered as demand warrants.)

M.E. 441 Mass and Energy Transfer (3+0) 3 Credits Fall

Heat transfer, diffusion, ablation, and flame propagation. (Prerequisite: E.S. 346.)

M.E. 450 Theory of Flight (3+1) — 3 Credits — Fall or Spring

Airfoil theory in subsonic and supersonic flow. Propulsion systems, stability, and performance of aircraft. (Prerequisite: M.E. 413.)

M.E. 491	Seminar I (1+0)	1 Credit	Fall
492	Seminar II	1 Credit	Spring

Preparation and presentation of a formal report, based on literature survey of a subject chosen by the student. (Prerequisite: senior standing.)

M.E. 493	Special Problems	Credit Arr.	Fall
494		Credit Arr.	Spring

Guided study of special topics of interest to the student. (Prerequisite: approval by instructor and advisor.)

M.E. 616 Space Conditioning (2+3) — 3 Credits — Spring

Principles of heating, ventilating, air conditioning, and refrigeration with practical applications. (Prerequisite: M.E. 414.)

M.E. 617 Power Analysis (3+3) — 4 Credits — Fall

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. 413.)

M.E. 693	Thesis	Credit Arr.	Spring
694		Credit Arr.	Fall

Research and thesis preparation. (Prerequisite: graduate standing.)

METALLURGY

Met. 304 Introduction to Metallurgy (3+0) — 3 Credits — Spring

Definitions and principles of basic science and engineering principles as applied to process and adaptive metallurgy. (Prerequisites: Math. 102, Chem. 202 or 211, Phys. 212.)

Met. 312 Fire Assaying (0+6) — 2 Credits — Spring

Sampling and preparation of ores, mill products, and smelter products for assay. Assaying gold, silver, and lead. (Prerequisite: permission of the instructor. Offered as demand warrants.)

Met.	332	Physical Metallurgy and Metallorgraphy (3+3)	4 Credits	Spring

Properties of metals and alloys, metal crystals, chemical and mettalic bonds, equilibrium diagrams, defect in metals, heat treatment, pyrometry, foundry, forging welding, principles and application of electron microscope, x-ray. Electron and x-ray diffraction. Equipment used in metallurgy. (Prerequisite: Met. 304. Offered as demand warrants.)

Met.	493	Special Topics	Credits Arr.	Fall
	494		Credits Arr.	Spring

Various subjects studied, principally through directed reading and discussions. (Admission by arrangement.)

Met.	693	Special Topics	Credits Arr.	Fall
	694		Credits Arr.	Spring

Various subjects studied. (Admission by arrangement.)

MILITARY SCIENCE

Mil.	101	First-Year Military Science (2+1)	1½ Credits	Fall
	102		1½ Credits	Spring

First-year basic: organization of the Army; individual weapons and marksmanship; U.S. Army and national security; school of the soldier and exercise of command.

Mil.	201	Second-Year Military Science (2+1)	1½ Credits	Fall
	202		1½ Credits	Spring

Second-year basic: American military history; map and aerial photography reading; introduction to operations and basic tactics; school of the soldier and exercise of command.

Mil.	301	Third-Year Military Science (3+1)	3 Credits	Fall
	302		3 Credits	Spring

First-year advanced: leadership; military teaching; branches of the Army; small unit tactics; communications; school of the soldier and exercise of command.

Mil.	401	Fourth-Year Military Science (3+1)	3 Credits	Fall
	402		3 Credits	Spring

Second-year advanced; operations; logistics; Army administration; military law; the role of the U.S. in world affairs; service orientation; school of the soldier and exercise of command.

Mil. 403 ROTC Flight Training 2 Credits Spring

Thirty-five hours of ground school and 36½ hours of flight; includes FAA flight check.

MINERAL AND PETROLEUM TECHNOLOGY

M.P.T. 61 Math for Technicians (3+0) 3 Credits Fall

Arithmetic, trigonometry, slide rule, graphs, and computations applicable to mineral and petroleum fields.

M.P.T. 62 Mineralogy and Petrology (2+3) 3 Credits Spring

Mineral and rock identification of hand specimens. Physical characteristics and simple chemical tests.

M.P.T. 63 Map Reading and Drafting (0+6) 2 Credits Fall

Map interpretation, lettering, drafting and use of equipment.

M.P.T. 64 Measurements and Mapping (2+3) 3 Credits Spring

Use of brunton, transit, level and other surveying equipment. Map preparation.

M.P.T. 65 Science for Technicians (3+0) 3 Credits Fall

Basic principles of chemistry and physics as applicable to mineral and petroleum technology.

M.P.T. 67 Petroleum I (3+0) 3 Credits Fall

Introduction to petroleum industry. Practical exploration and drilling technology.

M.P.T. 68 Petroleum II (3+0) 3 Credits Spring

Pipeline, transportation and storage technology.

M.P.T. 69 Geography and Geology (3+0) 3 Credits Fall

Introduction to geography and physical geology with emphasis to Alaska.

M.P.T. 71 Exploration Methods (2+3) 3 Credits Fall

Introduction to geochemical, geophysical and physical methods of exploration in mineral and petroleum fields.

M.P.T. - 72 Milling and Metallurgy (2+3) 3 Credits Spring

Sampling and sample preparation. Methods of ore dressing on a unit and continual basis. Introduction to physical metallurgy.

M.P.T. 73 Technical Drawing (0+6) 2 Credits Fall

Drafting methods used in exploration and productions, geometric construction, orthographic projection, sectioning and pictorial representation.

M.P.T. 74 Laboratory Instrumentation and Controls (2+3) 3 Credits Spring

Introduction to practical laboratory techniques, modern instrumentation methods and applications.

M.P.T. 75 Petroleum III (2+3) 3 Credits Fall

Production processing and instrumentation. Technology, field and laboratory testing.

M.P.T. 76 Petroleum IV (3+0) 3 Credits Spring

Petroleum geology, reservoir and conservation technology.

M.P.T. 78 Computer Applications (2+3) 3 Credits Spring

Introduction to computer applications in mineral and petroleum industries. Familiarization with FORTRAN II programming language.

M.P.T. 80 Intro. to Mineral and Petroleum Economics (3+0) 3 Credits Spring

Elements of economics, resource economics and operational cost analysis applied to mineral and petroleum production.

M.P.T. 82 Field Trip 1 Credit Spring

Field trip to observe exploration and operational functions in mineral and petroleum fields. Technical report required.

MINERAL PREPARATION ENGINEERING

M.Pr. 313 Introduction to Mineral Preparation (2+3) 3 Credits Fall

Elementary theory and principles of unit processes of liberation, concentration, and solid-fluid separation as applied to mineral beneficiation. (Prerequisite: junior standing or permission of the instructor.)

M.Pr. 314 Unit Preparation Processes (1+6) 3 Credits Spring

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.)

M.Pr. 406 Materials Handling Systems (2+3) 3 Credits Spring

The techniques and design of systems to move ore, concentrates and waste materials in mining and milling operations. (Prerequisite: senior standing or permission of the instructor.)

M.Pr. 418 Emission Spectroscopy, X-Ray Spectroscopy, Atomic Absorption Spectroscopy and Electron Microscopy (2+3) 4 Credits Spring

Can be taken for any combination of parts A, B, C, D as demand warrants. (Admission by arrangement.)

M.Pr. 418A — Theory and application of emission spectrography; two one-hour classes; one three-hour lab per week for five weeks. One credit.

M.Pr. 418B — Theory and application of x-ray spectrograph and diffractometer; two one-hour classes; 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; one three-hour lab per week for five weeks. One credit.

M.Pr. 418D — Theory and application of electron microscope; two one-hour classes; one three-hour lab per week for five weeks. One credit.

M.Pr. 431 Applied Ore Microscopy (1+3) 2 Credits Fall

Preparation of polished sections of ores. Identifications of ore minerals in reflected light by physical, optical, and chemical methods. Applications to ore genesis, drill core interpretation, beneficiation, and process control. (Prerequisite: Geol. 213.)

M.Pr. 433 Coal Preparation (2+3) 3 Credits Fall

Unit operations, flowsheets, washability characteristics, and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. (Prerequisite: M.Pr. 313.)

M.Pr. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects studied through directed reading, discussions, and laboratory work. (Admission by arrangement.)

M.Pr. 601 Froth Flotation (2+3) 3 Credits Fall

Theory and application of bulk and differential froth flotation to metallic minerals, non-metallic minerals, and coal. (Admission by arrangement.)

M.Pr. 606 Plant Design (1+6) — 3 Credits — Spring

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. 693 Special Topics — Credits Arr. — Fall
694 — Credits Arr. — Spring

Various subjects studied. (Admission by arrangement.)

M.Pr. 695 Mineral Preparation Research (1+6) — 3 Credits — Fall
696 — 3 Credits — Spring

Familiarizes students with the concept of basic research and its needs in the field of mineral benefication, including such research subjects as magnetic susceptibility, dielectric constants, and electrical conductivity of minerals; chemical theory and mechanism of bubble contact in flotation; the effect of ultrasonic vibration in unit processes. (Admission by arrangement.)

M.Pr. 697 Thesis — 3 Credits — Spring
698 — 3 Credits — Spring

Application of fundamentals to the actual beneficiation problems of Alaskan ores; to produce increased effectiveness in ability to organize, interpret, and present the results of research clearly, precisely, and with meaning in acceptable thesis form.

MINING ENGINEERING

Min. 102 Mining Engineering Systems (4+0) — 4 Credits — Spring

Can be taken in any combination of parts A,B,C.

Min. 102A — Introduction to mineral industries and elementary principles of exploration. Four one-hour classes per week for four weeks. One credit.
Min. 102B — Utilization and application of mining explosives. Four one-hour classes for four weeks. One credit.
Min. 102C — Fundamentals of mining systems for bedded, massive, vein and surface deposits. Four one-hour classes per week for eight weeks. Two credits.

Min. 202 Mine Surveying (2+3) — 3 Credits — Spring

Surveying principles for surface and underground control of mining properties. Field and office procedures for preparation of maps and engineering data. (Prerequisite: Math. 106.)

Min. 320 Seminar and Senior Field Trip — 1 Credit — Fall or Spring

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 student. Offered as demand warrants.)

Min. 331 Mining Law (2+0) — 2 Credits — Fall

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. (Offered as demand warrants.)

Min. 400 Practical Engineering Report — 1 Credit — Spring

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. (Offered as demand warrants.)

Min. 401 Rock Mechanics (2+3) — 3 Credits — Fall

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.)

Min. 402 Energy Economics (3+0) — 3 Credits — Spring

Economics of mineral fuels in the competitive market; regional and national projection of energy supply and demand; structure of coal, petroleum, natural gas, and uranium industries; and seminar on energy policies. (Admission by arrangement.)

Min. 403 Operations Research in Mineral Industries (2+3) — 3 Credits — Fall

The application of operations research techniques in mineral exploration, mineral economics, mine systems, and mineral preparation. (Prerequisite: senior standing or permission of the instructor.)

Min. 405 Geophysical and Geochemical Exploration (2+3) — 3 Credits — Fall

Theory and techniques of geophysical and geochemical exploration. Chemical, gravimetric, seismic, electrical, magnetic, and radioactive measurements. (Prerequisites: Chem. 202, Phys. 212.)

Min. 406 Mining Plant Engineering (3+3) — 4 Credits — Spring

Principles of mine ventilation, haulage, pumping, and energy transmission system. (Prerequisites: Min. 102, Phys. 212, and E.S. 341.)

Min. 408 Mineral Valuation and Economics (3+3) — 4 Credits — Spring

Theory of sampling techniques, deposit and reserve calculations, and analysis of mineral economic problems. (Prerequisite: Min. 102 or permission of the instructor.)

Min. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

Various subjects studied, principally through directed reading and discussion. (Admission by arrangement.)

Min. 621	Advanced Mineral Economics (3+0)	3 Credits	Fall

Economics of mineral exploitation and utilization. International trade, state and federal policies, financial control, and research methods. (Admission by arrangement.)

Min. 691	Seminar	Credits Arr.	Fall
692		Credits Arr.	Spring

Reading and report required. (Admission by arrangement.)

Min. 693	Special Topics	Credits Arr.	Fall
694		Credits Arr.	Spring

Various subjects studied. (Admission by arrangement.)

Min. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

MUSIC

APPLIED MUSIC

Mus. 101	Chorus (0+3)	1 Credit	Fall
		1 Credit	Spring
Mus. 109	ROTC Band (0+3)	1 Credit	Fall
		1 Credit	Spring
Mus. 208	Orchestra (0+3)	1 Credit	Fall
		1 Credit	Spring
Mus. 205	Concert Band (0+3)	1 Credit	Fall
		1 Credit	Spring
Mus. 211	"Choir of the North" (0+3)	1 Credit	Fall
		1 Credit	Spring
Mus. 307	Chamber Music (0+3)	1 Credit	Fall
		1 Credit	Spring
Mus. 313	Opera Workshop (0+3, 6 or 9)	1,2,3 Credits	Fall
		1,2,3 Credits	Spring
Mus. 317	Collegium Musicum (0+3)	1 Credit	Fall
		1 Credit	Spring

NOTE: Admission to ensemble courses above the 100 level is by permission of the instructor. Ensemble courses may be repeated for credit; a maximum of 12 such credits may be counted toward graduation.

Mus. 151, 152	Class Lessons (0+3)	1 Credit	Fall
251, 252		1 Credit	Spring

Class instruction in piano, voice, or orchestral instrument.

Mus. 161, 162	Private Lessons (½ or 1+1) and Spring	2 or 4 Credits	Fall
261, 262			
361, 362			
461, 462			

Private instruction in piano, voice, or instruments. 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.)

MUSIC THEORY AND HISTORY

Mus. 51	Music Fundamentals (3+0)	3 Credits	Fall or Spring

Rudiments of music for students with little or no prior training in music reading.

Mus. 123	Introduction to Music (2+3)	3 Credits	Fall
124		3 Credits	Spring

Cultivation of the understanding and intelligent enjoyment of music through a study of its elements, forms, and historical styles. Open to all students, including music majors.

Mus. 131	Basic Theory (2+3)	3 Credits	Fall
132		3 Credits	Spring

Development of basic musical skills including sight-singing; ear training; rhythmic, melodic, and harmonic dictation; and keyboard harmony. Study and application of written materials and stylistic analysis of 18th and 19th century works.

Mus. 231	Advanced Theory (2+3)	3 Credits	Fall
232		3 Credits	Spring

Continued study in traditional harmony with emphasis on composition. Development of greater keyboard facility and more advanced harmonic vocabulary. Second semester includes composition and analysis of twentieth century techniques. (Prerequisites: Mus. 131-132 or permission of instructor.)

Mus. 309	Elementary School Music Methods (3+0)	3 Credits	Fall or Spring

Principles, procedures, and materials for teaching music to children at the elementary level. (Prerequisite: Ed. 313 and prerequisites thereto.)

Mus. 315	Music Methods and Techniques (1+3)	2 Credits	Fall or Spring

Instruction in voice and the basic instruments of band and orchestra.

Mus. 321	History of Music (3+0)	3 Credits	Fall
322		3 Credits	Spring

Fall Semester: music before 1750. Spring Semester: music since 1750. (Prerequisite: Mus. 232 or permission of the instructor.)

Mus. 331	Form and Analysis (1+3)	2 Credits	Fall
332		2 Credits	Spring

Fall Semester: dance forms of the seventeenth and eighteenth centuries. Development of the various sonata forms. Spring Semester: detailed analysis of sonatas by Haydn, Mozart, and Beethoven. (Prerequisite: Mus. 232 or permission of the instructor. Semesters must be taken in sequence.)

Mus. 351	Choral Conducting (2+0)	2 Credits	Fall

Principles of conducting and interpretation with vocal ensembles. (Prerequisite: Mus. 232.)

Mus. 352	Instrumental Conducting (2+0)	2 Credits	Spring

Principles of conducting and interpretation with instrumental ensembles. (Prerequisite: Mus. 232.)

Mus. 405	Methods of Teaching Music (3+0)	3 Credits	As demand warrants

See description under Ed. 405, Methods of Teaching Music.

Playing and teaching of string instruments. Fall Semester: violin and viola. Spring Semester: cello and bass. (Prerequisite: Mus. 232 or permission of the instructor.)

Mus. 431	Counterpoint (3+0)	3 Credits	Fall

The contrapuntal style and techniques of the sixteenth century, acquaintance with species counterpoint. (Prerequisite: Mus. 232.)

Mus. 432	Orchestration and Arranging (3+0)	3 Credits	Spring

Principles and practices of instrumentation and arranging for vocal and instrumental ensembles.

Mus. 491	Senior Seminar (2+0)	2 Credits	Fall
492		2 Credits	Spring

Variety of subject matter depending on the interests and needs of students.

Mus. 493	Special Topics	Credit Arr.	Fall
494		Credit Arr.	Spring

Various subjects. (Admission by arrangement.)

Mus. 693	Special Topics	Credit Arr.	Fall
694		Credit Arr.	Spring

Various subjects. (Admission by arrangement.)

OCEANOGRAPHY AND OCEAN ENGINEERING

OCN 411 General Oceanography (3+0) 3 Credits Fall

Description of the oceans and ocean processes; inter-relationship of disciplinary sciences to the field; historical facts of oceanography, modern developments, and trends in the field. (Prerequisite: senior or graduate standing in a disciplinary science, mathematics or engineering.)

OCN 613 Marine Geology (3+0) 3 Credits Spring

Survey of marine geology; structure of ocean basins and continental margins; chemical and physical properties of marine sediments; geological processes in the oceans. (Prerequisites: senior or graduate standing in geology or appropriate interdisciplinary programs; or permission of the instructor.)

OCN 620 Introduction to Physical Oceanography (3+0) 3 Credits Fall

(Same as Phys. 620)
Physical description of the sea, physical properties of sea water, methods and measurements, boundary processes, currents, tides and waves, regional oceanography. (Prerequisite: science or engineering degree, or permission of the instructor.)

OCN 622 Ocean Currents and Water Masses (3+0) 3 Credits Fall

Theories of ocean circulation, wind currents, and boundary currents. Topographic influences on currents, origin of water masses, instruments, and observations. (Prerequisite: OCN 620 or permission of the instructor.)

OCN 624 Estuarine Dynamics (3+0) 3 Credits Spring

Physical and chemical properties of estuatine waters including kinematics and dynamics of motion. Classification of estuaries by geomorphological and oceanographic parameters. (Prerequisites: OCN 620, Math 302, or permission of the instructor.)

OCN 650 Introduction to Biological Oceanography (3+0) 3 Credits Fall

Survey of marine plants and animals and their inter-relationships with major emphasis on primary productivity and marine food chains.

OCN 661 Chemical Oceanography I (3+0) 3 Credits Spring

(Same as Chem. 661)
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.)

OCN 663 Chemical Oceanography II (3+0) 3 Credits Fall

(Same as Chem. 663)
Selected topics in chemical oceanography, including stable isotope chemistry; chemical equilibria; chemistry of marine biota and their products; interaction of sediments and water; material exchange through sea air interface; marine photosynthesis and special topics of marine biochemistry; chemical technology as applied to oceanography; raw materials and industrial utilization. (Prerequisite: OCN 661, or permission of the instructor.)

OCE 670 Waves and Tides (3+0) 3 Credits Spring

(Same as C.E. 670)
Generation and propagation of waves at sea, theory of waves, wave spectra and forecasting, observation and recording of ocean waves, tsunamis, tides, and internal waves.

OCE 672 Underwater Acoustics (3+0) 3 Credits Fall

(Same as E.E. 672)
Nature of sound, units and standards, sound-related characteristics of sea water, transmission and transmission losses, effect of discontinuities, reverberation, and measurement techniques.

OCE 674 Environmental Hydrodynamics (3+0) 3 Credits Spring

(Same as C.E. and Phys. 674)
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.

OCE 676 Coastal Engineering (3+0) 3 Credits Fall

(Same as C.E. 676)
Review of deep and shallow water waves, littoral drift, coastal structures, pollution problems, harbor seiches. (Prerequisite: OCE 670.)

OCE 680 Ocean Engineering Field Work (3+0) 3 Credits Fall or Spring

Field experience either on a vessel or at an ocean engineering site selected by the student in consultation with his graduate committee. Usual duration of the field work is approximately two months.

OCN 690	**Colloquium**	0 Credits	Spring
OCN 691	**Seminar**	1 Credit	Fall
692			Spring
OCN 693	**Special Topics**	Credits Arr.	Fall
694			Spring
OCN 697	**Thesis**	Credits Arr.	Fall
698			Spring

OFFICE ADMINISTRATION

O.A. 61 Clerical Skills (3+0) — 3 Credits — Fall

Instruction in various duplication processes, filing, responsibilities and duties of a clerical worker.

O.A. 63 Adding and Calculating Machines (1+2) — 3 Credits — Spring or Fall

Basic operation of adding, calculating, and key punch machines.

O.A. 65 Machine Transcription (3+0) — 3 Credits — Fall

Transcription from various voice-writing machines with special emphasis on spelling, word choice, and grammar.

O.A. 66 Machine Transcription (3+0) — 3 Credits — Spring

Transcription training, with emphasis on mailable material, efficient office routine, setting up letters.

O.A. 99 Office Practice (2+10) — 6 Credits — Spring

Same as O.A. 299

O.A. 101 Shorthand (3+1) — 3 Credits — Fall
102 — 3 Credits — Spring

Beginning Gregg Shorthand for secretarial students. Theory and reading practice first semester; dictation and transcription practice second semester.

O.A. 103 Elementary Typewriting (2+0) — 2 Credits — Fall or Spring

Basic typewriting skills, techniques of copy work, introduction to letter writing, simple tabulations. For students who have had no previous typewriting.

O.A. 105 Intermediate Typewriting (2+2) — 2 Credits — Fall or Spring

Speed development and application of typewriting skill to special letter problems, tabulations, and office problems. (Prerequisite: one year of high school typewriting or O.A. 103.)

O.A. 106 Advanced Typewriting (2+2) — 2 Credits — Fall or Spring

Letter writing with special problems, reports, business forms, statistical tabulations and legal documents; emphasis is on speed and office standards. (Prerequisites: O.A. 105 or equivalent and speed of 40 words per minute.)

O.A. 107 Advanced Dictaphone Transcription (3+0) — 3 Credits — Fall or Spring

Advanced transcription training with emphasis on mailability, speed, meeting deadlines, and working under pressure.

O.A. 201 Intermediate Stenography (2+2) 3 Credits Fall
202 Advanced Stenography 3 Credits Spring

High speed shorthand dictation and transcription. (Prerequisite: O.A. 102, 106 or equivalent.)

O.A. 203 Office Machines (1+2) 3 Credits Fall

Basic operation and application of calculating and adding machines; key punch machine operation. (Prerequisite: O.A. 105 or equivalent.)

O.A. 208 Specialized Secretarial Skills (3+0) 3 Credits Fall or Spring

Principles, practices, and rules of filing and records management. Training and practice in the operation of transcribing and duplicating machines; responsibilities and duties of the secretary; business ethics. (Prerequisites: O.A. 105 or equivalent.)

O.A. 231 Business Correspondence (3+0) 3 Credits Fall

Funadamentals of business writing; emphasis on clarity, accuracy, and effectiveness in the writing of business letters and reports. (Prerequisite: Engl. 102, O.A. 105 or equivalent.)

O.A. 292 Introduction to Data Processing (3+0) 3 Credits Spring

(Same as B.A. 292)
Introduction to data processing. Related management consideration.

O.A. 299 Office Practice (2+10) 6 Credits Spring

Actual office experience. Students are required to work in selected offices on campus for ten hours each week. They also meet two class hours per week and discuss receptionist duties in an office including business ethics, telephone techniques, meeting callers, taking orders, getting along with fellow employees, subordinates, and superiors. (Admission by permission of the instructor.)

O.A. 302 Secretarial Training (3+0) 3 Credits Spring

Business office systems, procedures, organization; professional secretarial standards and practices; C.P.S. program and requirements; the preparation of office manuals.

O.A. 351 Readings in Office Administration (1+0) 1 Credit Fall or Spring

Readings in current problems, practices, procedures, methods. Not more than two credits to be earned by any student.

O.A. 360 C.P.S. Coaching (3+0) 3 Credits Fall or Spring

Review of current professional literature, a study of material covered in recent C.P.S. examinations, and solving of problems under examination conditions. Guidelines of the course are the requirements for the C.P.S. examination. (Prerequisite: senior standing or permission of the instructor.)

O.A. 493 Special Topics — Credits Arr. Fall; Credits Arr. Spring

O.A. 499 Office Practice (2+10) — 6 Credits Spring

Description same as O.A. 299.

PETROLEUM

Pet. 101 Introduction to Petroleum (3+0) — 3 Credits Fall and Spring

A survey of the petroleum industry from exploration through refining. (Prerequisites: freshman standing.)

Pet. 302 Oil Well Design and Production (3+0) — 3 Credits Spring

Fundamental principles underlying the analysis, design and engineering of petroleum production systems. (Prerequisites: Phys. 211, Math. 201 or permission of instructor.)

PHILOSOPHY

Phil. 201 Introduction to Philosophy (3+0) — 3 Credits Fall and Spring

Terms, concepts, and problems as reflected in writings of great philosophers. (Prerequisites: Engl. 102, sophomore standing, and permission of the instructor.)

Phil. 204 Introduction to Logic (3+0) — 3 Credits Spring

Principles of deductive and inductive logic, application of these laws in science and other fields; brief introduction to symbolic logic and its applications. (Prerequisite: sophomore standing.)

Phil. 321 Aesthetics (3+0) — 3 Credits Fall

The nature of aesthetic experience in poetry, music, painting, sculpture, and architecture; studies in relation to artistic production and the role of art in society. (Offered in alternate years; next offered in 1971.)

Phil. 332 Ethics (3+0) — 3 Credits Spring

Examination of ethical theories and basic issues of moral throught. (Offered in alternate years; next offered in 1972.)

Phil. 341 Epistemology (3+0) — 3 Credits Fall

The nature of knowledge, truth and certainty. (Prerequisite: Phil. 201. Offered in alternate years, next offered in 1970.)

Phil. 342 Metaphysics (3+0) — 3 Credits Spring

The nature of reality comprising both ontology and cosmology. (Prerequisite: Phil. 201. Offered in alternate years, next offered in 1971.)

Phil. 351 History of Philosophy (3+0) 3 Credits Fall

Ancient and medieval periods. (Prerequisite: six credits in philosophy or social science.)

Phil. 352 History of Philosophy (3+0) 3 Credits Spring

Renaissance, modern, and recent periods. (Prerequisite: six credits in philosophy or social science.)

Phil. 471 Contemporary Philosophical Problems (3+0) 3 Credits Fall or Spring

Ideological issues facing the modern world. (Prerequisite: nine credits in philosophy or permission of the instructor.)

Phil. 481 Philosophy of Science (3+0) 3 Credits Fall

Comparison and discussion of various contemporary methodological positions. (Prerequisite: junior standing.)

Phil. 482 Comparative Religion (3+0) 3 Credits Spring

Seven world faiths represent answers to questions of man's duty, his destiny, and his nature. (Prerequisite: permission of the instructor.)

Phil. 484 Philosophy of History (3+0) 3 Credits Spring

Critical examination of the nature of history and historical inquiry. (Prerequisite: nine credits in philosophy or social science.)

Phil. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects.

PHYSICAL EDUCATION

P.E. 100 Physical Education Activities (0+3) 1 Credit Fall and Spring

Only P.E. 100 will count toward the four semesters of physical education referred to under General Requirements for Undergraduate Degrees. An activity may be repeated for credit only if the activity is offered on an intermediate or advanced level. Regulation uniforms are required for participation in all activities.

PROFESSIONAL TRAINING COURSES

P.E. 203 Fundamentals of Sports — Tennis and Badminton (0+2) 1 Credit Fall

Skills, rules, strategies, terminology of tennis and badminton.

P.E. 205 Fundamentals of Sports — Wrestling (Men) (0+2) 1 Credit Fall

Skills, rules, terminology, and techniques of wrestling. (Offered alternate years, beginning 1969.)

P.E. 211 Fundamentals of Sports — Volleyball and Soccer (0+2) 1 Credit Spring

Skills, rules, strategies, terminology of volleyball and soccer.

P.E. 213 Fundamentals of Sports — Swimming (0+2) 1 Credit Fall

Skills, techniques, terminology of basic strokes; instruction in water safety and accident prevention; a preparatory course for P.E. 401.

P.E. 214 Fundamentals of Sports — Skiing (0+2) 1 Credit Spring

Skills, techniques, terminology of alpine type and cross-country skiing. Methods of instruction.

P.E. 215 Fundamentals of Sports — Tumbling and Gymnastics (Men) (0+2) 1 Credit Fall

Skills, techniques, terminology of tumbling and gymnastics.

P.E. 216 Fundamentals of Sports — Rhythms (0+2) 1 Credit Spring

Skills, terminology, and basic patterns of movement.

P.E. 217 Fundamentals of Sports — Tumbling and Apparatus Gymnastics (Women)(0+2) 1 Credit Fall

Instruction in basic skills and techniques of apparatus gymnastics. Training and practices in tumbling, free exercises, uneven bars, balance beam, and trampoline.

P.E. 242 Personal and Community Health (3+0) 3 Credits Spring

Development of positive health attitudes; principles and practices of personal and community health.

P.E. 246 First Aid (2+0) 2 Credits Fall or Spring

Knowledge and skills necessary to provide efficient aid and treatment in emergencies.

P.E. 301 Techniques in Physical Education — Basketball (Men) (2+1) — 2 Credits — Fall

Methods of coaching and training basketball teams; strategy, methods, and psychology of offense and defense.

P.E. 302 Techniques in Physical Education — Track and Field (2+1) — 2 Credits — Spring

Methods and strategy of coaching track and field; form, technique, and training for events; organization and conduct of meets; construction, assembly, and use of equipment.

P.E. 303 Techniques in Physical Education — Team Sports (Women) (2+1) — 2 Credits — Fall

Methods and practices, analysis of skills and progressions for selected team sports for women.

P.E. 308 Physical Education for the Elementary School (2+3) — 3 Credits — Spring

(Same as Ed. 308)
Philosophy, source, materials, games, rhythmics, group activities, and program planning; participation required to gain skills and techniques of teaching activities for elementary grade children. (Prerequisites: Ed. 313 and prerequisite thereto.)

P.E. 311 Principles of Physical Education (4+0) — 4 Credits — Fall

Basic principles and philosophy of physical education; its relation to general education; biological, sociological, and psychological bases.

P.E. 331 Sports Officiating (1+3) — 2 Credits — Fall

Ethics of sports officiating; mastery, interpretation, and application of sports rules; laboratory consists of game officiating in the intramural program.

P.E. 358 History of Physical Education (3+0) — 3 Credits — Spring

The position of physical education in successive societies since primitive man, with emphasis on its relation to general education.

P.E. 400 Techniques in Physical Education — Tumbling and Gymnastics (2+1) — 2 Credits — Spring

Methods and practice in teaching tumbling and gymnastics. (Prerequisite: P.E. 215 or 217.)

P.E. 401 Techniques in Physical Education — Aquatics and Rhythms (2+1) — 2 Credits — Fall

Methods and materials, techniques and practice in teaching aquatics and rhythms. (Prerequisites: P.E. 213, 216.)

P.E. 425 Organization and Administration of Physical Education (3+0) — 3 Credits — Fall

Philosophy, methodology, and problems of planning, organizing, and directing the total physical education program at the secondary school level.

P.E. 440 Prevention and Care of Athletic Injuries (2+1) — 2 Credits — Spring

Athletic injuries; practical and theoretical aspects of taping, bandaging, and massage; physical therapeutic procedures.

P.E. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

PHYSICS

Phys. 51 Elements of Weather (3+0) — 3 Credits — Fall, Spring

Definitions of weather elements; methods of measurement; composition of the atmosphere; description of atmospheric process leading to rain, fog, snow, hail, hurricanes, tornadoes, thunderstorms; weather fronts and pressure systems and their movement; general circulation of the atmosphere and its source; wind and secondary circulation; weather forecasts—how they are made and how they can be used; weather satellites—their current and projected use. (Offered only at Anchorage Community College.)

Phys. 53 Aviation Weather (3+0) — 3 Credits — Fall, Spring

Weather as it affects aircraft operations. Types, sources, and limits of aviation weather forecasts. Canadian and U.S. weather services are included with emphasis on Alaska and Western Canada. (Offered only at Anchorage Community College.)

Phys. 103 College Physics (3+3) — 4 Credits — Fall
104 — 4 Credits — Spring

Unified classical and modern physics. (Prerequisite: High school algebra and geometry.)

Phys. 211	**General Physics (3+3)**	**4 Credits**	**Fall**
212		**4 Credits**	**Spring**

Mechanics, acoustics, thermodynamics and kinetic theory, electricity and magnetism, waves and optics.

Phys. 275	**Astronomy (3+0)**	**3 Credits**	**Fall**
276		**3 Credits**	**Spring**

Science elective for the general student. Fall Semester: stellar astronomy, nature of radiation, physical properties and distribution of stars, galactic structure and cosmology. Spring Semester: the solar system, laws of motion, the earth, the moon, planets, comets and meteors, cosmogony. Evening demonstrations both semesters. (Prerequisite: sophomore standing; Phys. 275 not required for 276.)

Phys. 280	**Shop Technique (0+3)**	**1 Credit**	**Fall or Spring**

Elements of machine tool operations, welding, soldering, glass blowing, high vacuum technique. Rudiments of apparatus construction. Shop project. Enrollment limited. (Prerequisite: permission of the instructor. Offered as demand warrants.)

Phys. 281	**Astronomy Laboratory (0+3)**	**1 Credit**	**Fall**
282		**1 Credit**	**Spring**

Laboratory experiments in gravitation, geometric optics, physical optics, radiometry, photoelectricity, spectrophotometry and spectroscopy illustrating and supplementing Phys. 275, 276. (Prerequisite: sophomore standing; Phys. 281 not required for 282. Offered as demand warrants.)

Phys. 301	**Applied Physics (2+3)**	**3 Credits**	**Fall**
302		**3 Credits**	**Spring**

Applied physics for majors in the arts, biological sciences, and education. Electronics, atomic structure and spectra, nuclear structure and reactions, radio-activity, tracer techniques, nuclear power. (Prerequisites: Phys. 104, Math. 102. Offered as demand warrants.)

Phys. 311	**Classical Physics (4+0)**	**4 Credits**	**Fall**
312		**4 Credits**	**Spring**
313		**4 Credits**	**Spring**

Selected topics from mechanics, thermodynamics, kinetic gas theory, statistical mechanics, acoustics, geometric and physical optics. (Prerequisites: Phys. 212, Math. 202, or permission of the instructor. Physics 312 and 313 are offered in alternate years in the spring.)

Phys. 331	**Electricity and Magnetism (3+0)**	**3 Credits**	**Spring**
332		**3 Credits**	**Fall**

Electrostatics, dielectrics, magnetostatics, magnetic materials, electromagnetism. Maxwell's equations, plane electromagnetic waves, radiation, selected topics from circuit theory and electronics. (Prerequisites: Phys. 212, Math. 202.)

Phys. 351 Introduction to Dynamic Meteorology (3+0) — 3 Credits — Fall

A mathematical treatment of atmospheric thermodynamics and basic equations of motion. The principles of thermodynamics are applied to the atmospheric system in the theoretical considerations as well as in practical applications. (Prerequisites: Math. 201, Math. 202 taken concurrently. Offered as demand warrants.)

Phys. 361 General Geophysics (3+0) — 3 Credits — Fall
362 — 3 Credits — Spring

Introduction to basic geophysics including terrestrial electricity and magnetism, meteorology and seismology, geodesy and vulcanology, glaciology, oceanography and techtonophysics. (Prerequisites: junior standing; Phys. 104 or 212, Math. 102, one semester of geology. Offered as demand warrants.)

Phys. 381 Physics Laboratory — Credits Arr. — Fall
382 — Credits Arr. — Spring

Laboratory experiments illustrating and supplementing Phys. 311, 313, and Phys. 331, 332. Enrollment limited. (Prerequisite: permission of the instructor.)

Phys. 411 Modern Physics (3+0) — 3-4 Credits — Fall
412 — 3-4 Credits — Spring

Relativity, elementary particles, atomic structure, x-rays, solid state physics, nuclear structure and reactions. Engineering majors take the three credits lecture course only. Physics majors are required to take a supplementary one credit reading course. (Prerequisites: Phys. 212, 332, Math. 302.)

Phys. 445 Solid State Physics (3+0) — 3 Credits — Fall

Theory of matter in the solid state, especially semiconductors. (Prerequisites: Phys. 212, Math. 202. Offered as demand warrants.)

Phys. 455 Atomic and Nuclear Physics (3+0) — 3 Credits — Fall

Radioactivity, counters, nuclear reactions, neutron physics, nuclear physics, nuclear fission, cosmic rays. (Prerequisites: Phys. 212, Math. 202. Offered as demand warrants.)

Phys. 460 Geophysical Prospecting (2+3) — 3 Credits — Fall or Spring

Basic methods in geophysical exploration and measurements, gravimetric, seismic, electrical magnetic, and radioactive. (Prerequisites: Phys. 212, Geol. 101, 102, Math. 201. Offered as demand warrants.)

Phys. 465 Meteorology — 3 Credits — Fall or Spring

Instruments and observations. Introduction to mechanics and thermodynamics of the atmosphere. Weather analysis and forecasting. (Prerequisites: Phys. 104 or 212, Math. 102. Offered as demand warrants.)

Phys. 470 Astronautics (3+0) — 3 Credits — Fall or Spring

Principles of astronomy, foundation of mechanics, and dynamics of space flight. (Prerequisites: Phys. 212, Math. 202. Offered as demand warrants.)

Phys. 481 Advanced Physics Laboratory — Credits Arr. — Fall
482 — Credits Arr. — Spring

Laboratory experiments illustrating and supplementing Phys. 411, 412, 445, 455, 475. Enrollment limited. (Prerequisite: permission of the instructor.)

Phys. 485 Experimental Physics — Credits Arr. — Fall
486 — Credits Arr. — Spring

Senior projects in experimental physics. Enrollment limited. (Prerequisites: senior standing and permission of the instructor.)

Phys. 491 Physics Seminar — Credits Arr. — Fall
492 — Credits Arr. — Spring

Seminar courses in various topics selected according to needs and interest of students. Primarily for physics majors. (Prerequisite: permission of the instructor.)

Phys. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

Various subjects. (Admission by arrangement.)

Phys. 603 Introduction to Geophysics (3+0) — 3 Credits — Fall
604 — 3 Credits — Spring

(603 same as Geol. 603)
A survey of selected topics in the planetary sciences, including introductory material in each of the major research subject areas in geophysics. 603 covers earth science and 604 covers atmospheric and space science.

Phys. 611 Theoretical Physics (3+0) — 3 Credits — Fall
612 — 3 Credits — Spring

(Same as Math. 611, 612)
Advanced consideration of such topics as transform methods, asymptotic methods, Green's function, Stürm—Liouville Theory, conformal mapping, and calculus of variations with applications to problems arising in physics. (Prerequisites: Math. 402 or 406 and permission of the instructor.)

Phys. 620 Introduction to Physical Oceanography (3+0) — 3 Credits — Fall

(Same as OCN 620)
Physical description of the sea, physical properties of sea water, methods and measurements, boundary processes, currents, tides and waves, regional oceanography. (Prerequisite: science or engineering degree, or permission of the instructor.)

Phys. 621 Classical Mechanics (3+0) — 3 Credits — Fall

Lagrange's equations, two-body problem, rigid body motion, special relativity, canonical equations, transformation theory and Hamilton-Jacobi method. (Admission by arrangement.)

Phys. 622 Statistical Mechanics (3+0) — 3 Credits — Spring

Classical and quantum statistics of independent particles, ensemble theory, and applications. (Admission by arrangement.)

Phys. 626 Magnetohydrodynamics and Plasma Physics (3+0) — 3 Credits — Spring

Fundamental equations of magnetohydrodynamics and magnetohydrodynamic waves. Invariants of the motion of a charged particle in a magnetic field. Dynamics of a plasma, plasma waves. (Admission by arrangement.)

Phys. 627 Plasma Physics (3+0) — 3 Credits — Fall or Spring

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; quasi-linear theory and plasma disturbance.

Phys. 631 Electromagnetic Theory (3+0) — 3 Credits — Fall
632 — 3 Credits — Spring

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.)

Phys. 642 Radio Physics (3+0) — 3 Credits — Fall or Spring

Selected topics from ionospheric absorption, diffraction, and scattering of radio waves. (Admission by arrangement. Offered as demand warrants.)

Phys. 651 Quantum Mechanics (3+0) — 3 Credits — Fall
652 — 3 Credits — Spring

Schrodinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum-statistic mechanics and applications of quantum mechanics to collision problems, radiation and spectroscopy.

Phys. 657 Seismology (3+0) — 3 Credits — Fall
658 — 3 Credits — Spring

(Same as Geol. 657, 658)
Propagation of elastic waves in layered media. (Admission by arrangement.)

Phys. 660 Theoretical Geophysics (3+0) 3 Credits Fall or Spring

(Same as Geol. 660)
Selected topics in theoretical geophysics, mainly in solid earth physics, seismology, and geomagnetism. (Admission by arrangement. Offered as demand warrants.)

Phys. 661 Physics and Chemistry of the Upper Atmosphere (2+0) 2 Credits Spring

Aerostatics, composition. Kinetic theory. Properties, viscosity, thermal conductivity and diffusion. Escape. Solar radiation. Absorption. Dissociation and ionization. Positive and negative ions. Recombination, attachment and detachment. Ozone, hydroxyl, and hydrogen. The airglow. (Admission by arrangement. Offered as demand warrants.)

Phys. 663 The Geomagnetic Field (2+0) 2 Credits Spring

The amin field at the earth's surface. Spherical harmonic analysis; the field within the earth; the field outside the earth; the secular magnetic variation; paleomagnetism; the dynamo theory of the field and its secular variation; distortion of the outer field by electric currents associated with magnetic disturbance. (Admission by arrangement. Offered as demand warrants.)

Phys. 664 Geomagnetic Disturbance and the Aurora (2+0) 2 Credits Fall or Spring

The morphology, statistics, solar and ionospheric associations of magnetic disturbances; indices of disturbance; auroral phenomena; theories of magnetic disturbance and the aurora. (Admission by arrangement. Offered as demand warrants.)

Phys. 665 Dynamic Meteorology (3+0) 3 Credits Fall or Spring

Atmospheric statics, thermodynamics, radiation, and dynamics; atmospheric turbulence; general circulation; perturbation theory. (Admission by arrangement. Offered as demand warrants.)

Phys. 667 Theoretical Astrophysics (3+0) 3 Credits Fall or Spring

Radiative transfer and stellar hydrodynamics; theory of continuous and line spectrum from stellar atmospheres; solar. photosphere, chromosphere and corona. (Admission by arrangement. Offered as demand warrants.)

Phys. 671 Space Physics (2+0) 2 Credits Fall or Spring

Radiation belts, motions and magnetic fields of trapped particles, geomagnetic storm effects and primary auroral particles. (Admission by arrangement. Offered as demand warrants.)

Phys. 674 Environmental Hydrodynamics (3+0) 3 Credits Spring

(Same as OCN 674 and C.E. 674)
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.

Phys. 675 Radio Astronomy (3+0) 3 Credits Fall or Spring

Survey of instruments and techniques, radio wave generation and propagation in ionized media, solar radio waves, cosmic radio waves, effects of the troposphere on extra-terrestrial radio waves, radar astronomy. (Admission by arrangement. Offered as demand warrants.)

Phys. 677 Atomic and Molecular Processes Credits Arr. Fall
678 Credits Arr. Spring

Selected topics in collision theory, radiation theory, atomic and molecular structure and reactions, and experimental techniques of atomic and molecular physics.

Phys. 685 Experimental Physics Credits Arr. Fall
686 Credits Arr. Spring

Advanced work in experimental physics. (Admission by arrangement.)

Phys. 690 Colloquium 0 Credits Fall or Spring

Phys. 691 Seminar Credits Arr. Fall
692 Credits Arr. Spring

Various topics. (Admission by arrangement.)

Phys. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

Special topics given by staff or visiting scholars in subjects of current interest. At least one course is offered each semester.

Phys. 697 Thesis or Dissertation Credits Arr. Fall
698 Credits Arr. Spring

POLICE ADMINISTRATION

P.A. 151 Introduction to Criminology (3+0) 3 Credits Fall

Study of the major areas of deviant behavior and relationship to society, law and law enforcement.

P.A. 152 Criminal Law (3+0) 3 Credits Fall

Structure, definitions, and most frequently used sections of the Penal Code and other criminal statutes.

P.A. 153 Criminal Evidence (3+0) 3 Credits Spring

The kinds and degrees of evidence and the rules governing the admissibility of evidence in court.

P.A. 154 Administration of Justice (3+0) 3 Credits Spring

Review of court systems, procedures from incident to final disposition; principles of constitutional, federal, state, and civil laws, as they apply to and affect law enforcement. (Offered in alternate years.)

P.A. 155 Criminal Investigation (3+0) 3 Credits Spring

Fundamentals of investigation; crime scene search and recording; collection and preservation of physical evidence; scientific aids; modus operandi; sources of information; interviews and interrogation; follow-up and case preparation. (Offered in alternate years.)

P.A. 156 Patrol Procedures (3+0) 3 Credits Fall

Responsibilities, techniques, and methods of police work; computer orientation. (Offered in alternate years.)

P.A. 157 Traffic Control (3+0) 3 Credits Spring

Traffic laws, enforcement, regulation, and control; fundamentals of traffic accident investigation; vehicle code. (Offered in alternate years.)

P.A. 158 Juvenile Procedures (3+0) 3 Credits Spring

The organization, functions, and jurisdiction of juvenile statutes and court procedures. (Offered in alternate years.)

P.A. 159 Organization, Management, and Administration (3+0) 3 Credits Fall

An integrated study of the composition and functions of organizations; principles and problems of management and supervision; the role of administrator, including report writing. (Offered in alternate years.)

POLITICAL SCIENCE

P.S. 101 Introduction to American Government and Political Science (3+0) — 3 Credits — Fall
102 — 3 Credits — Spring

U.S. Constitution and its philosophy; evolution of the branches of government; political process; contemporary political issues; goals, methods, and levels of government.

P.S. 201 Comparative Politics: Methods of Political Analysis (3+0) — 3 Credits — Fall

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. Special application is made to three democratic European countries.

P.S. 202 Comparative Politics: Contemporary Doctrines and Structures (3+0) — 3 Credits — Spring

Conflicting approaches to the solution of social and political problems are reviewed with particular emphasis on nations employing various forms of communism, socialism, fascism, or contemporary concepts of "tutelary" or "controlled" democracy.

P.S. 211 State and Local Government (3+0) — 3 Credits — Fall or Spring

Organization and politics of state and local government in the United States; the Alaska constitution; problems of statehood in Alaska. (Prerequisite: P.S. 101.)

P.S. 301 Public Administration (3+0) — 3 Credits — Fall or Spring

Techniques and problems of administering public policy. The changing role of the executive branch in the political process. (Prerequisite: P.S. 101.)

P.S. 321 International Affairs (3+0) — 3 Credits — Fall
322 International Affairs: Case Studies (3+0) — 3 Credits — Spring

Development of internationalism in relation to nationalism and imperialism; attempts at world government. The League of Nations and the United Nations. International law. The role of national governments in the development of foreign policy.

P.S. 332 International Law and Organization (3+0) — 3 Credits — Fall or Spring

Development, structure, policies, and problems of public international law and organizations. Accomplishments and limitations of universal and regional organizations and law.

P.S. 361 Latin American Governments and Politics (3+0) — 3 Credits — Fall or Spring

A survey of Latin American political structures and processes emphasizing executive, legislative, and judicial systems; political parties and pressure groups; political activities of students, labor unions, and agricultural workers' groups; plus consideration of class conflicts, militarism, and church-state problems.

P.S. 401 Political Behavior (3+0) — 3 Credits — Fall
402 — 3 Credits — Spring

Behavior of political organizations, parties, groups, politicians, and individual citizens. (Prerequisites: P.S. 101, 102.)

P.S. 411 Political Theory (3+0) — 3 Credits — Fall
412 — 3 Credits — Spring

Ancient, classical, medieval, and modern political concepts, and their effects on political behavior.

P.S. 415 Recent Political Thought (3+0) — 3 Credits — Fall or Spring

A discussion of the contributions of modern thinkers to political theory.

P.S. 434 American Constitution (3+0) — 3 Credits — Fall or Spring

Role of the judiciary in the American political system viewed both historically and through analysis of leading cases. (Prerequisite: P.S. 101.)

P.S. 485 Seminar in Contemporary International Relations (3+0) — 3 Credits — Fall or Spring

Theory of international conflict. Prerequisites for international political cooperation. The effect on international affairs of advances in military science. (Prerequisite: P.S. 321.)

P.S. 491 Seminar — Credits Arr. — Fall
492 — Credits Arr. — Spring

P.S. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

PSYCHOLOGY

Psy. 53 Human Relations (3+0) — 3 Credits — Fall, Spring

Aspects of human behavior that are of basic importance to an understanding of self and others with emphasis upon functional experiences to aid the student in acquiring and improving skills in interpersonal situations, especially employer-employee relations. (Offered only at Anchorage Community College.)

Psy. 101 Introduction to Psychology (3+0) 3 Credits Fall or Spring

Fundamentals of general psychology. Human behavior: genetic, motivation, learning, sensations, perception, personality.

Psy. 201 Advanced General Psychology (3+0) 3 Credits Fall

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. (Prerequisites: Psy. 101.)

Psy. 209 Social Psychology (3+0) 3 Credits Fall

Social influences on human behavior. (Prerequisite: 6 hours in Psy. and/or Soc. Offered only at Juneau-Douglas Community College.)

Psy. 223 Introduction to Counseling (3+0) 3 Credits As demand warrants

Basic principles of counseling, elementary concepts of individual and group relationships. A theoretical and practical familiarity with various counseling goals, identification of symptoms, and referrals.

Psy. 251 Introductory Statistics for Behavioral Sciences (3+0) 3 Credits Fall or Spring

(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. 201.)

Psy. 261 Introduction to Experimental Psychology (2+3) 3 Credits Fall

Introduction to and laboratory application of the experimental methods to some problems of psychology using both human and animal subjects. (Prerequisite: Psy. 201, 251. Psy. 251 and 261 may be taken concurrently.)

Psy. 301 History and Systems of Psychology (3+0) 3 Credits Fall

Development of psychological thought with an emphasis on experimental and theoretical areas from the early Greeks to the present. (Prerequisite: Psy. 201.)

Psy. 302 Social Psychology (3+0) 3 Credits Spring

(Same as Soc. 302)
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: Psy. 201 and/or Soc. 101, 102.)

Psy. 331 Industrial Psychology (3+0) — 3 Credits — Fall

Job and worker analysis, selection, training, fatigue, worker adjustment, morale, labor-management relations. (Prerequisite: Psy. 201. Offered alternate years; next offered 1971.)

Psy. 338 Abnormal Psychology (3+0) — 3 Credits — Spring

Abnormalities of human behavior. (Prerequisites: Psy. 201.)

Psy. 351 Child Development (2+9) — 5 Credits — Fall, Spring

(Same as H.E. 351)
Theory and laboratory of human mental, emotional, social, and physical development. (Prerequisites: Psy. 201, 45 semester hours, and permission of the instructor.)

Psy. 352 Adolescence (2+3) — 3 Credits — Fall, Spring

(Same as Soc. 352)
Intellectual, emotional, social, and physical development patterns during the adolescent years. Laboratory arranged for observations of adolescents in a variety of settings, including public schools. (Prerequisites: Psy. 201, 45 semester hours, and permission of the instructor. Soc. 101 is recommended.)

Psy. 362 Intermediate Experimental Psychology (2+3) — 3 Credits — Spring

Training in the design, instrumentation, and execution of experiments with human and animal subjects. Major emphasis in the areas of learning, motivation, and perception. (Prerequisites: Psy. 201, 261.)

Psy. 373 Psychological Testing (3+0) — 3 Credits — Fall

Standardized psychological tests in various applied areas; administration, scoring, and interpretation of established tests. (Prerequisites: Psy. 201, 261.)

Psy. 406 Theories of Personality (3+0) — 3 Credits — Spring

Current psychological theories, with a critical examination of the different approaches used in theory construction. (Prerequisites: Psy. 201, 338.)

Psy. 407 Motivation (3+0) — 3 Credits — Fall

Survey of theory and research on reinforcement, punishment, frustration, preference, instinctual mechanisms, and other factors "controlling" the performance of organisms. (Prerequisites: Psy. 201, 261. Offered alternate years; next offered 1970.)

Psy. 433 Clinical Psychology (3+0) — 3 Credits — Spring

Elementary course in methods of clinical psychology with consideration of psychological assessment and psychological approaches to treatment. (Prerequisite: Psy. 201. Offered alternate years. Next offered 1971.)

Psy. 464 Learning (3+0) — 3 Credits — Spring

A study of the major theories of conditioning and learning, and a survey of current literature concerning classical conditioning and instrumental learning in humans and animals. (Prerequisites: Psy. 201, 261. Offered alternate years; next offered 1971.)

Psy. 465 Comparative and Physiological Psychology (3+0) — 3 Credits — Fall

An introduction to physiological, chemical, and neutral principles basic to human and animal behavior. Review of current literature in the field. (Prerequisites: Psy. 201, 261. It is recommended that Biol. 105 and 106 be taken prior to Psy. 465. Offered alternate years; next offered 1970.)

Psy. 466 Perception (3+0) — 3 Credits — Spring

Current literature and theoretical models of perception emphasizing the physiological, developmental, and social effects on interpretation of sensory processes. (Prerequisites: Psy. 201, 261. Offered alternate years; next offered 1971.)

Psy. 473 Social Science Research Methods (3+0) — 3 Credits — Fall

(Same as Soc. 473)
Techniques of social research; sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments; attitude scaling. (Prerequisites: Psy. 251 and prerequisites thereto.)

Psy. 492 Seminar in Human Behavior (2+0) — 2 Credits — Spring

(Same as Soc. 492)
Integrated behavioral approach emphasizing the major sociological and psychological theories with special attention to current literature. (Prerequisite: senior standing in psychology or sociology.)

Psy. 493 Special Topics — Credits Arr. — Fall
494 — Credits Arr. — Spring

Various subjects. (Admission by arrangement.)

Psy. 623 Principles of Individual Counseling (3+0) — 3 Credits — As demand warrants

(Same as Ed. 623)
Counseling techniques and procedures in education, social work, and on a limited basis, clinical psychology; their applications by the classroom teacher and a guidance specialist in assisting students with adjustment problems within a normal range. (Prerequisites: Ed. 426, Psy. 338 or 406 and permission of the instructor.)

Psy. 624 Group Counseling (3+0) — 3 Credits — As demand warrants

(Same as Ed. 624)
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.)

Psy. 628 Analysis of the Individual (3+0) — 3 Credits — As demand warrants

(Same as Ed. 628)
Means of acquiring data pertinent to the individual. Interpreting data and formulating case reports conducive to greater understanding. (Prerequisite: Ed. 426.)

Psy. 629 Individual Tests of Intelligence (3+0) — 3 Credits — As demand warrants

(Same as Ed. 629)
Individual intelligence tests with emphasis on the Revised Stanford-Binet Intelligence Scale and the Wechsler Intelligence Scales. (Prerequisites: Ed. 332 and permission of the instructor.)

Psy. 630 Laboratory in Individual Tests of Intelligence (0+9) — 3 Credits — As demand warrants

(Same as Ed. 630)
Provides laboratory experience in administration of the Revised Stanford-Binet Intelligence Scale or the Wechsler Intelligence Scales. (Prerequisites: Ed. 629 and permission of the instructor.)

Psy. 632 Occupational Information (3+0) — 3 Credits — As demand warrants

(Same as Ed. 632)
Principles and practices of vocational guidance. Explains process of choosing a vocation, theories of vocational choice, sources and dissemination of occupational information. (Prerequisites: graduate standing, Ed. 426, and permission of the instructor.)

Psy. 634 Counseling Practicum — 1-3 Credits — Arranged

(Same as Ed. 634)
Provides supervised field experience, including preparatory activities in an educational and agency setting. (Prerequisite: Approval of instructor. May be repeated for a maximum of 6 credits.)

Psy. 697	Thesis	Credits Arr.	Fall
698		Credits Arr.	Spring

RUSSIAN

Russ. 101	Elementary Russian (5+0)	5 Credits	Fall
102		5 Credits	Spring

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary.

Russ. 105	Elementary Russian (3+0)	3 Credits	Fall
106		3 Credits	Spring
107		3 Credits	Spring

Same course content as Russ. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Russ. 108	Russian for Reading Ability (3+0)	3 Credits	Spring

Rapid acquisition of reading knowledge with attention to needs in specialized fields. Credit not applicable toward degree language requirements. (Offered as demand warrants.)

Russ. 201	Intermediate Russian (3+0)	3 Credits	Fall
202		3 Credits	Spring

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. 321	Studies in Russian Literature (3+0)	3 Credits	Fall
322		3 Credits	Spring

Choice of authors, genres, or periods of Russian literature for intensive study. Conducted in Russian. (Prerequisite: Russ. 202 or equivalent. Students may repeat course for credit when topic varies.)

Russ. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects for advanced students. (Admission by arrangement. Offered as demand warrants.)

SOCIOLOGY

Soc. 101 Introduction to Sociology (3+0) 3 Credits Fall or Spring

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.

Soc. 102 Introduction to Sociology (3+0) 3 Credits Fall or Spring

A continuation of Soc. 101. (Prerequisite: Soc. 101.)

Soc. 106 Social Welfare (3+0) 3 Credits Fall or Spring

Functions and development of modern social welfare and the distinctive features of the field, designed primarily to assist in the understanding of social welfare problems and services. (Prerequisite: Soc. 101. Course not offered on main campus at College.)

Soc. 109 Principles of Case Work (3+0) 3 Credits

An introductory study of case work and group work theory, techniques of interviewing and recording, and a review and analysis of case history.

Soc. 201 Social Problems (3+0) 3 Credits Fall

Problems of contemporary society; analysis of factors giving rise to them. (Prerequisites: Soc. 101, 102.)

Soc. 205 Group Processes in Modern Society (3+0) 3 Credits Fall

Formation, structure and functioning of groups; group processes and group products; implications of various research techniques. (Prerequisites: Soc. 101, 102)

Soc. 207 Population (3+0) 3 Credits Fall

Analysis of world populations; growth and decline patterns, migratory trends and ecology; worldwide implications to current population growth; critical review of major theoretical contributions with introduction to demographic methods. (Prerequisites: Soc. 101, 102.)

Soc. 210 Principles of Correction (3+0) 3 Credits

An introduction to the basic concepts of probation and parole; the use of authority in corrective services; institutional treatment methods, a study of popular and professional concepts in correction.

Soc. 242 The Family (3+0) 3 Credits Spring

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. (Prerequisites: Soc. 101, 102.)

Soc. 251 Introductory Statistics for Behavioral Sciences (3+0) 3 Credits Fall or Spring

(Same as Psy. 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: Soc. 101.)

Soc. 302 Social Psychology (3+0) 3 Credits Spring

(Same as Psy. 302)
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: Psy. 201 and/or Soc. 101, 102.)

Soc. 304 Culture and Personality (3+0) 3 Credits Spring

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. 309 Urban Sociology (3+0) 3 Credits Fall

Growth and development of urban communities with reference to migration patterns, differentiation of functions, ecological patterns of land use, social control, secondary group associations of metropolitan magnitude. (Prerequisites: Soc. 101, 102.)

Soc. 310 Sociology of Later Life (3+0) 3 Credits Spring

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, 102. Offered alternate years; next offered 1971.)

Soc. 333 Social Welfare as a Social Institution (3+0) 3 Credits Fall

Historical development and survey of social services and social work practice as these affect human needs: economic security, child welfare, family service programs, health agencies, correctional agencies, community organization programs. (Prerequisites: Soc. 101, 102, 201.)

Soc. 336 Social Work Methods (3+0) 3 Credits Spring

The scope and principles of modern social work. Description of the three major methods of social work; casework, group work, and community organization. Preparation for further study in the field and for preliminary work in it. (Prerequisites: Psy. 101, Soc. 333, or permission of the instructor.)

Soc. 343 Sociology of Deviant Behavior (3+0) 3 Credits Fall

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. 345 Sociology of Education (3+0) 3 Credits Fall

(Same as Ed. 345)
Impact of culture on schools. Examination of contemporary social trends and relationships among church, school, government, and family. (Prerequisite: Soc. 101.)

Soc. 347 Sociology of Religion (3+0) 3 Credits Fall

The study of the historical development and functional significance of religion, values, and norms of institutions, groups, and reform movements, and their influence on social organization. (Prerequisites: Soc. 101, 102. Offered alternate years; next offered 1970.)

Soc. 352 Adolescence (2+3) 3 Credits Fall Spring

(Same as Psy. 352)
Intellectual, emotional, social, and physical development patterns during the adolescent years. Laboratory arranged for observations of adolescents in a variety of settings, including public schools. (Prerequisites: Psy. 201, 45 semester hours, and permission of the instructor. Soc. 101 is recommended prior to Soc. 352.)

Soc. 363 Social Stratification (3+0) 3 Credits Fall

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. (Prerequisites: Soc. 101, 102.)

Soc. 383 Field Observation (to be arr.) 3 Credits Fall Spring

Introduction to the services of community agencies to provide a better understanding of the role and programs of social agencies and their services. It is designed to assess the students' interest in and motivation for a career in the social services. The serious student can obtain credit for two semesters work in this course. Four to six hours a week in approved social agencies. (Prerequisites: Soc. 336 or concurrently with Soc. 336 and permission of the instructor.)

Soc. 402 Theories of Sociology (3+0) 3 Credits Spring

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: Psy. 302 or Soc. 302.)

Soc. 405 Social Change (3+0) 3 Credits Fall

Social change in long-time perspective, with emphasis on social movements and the influence of technology. (Prerequisites: Soc. 101, 102.)

Soc. 406 Human Ecology (3+0) 3 Credits Spring

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. (Prerequisites: Soc. 101, 102. Offered alternate years; next offered 1971.)

Soc. 408	Ethnic Minorities (3+0)	3 Credits	Spring

Immigration as a factor in American life. Changing politics and practices toward the immigrant seen in the setting of the times. Special problems of Puerto Rican, Mexican, and other recent migrants. Present status of national and religious minorities. Theories of adjustment. Changing social, economic, and political status of the Black and the factors contributing to change. Black-white relationships. Recent desegregation trends. (Prerequisites: Soc. 101, 102.)

Soc. 473	Social Science Research Methods (3+0)	3 Credits	Fall

(Same as Psy. 473)
Techniques of social research; sampling, questionnaire construction, interviewing and data analysis in surveys; field and laboratory experiments; attitude scaling. (Prerequisite: Psy. 251 or Soc. 251.)

Soc. 492	Seminar in Human Behavior (2+0)	2 Credits	Spring

Integrated behavioral approach emphasizing the major sociological and psychological theories with special attention to current literature. (Prerequisite: senior standing in psychology or sociology.)

Soc. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects. (Admission by arrangement.)

SPANISH

Span. 101	Elementary Spanish (5+0)	5 Credits	Fall
102		5 Credits	Spring

Development of the four skills (listening comprehension, speaking, reading, and writing) with emphasis on oral work, practice in the language laboratory, basic grammar, and vocabulary.

Span. 105	Elementary Spanish (3+0)	3 Credits	Fall
106		3 Credits	Spring
107		3 Credits	Spring

Same course content as Span. 101 and 102 but with the year sequence divided into three courses rather than two. (Course not offered on main campus at College.)

Span. 201	Intermediate Spanish (3+0)	3 Credits	Fall
202		3 Credits	Spring

Continuation of Span. 102. Increasing emphasis on reading ability and cultural material. Conducted in Spanish. (Prerequisite: Span. 102 or two years of high school Spanish.)

Span. 203	Composition and Conversation (2+0)	2 Credits	Fall
204		2 Credits	Spring

Supplements Span. 201, 202 stressing written and oral practice. Conducted in Spanish. (Concurrent enrollment in Span. 201 or 202 recommended. Prerequisite: Span. 102 or equivalent.)

Span. 301	Advanced Spanish (3+0)	3 Credits	Fall
302		3 Credits	Spring

Discussions and essays on more difficult subjects or texts, translations, stylistic exercises, special grammatical problems, systematic vocabulary building. Conducted in Spanish. (Prerequisite: Span. 202 or equivalent. Next offered 1971-72.)

Span. 321	Studies in Spanish Literature (3+0)	3 Credits	Fall
322		3 Credits	Spring

Choice of authors, genres, or periods of Spanish literature for intensive study. Conducted in Spanish. Students may repeat course for credit when topic varies. (Prerequisite: Span. 202 or equivalent. Next offered 1970-71.)

Span. 437	Literature of the Golden Age (3+0)	3 Credits	Fall

Close study of outstanding literary works in different genres. Conducted in Spanish. (Next offered 1972.)

Span. 493	Special Topics	Credits Arr.	Fall
494		Credits Arr.	Spring

Various subjects for adyanced students. (Admission by arrangement. Offered as demand warrants.)

SPEECH

Sp.	68	Basic Speech Communication Skills (2+0)	2 Credits	Fall or Spring
	69			

Development of ease and fluency in oral discourse.

Sp.	111	Public Speaking I (3+0)	3 Credits	Fall or Spring

Fundamentals of oral communication. Theory and practice of exposition and persuasion.

Sp.	122, 322	Theater Practicum (0+var.)	1-3 Credits	Fall
	222, 422			Spring

Participation in Drama Workshop or lab production as performer or technical staff member.

Sp. 212 Public Speaking II (2+0) 2 Credits Fall or Spring

Theory and practice of rhetoric and public address. Basic works from Plato to Quintillian. Practice in advanced forms of exposition and persuasion.

Sp. 215 Debate Practicum (0+2) 1 Credit Fall or Spring

Training in practical debate situations. Participation in Debating Society required. May be repeated for a maximum of six credits. Students wishing to take this course and Sp. 314, Argumentation and Debate, may enroll in the latter with the consent of the instructor and may not receive more than eight units of credit for any combination of the two courses.

Sp. 221 Introduction to the Theater (3+0) 3 Credits Fall or Spring

History of theater with emphasis on dramatic form, architecture, and standards of criticism.

Sp. 223 Acting I (1+4) 3 Credits Fall or Spring

Principles of acting developed through pantomine, improvisation, and sense-memory. (Prerequisite: Sp. 221 or admission by arrangement.)

Sp. 225 Basic Stagecraft (1+4) 3 Credits Fall or Spring

Materials of scene construction and painting and their use.

Sp. 231 Introduction to Broadcasting (3+0) 3 Credits Fall or Spring

A survey of radio and television, with emphasis on the history, financing, regulation, and operation of the broadcasting industry.

Sp. 237 Announcing (1+2) 2 Credits Fall or Spring

Microphone techniques, role of the announcer in broadcasting. Fundamentals of announcing; their practical application. (Prerequisite: Sp. 111 or admission by arrangement.)

Sp. 239 Radio Operations (0+3) 1 Credit Fall or Spring

Training in practical radio operations. Participation on KUAC staff required. May be repeated for a maximum of four credits.

Sp. 313 Argumentation and Debate (3+0) 3 Credits Fall or Spring

Theory of argumentation and debate applied to contemporary issues. Practice in briefing and presenting arguments, testing evidence, and detecting fallacies.

Sp. 314 Discussion (3+0) 3 Credits Fall or Spring

Nature and operation of discussion groups; use of evidence, reasoning, reflective thinking, group psychology, participant, and leader behavior.

Sp. 315 Phonetics (2+0) 2 Credits Fall or Spring

Use of the International Phonetic Alphabet; assimilation and dialectal problems; use in acting, teaching, speech improvement. (Prerequisite: Sp. 111 or admission by arrangement. Offered as demand warrants.)

Sp. 316 Voice and Diction (1+2) 2 Credits Fall

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 recordings. (Prerequisite: Sp. 111 or admission by arrangement.)

Sp. 317 Oral Interpretation (2+2) 3 Credits Fall or Spring

Interpretative reading based on textual analysis of literary forms and careful study of principles of effective reading. (Prerequisite: Sp. 111 or admission by arrangement.)

Sp. 323 Acting II (1+4) 3 Credits Fall or Spring

Building a character; role study and performance of small scenes. (Prerequisites: Sp. 221, 223, or admission by arrangement.)

Sp. 325 Theater Production (1+4) 3 Credits Fall or Spring

Direction of short plays for drama lab productions. Principles of makeup, lighting, and production. (Prerequisites: Sp. 221, 223, or admission by arrangement.)

Sp. 327 Makeup for Theater (1+2) 2 Credits Fall or Spring

Theatrical makeup for actors, teachers, directors, and other theater workers; makeup materials and use; straight and character makeup illusory and plastic relief; national types, influence of lighting. (Students will spend approximately $20.00 for materials. Offered as demand warrants.)

Sp. 333 Writing for Radio and Television (3+0) 3 Credits Fall or Spring

Preparation of announcements, interviews, music continuity, special events programs, documentaries, commentaries, news, and other basic radio and television continuity.

Sp. 334 Radio-Television Advertising (2+3) 3 Credits Fall or Spring

Academic approach to economics and standards of radio and television advertising. Special emphasis on ethical considerations involved in the preparation and presentation of commercial broadcast copy. (Prerequisite: Sp. 333 or permission of the instructor.)

Sp. 335 Broadcast Production (2+3) 3 Credits Fall or Spring

Use of studio equipment; radio-TV production techniques; radio-TV station organization; tape editing; sound effects; television directing.

Sp. 340 Speech for the Classroom Teacher (3+0) — 3 Credits — Fall or Spring

Speech development in the child. Common classroom speech disorders; articulation, delayed speech, stuttering. Classroom procedures in speech improvement.

Sp. 341 Fundamentals of Speech Correction I (3+0) — 3 Credits — Fall or Spring

Basic speech processes. Comprehensive study of four speech disorders; cleft palate, stuttering, hearing impairment, mental retardation (speech and language aspects).

Sp. 342 Speech Processes (3+0) — 3 Credits — Spring (Alternate years)

Five basic speech processes. Respiration, phonation, resonance, articulation, and audition.

Sp. 343 Clinical Methods in Speech Correction (3+0) — 3 Credits — Spring

Administration of clinical tests of speech and application of principles of speech correction. (Prerequisites: Sp. 111, 315, 341, or admission by arrangement.)

Sp. 344 Fundamentals of Speech Correction II (3+0) — 3 Credits — Fall or Spring

Comprehensive study of four speech disorders: articulation, aphasia, cerebral palsy, autism (speech and language aspects).

Sp. 345 Scene Design (3+0) — 3 Credits — Fall or Spring

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: Sp. 225 or permission of the instructor.)

Sp. 347 Lighting Design (3+0) — 3 Credits — Fall or Spring

Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. (Prerequisites: Sp. 225, Sp. 345 or permission of the instructor. May be taken concurrently with Sp. 345, as the material from one course may be applied to the other.)

Sp. 425 Directing (3+0) — 3 Credits — Spring

Directorial analysis of a major dramatic work for public presentation. (Prerequisite: senior majors with 3.00 G.P.A. in speech.)

Sp. 433 Radio-Television News (2+4) — 3 Credits — Fall or Spring

Responsible news writing, editing, processing and delivery for the broadcast media. Special emphasis on ethical considerations in broadcast journalism. (Prerequisite: Sp. 333 and Jour. 201 or by permission.)

Sp.	493	Special Topics	Credits Arr.	Fall
	494		Credits Arr.	Spring

Various subjects. (Admission by arrangement. Offered as demand warrants.)

WILDLIFE MANAGEMENT

W.M. 325 Scientific Sampling (2+3) — 3 Credits — Fall

Sampling methods, including simple random, stratified, and systematic; estimation procedures, including ratio and regression method; special area and point sampling procedures; optimum allocation; special features of biological sampling. (Prerequisites: Math. 122 or 201, and Math. 204 or permission of the instructor.)

W.M. 331 Wildlife Management Principles (2+6) — 4 Credits — Fall

Basic values and premises underlying management of wild animal populations; integration of wildlife management with other wildland resource programs. Field, laboratory, and office techniques of collecting, analyzing, interpreting data are introduced. (Prerequisites: Land Res. 101 and Biol. 303.)

W.M. 333 Literature of Ecology and Resource Management (0+3) — 1 Credit — Fall

Standard and modern approaches to utilization of biological literature; introduction to information retrieval problems and techniques. Thorough acquaintance developed with periodical and other literature in student's special interest field. (Admission by permission of the instructor.)

W.M. 411 Fisheries Field Trip — Credits Arr. — Fall

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. Offered as demand warrants.)

W.M. 417 Wildlife Management — Forest and Tundra (2+0) — 2 Credits — Fall or Spring

Forest and tundra wildlife, with emphasis on game and fur species; correlation of wildlife management with forest and tundra land use practices. (Admission by arrangement. Offered as demand warrants.)

W.M. 419 Wildlife Management — Wetlands (2+0) — 2 Credits — Fall or Spring

Wetland wildlife with emphasis on game and fur species of fresh-water areas; correlation of wildlife management with wetland use practices. (Admission by arrangement. Offered as demand warrants.)

W.M. 423 Limnology (2+3) — 3 Credits — Fall

Physical, chemical, and biological characteristics of fresh waters, emphasizing ecological aspects important to fish and other organisms. (Prerequisites: Chem. 102, Biol. 105, 303, or permission of the instructor.)

W.M. 426 The Analysis of Linearized Models (2+3) 3 Credits Spring

Analysis by methods of least squares of general linearized models, including those appropriate to various designs, including completely random, randomized complete block, incomplete block, and latin square, and those for the analysis of variance and analysis of covariance. Matrix algebra appropriate to least squares. (Prerequisites: Math. 122, or 201, Math. 204.)

W.M. 429 General Fisheries Biology (2+3) 3 Credits Fall

The general biology of fishes in relation to their management. Methods of collecting, analyzing and interpreting field and laboratory data. (Prerequisites: Biol. 303, 309, Math. 204.)

W.M. 430 Fisheries and Their Management (3+0) 3 Credits Spring

Major commercial and recreational fisheries of the world, with emphasis on the North Pacific. Biological, economic, and political considerations in the use and management of aquatic resources. (Prerequisites: Biol. 303, 309, and Math. 204 desirable, but non-majors encouraged, and permission of the instructor.)

W.M. 491 Seminar (2+0) 1 Credit Spring
492 1 Credit Fall

Various topics in wildlife management. (Prerequisite: senior standing in wildlife or admission by arrangement. Offered as demand warrants.)

W.M. 493 Special Topics Credits Arr. Fall
494 Credits Arr. Spring

Various subjects studied principally through directed reading and discussions. (Admission by arrangement.)

W.M. 611 Wildlife Field Trip Credits Arr. Fall
612 Credits Arr. Spring

Trips to wildlife areas to acquaint students with principal animals of the state and problems involved in their management. (Admission by arrangement. Offered as demand warrants.)

W.M. 621 Vertebrate Population Analysis (1+3) 2 Credits Fall

Dynamics of vertebrate populations, with particular emphasis on the collection and interpretation of vital statistics of wild populations. (Admission by arrangement. Offered as demand warrants.)

W.M. 622 Environmental Analysis (2+3) 3 Credits Spring

Recognition, description and evaluation of factors in terrestrial environments. (Admission by arrangement. Offered as demand warrants.)

W.M. 624 Problems in Fisheries Management 2 Credits Spring

Selected readings and discussions relating to major fisheries of the world, their problems, and the methods of attack on these problems. (Admission by arrangement. Offered as demand warrants.)

W.M. 625 Fishery Ecology (2+3) 3 Credits Fall

Advanced ecology of aquatic systems, with emphasis on production, bioenergetics, environmental relationships, pollution, fish behavior, and population dynamics. Applications to fish and invertebrate fisheries production and management. (Prerequisites: Geol. 411 or W.M. 423, and W.M. 429. Offered in alternate years; next offered 1970.)

W.M. 691 Seminar (2+0) 1 Credit Fall
692 1 Credit Spring

Various topics in wildlife management; required of all graduate students. (Biol. 691, 692 may be substituted by permission of the major professor. Offered as demand warrants.)

W.M. 693 Special Topics Credits Arr. Fall
694 Credits Arr. Spring

Various subjects studied principally through directed reading and discussions. (Admission by arrangement.)

W.M. 695 Research Credits Arr. Fall
696 Credits Arr. Spring

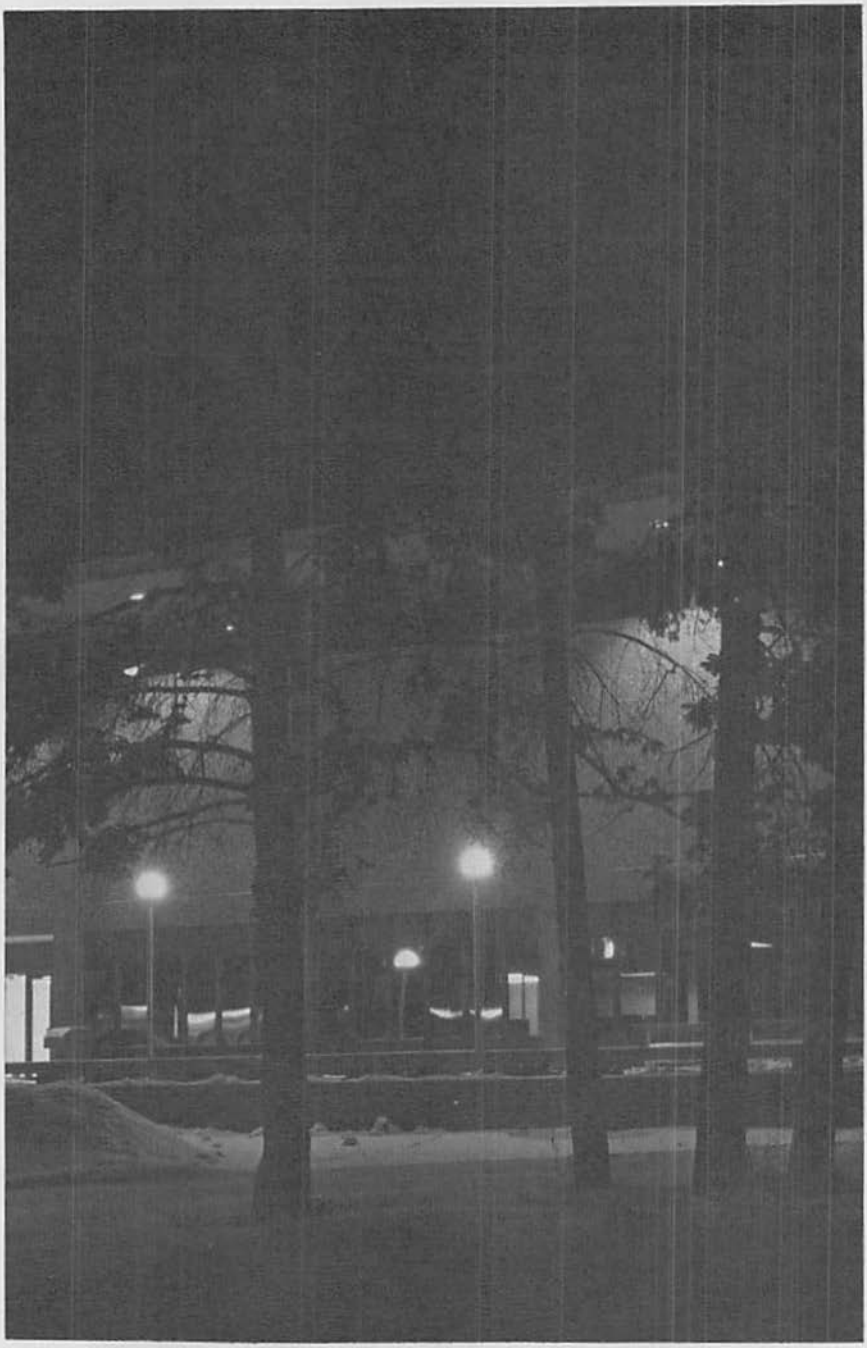
Investigative work, either field or laboratory, on a problem of lesser scope than the thesis, or supplementary to the thesis. (Admission by arrangement.)

W.M. 697 Thesis Credits Arr. Fall
698 Credits Arr. Spring

(Admission by arrangement.)

The mineral that made Alaska famous also lures students to pan for it during the summer months on university-sponsored goldpanning expeditions.

A definite Alaskan flavor can be detected in students' attire and leisure activity.



Registers

THE BOARD OF REGENTS

The Regents of the University of Alaska are appointed by the Governor and are confirmed by the Legislature.

WILLIAM A. O'NEILL, President, Anchorage, 1948-1973
ROBERT E. McFARLAND, Vice President, Anchorage, 1963-1971
DOROTHY A. WREDE, Secretary, Fairbanks, 1963-1971
HUGH B. FATE, JR., Treasurer, Fairbanks, 1969-1977
EDITH R. BULLOCK, Anchorage, 1967-1975
JAMES NOLAN, Wrangell, 1967-1973
A.D. ROBERTSON, Ketchikan, 1967-1975
BRIAN J. BRUNDIN, Anchorage, 1969-1977
WILLIAM R. WOOD, President of the University, Ex-Officio Member

ADMINISTRATIVE COUNCIL

WILLIAM R. WOOD, Ph.D., LL.D., President
DONALD R THEOPHILUS, JR., Ph.D., Academic Vice President
KENNETH M. RAE, Ph.D., Vice President for Research and Advanced Study
ARTHUR S. BUSWELL, Ph.D., Vice President for Public Service and Director, Cooperative Extension Service
A.B. FROL, M.B.A., Acting Comptroller
LEWIS E. HAINES, Ph.D., Provost of the University, Southcentral Region
ROBERT J. HILLIARD, M.A., Director, Student Affairs
TRUMAN F. CLAWSON, J.D., Director, University Relations
HAROLD A. BYRD, B.B.A., Executive Director, Budget Development and Legal Affairs
CHARLES SARGENT, M.S., Executive Director, Planning and Operations

HONORARY STAFF AND EMERITI

TERRIS MOORE, (Hon.), 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-)

ERNEST N. PATTY, President, Emeritus
University of Washington '19, B.S.; '25, E.M.; University of Alaska '53, D. Engr. (Dean, 1925-35, President 1953-1960)

VENA A. CLARK, Associate Professor of Home Economics, Emeritus
Cotner College '25, A.B.; Iowa State University '33, M.S. (1953-1967)

CHRISTIAN T. ELVEY, Director of the Geophysical Institute, Emeritus
University of Kansas '21, A.B.; '23, M.A.; University of Chicago '30, Ph.D. (1952-1967)

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)

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)

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)

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)

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-)

ACADEMIC FACULTY AND PROFESSIONAL STAFF 1970

The date following each name designates the time of original appointment to the university faculty or staff. (Dates of resignations and re-appointments are not indicated.)

A second date in parentheses follows each member's present rank and indicates the beginning of service in that rank.

ABERCROMBIE, ELIZABETH - 1969 - Practical Nursing Instructor (1969), Anchorage Community College

AKASOFU, SYUN-ICHI -1958 - Professor of Geophysics (1964), Geophysical Institute
University of Tohoku '53, B.S.; '57, M.S.; University of Alaska '61, Ph.D.

ALEXANDER, HERBERT L. - 1969 - Assistant Professor of Anthropology (1969)
University of Texas '54, B.A.; Yale University '62, M.A.; University of Oregon '69, Ph.D.

ALEXANDER, VERA - 1962 - Associate Professor of Marine Science (1969), Institute of Marine Science
University of Wisconsin '55, B.A.; '62, M.S.; University of Alaska '65, Ph.D.

ALLEN, GEORGE R. - 1964 - Instructor of English (1964)
University of Alaska '64, B.A.; '64, M.A.

ALLEN, LEE D. - 1956 - Assistant Agricultural Engineer (1967), Alaska Agricultural Experiment Station (Palmer)
University of Idaho '57, B.S.

ALLEN, MARY BELLE - 1966 - Professor of Microbiology (1966), Institute of Marine Science
University of California '41, B.S.; Columbia University '46, Ph.D.

ALLISON, RICHARD C. - 1968 - Associate Professor of Geology (1968)
University of Washington '57, B.S.; '59, M.S.; University of California '67, Ph.D.

ALLSEN, THOMAS T. - 1969 - Instructor of Library Science (1969)
Portland State College '62, B.A.; University of Washington '64, M.A.

ANDRESEN, PATRICIA - 1967 - Assistant Professor of Mathematics (1967)
University of Illinois '55, B.S.; University of Missouri '59, M.A.

APPEL, DARLENE M. - 1963 - Instructor of Office Administration (1963), Anchorage Community College
Mankato State College '56, B.S.

ARVEY, MARTHA M. - 1969 - Instructor of Library Science (1969)
Scripps College '63, B.A.; University of California at Los Angeles '64, M.L.S.

ATAMIAN, SARKIS - 1962 - Head, Department of Psychology and Sociology, and Associate Professor of Sociology (1967)
University of Rhode Island '50, B.S.; Brown University '54, M.A.

AYOTTE, ELLEN P. - 1964 - Agent, Home Economics and Assistant Professor of Extension Fairbanks), (1969)
Stout State College '58, B.S.; University of Alaska '69, M.A.

BABB, JAMES D. - 1968 - Editor, Institute of Social, Economic and Government Research (1968)
George Washington University '64, A.B.

BABCOCK, WILLIAM HAVENS - 1969 - Instructor of Sociology (1969), Anchorage Community College
Springfield College '60, B.S.; Columbia University '63, M.S.W.

BAILEY, EUNICE - 1961 - Assistant Professor of Office Administration (1967), Ketchikan Community College
Oregon State College '25, B.S.

BANG, MYRTLE B. - 1961 - Agent, Home Economics and Assistant Professor of Extension (Palmer), 1961)

BANKS, WILLIAM J. - 1968 - Technician, Instructs Electronics Technology (1968)
Anchorage Community College

BARDWELL, JAY H. - 1969 - Publications Editor (1969)
University of California, Berkeley '58, B.A.

BARGER, JAMES WILLARD - 1969 - Head, Department of Accounting, and Professor of Accounting (1969)
University of North Carolina '56, B.S.; Tennessee '59, C.P.A.; University of Alabama '60, M.B.A.; '63, Ph.D.

BARSDATE, ROBERT J. - 1962 - Associate Professor of Marine Science (1967), Institute of Marine Science
Allegheny College '59, B.S.; University of Pittsburgh '63, Ph.D.

BASYE, EDMUND - 1967 - Internal Auditor (1969)
University of Washington '49, B.A.; '52, C.P.A. Certificate

BEAUDRY, GLENN W. - 1968 - Assistant Professor of English (1968)
Los Angeles City College '56, A.A.; Mexico City College '58, B.A.; '60, M.A.; San Francisco State College '66, M.A.

BECK, MARY L. - 1963 - Assistant Professor of English (1969), Ketchikan Community College
Dominican College of San Rafael '45, B.A.; Stanford University '47, M.A.

BEDFORD, JIMMY - 1965 - Professor of Journalism (1968)
University of Missouri '50, A.B.; '51, B.J.; '52, M.A.

BEDSWORTH, WILLIAM E. - 1966 - Assistant Professor of Business Administration (1967), Southcentral Regional Center
University of California '58, B.A.; Washington State University '60, M.A.

BEERS, CLARENCE G. - 1961 - University Buyer (1963)

BEHLKE, CHARLES E. - 1950 - Dean, College of Mathematics, Physical Sciences and Engineering; Professor of Civil Engineering (1966)
Washington State University '48, B.S.; '50, M.S.; Stanford University '57, Ph.D.

BEHRISCH, HANS WERNER - 1969 - Assistant Professor (1969), Institute of Arctic Biology
University of British Columbia '64, B.S.; Oregon State University '66, M.A.; '69, Ph.D.

BEISTLINE, EARL H. - 1946 - Dean, College of Earth Sciences and Mineral Industry, and Professor of Mining Engineering (1949)
University of Alaska '39, B.Min.Engr.; '47, E.M.; '69, LL.D. (Hon.)

BELON, ALBERT E. - 1956 - Associate Professor of Physics (1962), Geophysical Institute
University of Alaska '52, B.S.; University of California '54, M.A.

BENESCH, WALTER J. - 1963 - Associate Professor of Philosophy (1968)
University of Denver '55, B.A.; University of Montana '56, M.A.; Leopold Franzeus Universitat Innsbruck '63, Ph.D.

BENJAMIN, ELIZABETH F. - 1968 - Staff Counselor and Assistant Professor of Education (1968)
University of the Pacific '48, B.S.; San Jose State College '63, M.A.

BENNETT, F. LAWRENCE - 1968 - Head, Department of Engineering Management, and Associate Professor of Engineering Management (1968)
Rensselaer Polytechnic Institute '61, B.C.E.; Cornell University '63, M.S.; '66, Ph.D.

BENSON, CARL S. - 1960 - Acting Head, Department of Geology, and Professor of Geology and Geophysics (1969)
University of Minnesota '50, B.A.; '56, M.S.; California Institute of Technology '60, Ph.D.

BERG, EDUARD - 1963 - Professor of Geophysics (1967), Geophysical Institute
University of Saarbrucken '53, Diplom Physiker; '55, Ph.D.

BERGSTROM, ROBERT - 1966 - Instructor of Electronic Technology (1969)

BERKEY, FRANK T. - 1962 - Senior Research Assistant (1963), Geophysical Institute
Linfield College '62, B.A.; University of Alaska '64, M.S.

BILLAUD, JEAN-PAUL - 1965 - Associate Professor of Music (1968)
Ecole Normale de Musique de Paris '55, Diplome Superieur de Virtuosite; '56, License de Concert

BINGHAM, DOUGLAS K. - 1967 - Senior Research Assistant (1967), Geophysical Institute
Yale University '62, B.A.; University of Alaska '67, M.S.

BLEWETT, PETER - 1968 - Assistant Professor of History, (1968), Anchorage Community College
Willamette University '61, B.A.; Johns Hopkins University '64, M.A.

BONNEY, WILLIAM W. - 1969 - Assistant Professor of English (1969)
University of Pennsylvania '64, B.A.; '65, M.A.; '69, Ph.D.

BOSLET, MAURICE D. - 1968 - Instructor of Electronics Technology (1968)

BOWLING, SUE A. - 1967 - Senior Research Assistant (1967), Geophysical Institute
Radcliffe College '63, A.B.; University of Alaska '67, M.S.

BOYD, JOHN S. - 1969 - Senior Research Assistant (1969), Geophysical Institute
University of Sydney B.Sc.; University of Alaska '69, M.S.

BRANTON, C. IVAN - 1968 - Agricultural Engineer (1968), Alaska Agricultural Experiment Station (Palmer)
Oregon State University '53, B.A.

BRENHOLT, JOANNE M. - 1969 - Assistant Professor of Office Administration (1969)
Wisconsin State University '66, B.A.; University of Montana '68, M.S.

BREWER, MAX C. - 1956 - Director and Ice Physicist (1956), Arctic Research Laboratory
Washington University '50, B.S.; University of Alaska '65, D.Sc. (Hon.)

BROCKEL, CLAYTON E. - 1964 - Resident Director (1964), Kenai Peninsula Community College
Montana State University '55, B.A.; Colorado State College '60, M.A.Ed.

BROWN, E. STAPLES - 1967 - Assistant Engineer (1969), Arctic Environmental Engineering Laboratory
University of Maine '63, B.S.M.E.; University of Alaska '67, M.S.E.M.

BROWN, GREETA K. - 1965 - Associate Professor of Music (1968)
Fort Wright College '49, B.M.; University of Idaho '53, M.M.

BROWN, J. FRANK - 1967 - Coordinator of Central Personnel Services (1968)
Brigham Young University '60, B.S.; '65, M.B.A.

BROWN, NEAL - 1966 - Assistant Geophysicist (1969), Geophysical Institute
Washington State University '61, B.S.; University of Alaska '66, M.S.

BROWN, ROBERT W. - 1967 - Head, Department of Mathematics, and Professor of Mathematics (1967)
Pacific University '50, B.S.; '52, M.S.; Oregon State University '58, Ph.D.

BRUNDAGE, ARTHUR L. - 1968 - Professor of Animal Husbandry (1968), Alaska Agricultural Experiment Station (Palmer)
Cornell University '50, B.S.; University of Minnesota '52, M.S.; '55, Ph.D.

BRYANT, JOHN D. - 1969 - Senior Research Assistant (1969), Institute of Arctic Biology
Colorado State University '66, B.S.; University of Calgary '67, M.S.

BURAND, JEAN R. - 1962 - Information Specialist—Nutrition Program, and Assistant Professor of Extension (1969)
University of Alaska '57, B.A.; '67, M.A.

BURAND, WILLOW M. - 1968 - Instructor of Mining Extension (1968), Statewide Services
New Mexico Institute of Mining Technology '53, B.S.

BURDICK, JOHN L. - 1960 - Head, Department of Civil Engineering, and Professor of Civil Engineering (1969)
Rensselaer Polytechnic Institute '47, B.S.C.E.; Massachusetts Institute of Technology '48, S.M.

BURRELL, DAVID COLIN - 1965 - Associate Professor of Marine Science (1969), Institute of Marine Science
Nottingham University '61, B.Sc.; '64, Ph.D.

BURTON, WAYNE E. - 1963 - Associate Professor of Economics (1969), Alaska Agricultural Experiment Station (Palmer)
University of Wyoming '58, B.S.; Texas A & M University '60, M.S.; Montana State University '68, Ph.D.

BUSWELL, ARTHUR S. - 1951 - Vice President for Public Service; Director, Cooperative Extension Service, and Professor of Agriculture (1968)
University of Maine '49, B.S.; '50, M.S.; University of Wisconsin '59, Ph.D.

BUTTON, DON K. - 1964 - Associate Professor of Marine Science (1968), Institute of Marine Science
Wisconsin State College '55, B.S.; University of Wisconsin '61, M.S.; '64, Ph.D.

BYRD, HAROLD A. - 1936 - Executive Director, Budget Development and Legal Affairs (1968)
University of Washington '31, B.B.A.

CAMERON, BRUCE M. - 1968 - Director of Accounting Services (1969)
Arizona State University '53, B.S.; Brigham Young University '64, M. of Accountancy

CARLSON, AXEL R. - 1965 - Farm and Home Structures Specialist, and Associate Professor of Extension (1967)
Michigan State University '53, B.S.; Pennsylvania State University '66, M.S.

CARLSON, ROBERT - 1965 - Associate Professor of Hydrology (1969), Institute of Water Resources
University of Wisconsin '61, B.S.; '63, M.S.; '67, Ph.D.

CASHEN, WILLIAM R. - 1942 - Professor of Mathematics (1951)
University of Alaska '37, B.S.; University of Washington '48, M.A.

CAVASOS, LLOYD E. - 1962 - Instructor (1962), Alaska Agricultural Experiment Station (College)
New Mexico State University '51, B.S.

CHAMORRO BUERBA, ANGEL - 1969 - Assistant Professor of Spanish (1969)
Salamanca University '55, B.A.; Paris University '58, M.A.; Diploma of High International Studies '60; University of Helsinki Diploma of Comparative Sciences '61.

CHAPMAN, SYDNEY - 1951 - Advisory Scientific Director, and Professor of Geophysics (1951), Geophysical Institute
Manchester University '07, B.S.; '08, M.S.; '12, D.Sc.

CHASTAIN, CHARLETTE E. - 1967 - Senior Research Assistant (1967), Institute of Marine Science
University of Oregon '65, B.A.

CHATTERJEE, BISWA N. - 1968 - Senior Research Assistant (1968), Geophysical Institute
Bangabasi College '54, B.S.; Asutosh College '61, B.S.; Vikram University '64, M.S.

CHAUVIN, DAVID L. - 1961 - Assistant for Technical Services (1970)
University of Washington '50, B.S.E.E.

CHINN, RONALD ERNEST - 1966 - Head, Department of Political Science, and Associate Professor of Political Science (1966)
Stanford University '33, A.B.; '37, M.A.; University of California at Berkeley '58, Ph.D.

CLAWSON, TRUMAN F. - 1968 - Director, University Relations, and Assistant to the President for Development (1968)
University of Utah '55, B.A. and J.D.

CLOUGH, ALBERT H. - 1967 - Marine Superintendent (1967), Institute of Marine Science
U.S. Coast Guard Academy '46, B.S.

CLUTTS, JOAN B. - 1961 - Associate Professor of Education (1966)
Colorado College '51, B.A.; University of Missouri '58, M.Ed.; '69, Ed.D.

COLE, HENRY P. JR. - 1969 - Senior Research Assistant (1969), Geophysical Institute
Williams College '59, B.A.; Michigan State University '63, M.S.

COLP, DOUGLAS B. - 1965 - Lecturer of Mineral Engineering (1969)
University of Alaska '40, B.S.

COMBS, ALEX DUFF - 1962 - Associate Professor of Art (1969), Anchorage Community College
Temple University '49, B.F.A.; '49, B.S.Ed.; '52, M.F.A.

CONNET, MARGARET B. - 1967 - Head Start Regional Training Officer (1967)
University of Kansas '25, A.B.; University of Chicago '47, M.A.

COOK, DONALD J. - 1953 - Head, Department of Mineral Engineering, and Professor of Mineral Beneficiation (1965)
University of Alaska '47, B.S.; '52, E.M.; Pennsylvania State University '58, M.S.; '60, Ph.D.

COOK, JOHN P. - 1968 - Assistant Professor of Human Ecology and Anthropology (1969)
Dartmouth College '59, B.A.; Brown University '64, M.A.; University of Wisconsin '68, Ph.D.

CREVENSTEN, DANIEL C. - 1963 - Executive Officer (1963), Geophysical Institute

CRUIKSHANK, JULIA - 1969 - Senior Research Assistant (1969), Institute of Social, Economic and Government Research
University of Toronto '67, B.A.; University of British Columbia '69, M.A.

DAMRON, FRANKLIN D. - 1969 - Instructor of Psychology (1969), Juneau-Douglas Community College
Foothill College '66, A.A.; San Jose State College '66, B.A.; '68, M.A.

DARNELL, FRANK - 1966 - Head, Department of Education, and Associate Professor of Education (1968)
Colorado State University '51, B.S.; University of Alaska '62, M.Ed.

DAVIS, CHARLES W. - 1963 - Professor of Music (1969)
State University of Iowa '37, B.A.; '48, M.A.

DAVIS, T. NEIL - 1965 - Assistant Director and Professor of Geophysics (1965), Geophysical Institute
University of Alaska '55, B.S.; '61, Ph.D.; California Institute of Technology '57, M.S.

DEAN, FREDERICK C. - 1954 - Head, Department of Wildlife Management, Professor of Wildlife Management, and Assistant Leader of Cooperative Wildlife Research Unit (1966)
University of Maine '50, B.S.; '52, M.S.; State University of New York '57, Ph.D.

DEAN, SHARON - 1967 - Data Processor and Computer (1968), Geophysical Institute
University of Alaska '67, B.S.

DECKER, DORIS S. - 1967 - Instructor of Office Administration (1967), Anchorage Community College
Husson College '59, B.S.

DEEHR, CHARLES S. - 1958 - Associate Professor of Geophysics (1968), Geophysical Institute
Reed College '58, B.S.; University of Alaska '61, M.S.; '68, Ph.D.

DEGEN, VLADIMIR - 1969 - Assistant Professor of Physics (1969), Geophysical Institute
University of Toronto '58, B.A.; '60, M.A.; University of Western Ontario '66, Ph.D.

DEXTER, WAYNE R. - 1968 - Instructor of Psychology (1968)
Brigham Young University '67, B.S.; '68, M.S.

DIETER, EMMA R. - 1962 - Senior Research Assistant (1962), Institute of Marine Science
DePaul University '59, B.S.

DIETERICH, ROBERT A. - 1967 - Veterinarian (1967), Institute of Arctic Biology
University of California '61, B.S.; '63, Ph.D.

DINKEL, DONALD H. - 1968 - Associate Professor of Plant Physiology (1968), Alaska Agricultural Experiment Station (College)
University of Minnesota '54, B.S.; '60, Ph.D.

DINKINS, WILLIAM H. - 1968 - Acting Head, Department of Economics, and Assistant Professor of Economics (1968)
Lewis & Clark College '49, B.S.; University of Missouri '51, A.M.; Columbia University '59, M.A.

DISTAD, JOHN O. - 1955 - Associate Professor of Mathematics (1968)
Montana State College '53, B.S.; '55, M.S.

DOUGLAS, ELVERA K. VOTH - 1962 - Assistant Professor of Music (1962), Anchorage Community College
Bethel College '46, B.A.; Northwestern University '48, M. Mus. Ed.

DOYLE, JOHN P. - 1963 - Assistant Professor of Fisheries Extension (1969), Statewide Services
University of Washington '59, B.S.

DOYLE, MARIE C. - 1965 - Associate Professor of Psychology (1968), Southcentral Regional Center
University of Utah '50, B.A.; '61, Ph.D.

DRAHN, THEODORE L. - 1968 - Assistant Professor of Sociology (1968)
University of Oregon '56, B.S.; Portland State College '65, M.S.W.

DRURY, HORACE F. - 1967 - Director (1967), Alaska Agricultural Experiment Stations
George Washington University '37, B.S.; Harvard University '38, A.M.; '40, Ph.D.

DULING, JOHN L. - 1968 - Associate Professor of Education (1968)
University of Iowa '48, M.A.; University of California '66, Ed.D.

DUNCAN, IRIS J. A. - 1965 - Associate Professor of English (1969)
Southwestern State College '55, B.A.; University of Oklahoma '62, M.A.; '65, Ph.D.

DUNLAP, SHERRY LYNN - 1964 - Instructor of Library Science (1964)
Bowling Green University '58, B.A.; University of Illinois '59, M.S.L.S.

EATON, EUGENE D. - 1968 - Assistant Professor of Economics (1968), Institute of Social, Economic and Government Research
University of Colorado '65, B.A.; '67, M.A.

EATON, JAMES ROBERT - 1967 - Professor of Electrical Engineering (1967)
Purdue University '25, B.S.E.E.; '30, E.E.; University of Wisconsin '38, M.S.E.E.; Purdue University '42, Ph.D.

ECHOLS, CAROL - 1965 - Instructor of Mathematics (1969)
Cornell College '54, B.S.; University of Alaska '63, M.S.

ECHOLS, F. ARNOL - 1963 - Executive Officer (1963), Office of the Vice President for Research and Advanced Study
Linfield College '57, B.S.; University of Alaska '68, M.B.A.

EGAN, ROBERT H. - 1965 - Special Orientation Advisor (1969), Office of Student Affairs
Montana State University '60, B.A.; Long Beach State College '65, M.A.

EISENHART, JEAN - 1968 - Librarian (1968), Ketchikan Community College
Middlebury College '61, A.B.; Columbia University '65, M.S.

ENGLISH, BURT H. - 1969 - Associate Professor of Political Science (1969)
Ohio University '62, B.A.; University of Florida '64, M.A.; '67, Ph.D.

ENSIGN, ELAINE - 1969 - Lecturer in Mathematics (1969)
Indiana University '53, B.A.; University of Wisconsin '55, M.S.

ENSIGN, WALTER GATES, JR. - 1969 - Assistant Professor of Speech and Theatre (1969)
University of Denver '66, B.A.; '67, M.A.

ENSOR, Barbara - 1969 - Instructor of English (1969), Anchorage Community College
Gettysburg College '59, B.A.; University of Colorado '67, M.A.

EPPS, ALLEN C. - 1969 - Extension Horticulturist, and Assistant Professor of Extension (College) (1969)
Montana State University '66, B.S.; '69, M.S.

ERICKSON, ROLAND I. - 1968 - Professor of Mining Engineering (1968)
University of Minnesota '30, E.M.; University of North Dakota '54, M.S.

ESMAIL, OMAR J. - 1969 - Assistant Professor of Petroleum Engineering (1969)
Louisiana State University '64, B.S.; '66, M.S.; University of Texas '69, Ph.D

EVERETTE, OLIVER P. - 1965 - Assistant Professor of English (1966)
Concordia College '33, B.A.; University of Washington '51, M.A.

FAHL, CHARLES B. - 1969 - Senior Research Assistant (1969), Geophysical Institute
Antioch College '63, B.S.; University of Alaska '69, M.S.

FEDER, HOWARD M. - 1970 - Associate Professor of Zoology and Marine Science (1970)
University of California at Los Angeles '48, A.B.; '51, M.A.; Stanford University '56, Ph.D.

FERGUSON, CHARLES O. - 1969 - Dean, Statewide Services and Associate Professor of Education (1969)
Northern Arizona University '56, B.S.; '60, M.A.; Wayne State University '69, Ed.D.

FINEBERG, RICHARD A. - 1969 - Assistant Professor of Political Science (1969)
Beloit College '64, B.A.; Claremont Graduate School '66, M.A.; '70, Ph.D.

FINK, MILTON A. - 1968 - Assistant Professor of Accounting (1968)
University of Nebraska '58, B.S.; University of Denver '66, M.S.B.A.; Colorado '66, C.P.A.

FISCHER, VICTOR - 1966 - Director, Institute of Social Economic and Government Research, and Professor of Political Science (1966)
University of Wisconsin '48, B.A.; Massachusetts Institute of Technology '50, M.C.P.

FLANAGAN, PATRICK W. - 1968 - Assistant Professor of Botony (1968)
Dublin University College '64, B.S.; McGill University '68, Ph.D.

FORBES, Robert B. - 1959 - Professor of Geology (1965)
University of Washington '50, B.S.; '59, Ph.D.

FLOYD, CAROLYN L. - 1969 - Resident Director (1969), Kodiak Community College
University of Mississippi '63, B.S.; '65, M.B.E.

FROL, ANTHONY B. - 1968 - Acting Comptroller (1969), Office of the Vice President for Finance and Comptroller
University of Washington '42, B.A.; '51, M.B.A.

FRY, CHARLES W. - 1969 - Instructor of History (1969)
University of Wichita '57, A.B.; University of California at Los Angeles '68, Ph.D.

FRYER, MARK W. - 1968 - Assistant Engineer (1968), Arctic Environmental Engineering Laboratory
University of Alaska '66, B.S.; '67, M.S.

GALSTER, WILLIAM A. - 1963 - Assistant Zoophysiologist and Coordinator for Analytical Services (1967), Institute of Arctic Biology
University of Wisconsin '58, B.S.; '61, M.S.

GARRISON, LUCILLE M. - 1967 - University Nurse (1967)
St. Francis Hospital '47, R.N.; Jefferson Medical College '55, O.R.

GATZKIEWICZ, ALICE - 1954 - Assistant Business Manager (1967)

GAUSS, EDWARD J. - 1960 - Head, Computer Center and Associate Professor of Electrical Engineering (1966)
California Institute of Technology '54, B.S.; University of Colorado '56, M.A.; University of California at Los Angeles '60, M.S.

GEDNEY, LARRY D. - 1966 - Assistant Geophysicist (1966), Geophysical Institute
University of Nevada '60, B.S.; '66, M.S.

GELLER, STEPHEN P. - 1965 - Computer Systems Analyst (1969), Geophysical Institute
Bates College '62, B.S.; University of Alaska '64, M.S.

GENAUX, CHARLES T. - 1953 - Assistant Professor of Chemistry (1963)
Iowa State College '50, B.S.; University of Rochester '53, M.S.; University of Alaska '69, Ph.D.

GENTRY, FOYE L. - 1964 - Head, Department of Electronics Technology, Supervisor and Senior Instructor of Electronics Technology (1969)

GEORGE, ALFRED H. - 1961 - Associate Comptroller for Research and Governmental Relations (1967)
Oregon State University '50, B.S.

GILLIAM, IVAN - 1963 - Civil Defense Adult Education Program Coordinator (1967), Anchorage Community College
William Jewell College '49, A.B.; University of Alaska '63, M.Ed.

GILMORE, JOHN - 1968 - Head, Department of Health, Physical Education and Recreation, and Associate Professor (1969)
Stanford University '54, B.A.; '58, M.A.; '67, Ed.D.

GOERING, JOHN J. - 1962 - Head, Oceanography and Ocean Engineering Program, and Professor of Marine Science (1968)
Bethel College '56, B.S.; University of Wisconsin '60, M.S.; '62, Ph.D.

GORDON, BRUCE R. - 1963 - Head, Department of Linguistics and Foreign Languages, and Professor of French and Spanish (1963)
Brown University '37, A.B.; New York State College for Teachers '42, M.A.; Syracuse University '50, Ph.D.

GOULD, JAMES - 1968 - Assistant Professor of Police Administration (1968), Anchorage Community College
Fresno State College '65, B.A.

GRANT, CAROL T. - 1968 - Student Counselor (1968), Anchorage Community College
Los Angeles State College '58, B.S.; Southern Methodist University '66, M.A.

GRIESE, ARNOLD - 1960 - Associate Professor of Education (1965)
Georgetown University '48, B.S.; University of Miami '57, M.Ed.; University of Arizona '60, Ph.D.

GRIMES, RICHARD C. - 1969 - Assistant Director (1969), News Service
Brigham Young University '67, B.A.

GROVES, JOANNE E. - 1967 - Senior Research Assistant (1967), Institute of Marine Science
University of Rochester '60, B.S.; University of Oregon '63, M.S.

GUNTHER, ERNA - 1966 - Faculty Associate (1969), Department of Anthropology
Barnard College '19, B.A.; Columbia University '20, M.A.; '28 Ph.D.

GUTHRIE, RUSSELL D. - 1963 - Associate Professor of Zoology (1968)
University of Illinois '58, B.S.; '59, M.S.; University of Chicago '63, Ph.D.

HAGE, ROBERT S. - 1967 - Professor of Education (1967)
St. Olaf College '47, B.A.; University of Iowa '49, M.A.; '54, Ph.D.

HAINES, LEWIS E. - 1964 - Provost of the University (1969), Southcentral Regional Center, and Professor of Education
Middlebury College '43, B.A.; Columbia Teachers' College '50, M.A.; Washington State University '60, Ph.D.

HAINES, ROBERT E. - 1967 - Assistant Professor of English (1967)
Ohio State University '54, B.A.; '56, M.A.; Stanford University '67, Ph.D.

HAKKILA, JACK O. - 1969 - Assistant Professor of Economics (1969)
University of Connecticut '61, B.S.; '69, Ph.D.

HALIKAS, GEORGE - 1968 - Assistant Professor of Biophysics (1968), Institute of Arctic Biology
McGill University '55, B.S.; University of Tennessee '65, M.S.; '67, Ph.D.

HALLINAN, THOMAS J. - 1965 - Associate Electronic Engineer (1969), Geophysical Institute
Cornell University '64, B.S.E.E.; University of Alaska '69, M.S.

HALVERSON, RADENE A. - 1969 - Assistant Professor of Office Administration (1969)
University of North Dakota '67, B.S.; '69, M.S.

HAMILTON, THOMAS D. - 1966 - Assistant Professor of Geology (1966)
University of Idaho '60, B.S.; University of Wisconsin '64, M.S.; University of Washington '66, Ph.D.

HANKS, LEW E. - 1955 - Assistant Coordinator, Civil Defense Program (1965) Anchorage Community College
University of Idaho '50, B.S.

HARBO, SAMUEL J. - 1964 - Assistant Professor of Biometrics (1965),
University of Nebraska '51, B.S.; University of Alaska '58, M.S.

HARRIS, MARGARET P. - 1958 - Assistant Professor of Library Science (1962)
William and Mary College '38, B.A.; University of Wisconsin '39, B.L.S.

HARRISON, GORDON S. - 1969 - Assistant Professor of Political Science (1969)
University of the Pacific '65, A.B.; Claremont Graduate School '69, Ph.D.; University of California '69, M.J.

HARROP, BETTIE S. - 1962 - Head, Alumni Services and Graduate Placement (1962)
Alaska Agricultural College and School of Mines '35, B.S.

HART, JOHN C. - 1966 - Assistant Professor of History and Political Science (1966), Anchorage Community College
Ursinus College '49, B.A.; Temple University '59, M.Ed.

HARTMAN, CHARLES W. - 1967 - Senior Research Assistant Engineer (1967), Institute of Water Resources Research
Rutgers University '64, B.S.; University of Alaska '67, B.S.

HASS, ORIL R. - 1969 - Instructor of Extension and Family Development Agent (Aniak) (1969)
Dumbarton College '63, B.A.; Oregon College of Education '67, M.S.

HASS, STEPHEN P. - 1969 - Instructor of Extension and Community Development Agent (Aniak) (1969)
Stanford University '63, B.A.; Oregon State University '69, M.S.

HAWKINS, DANIEL B. - 1967 - Associate Professor of Geology (1967)
Montana State University '56, B.S.; '57, M.S.; Pennsylvania State University '61, Ph.D.

HEACOCK, RICHARD - 1961 - Associate Geophysicist (1967), Geophysical Institute
Oregon State University '44, B.S.; University of Wisconsin '46, M.Ph.

HEAD, THOMAS J. - 1965 - Professor of Mathematics (1965)
University of Oklahoma '54, B.S.; '55, M.A.; University of Kansas '62, Ph.D.

HEARN, WILLIAM C. - 1969 - Assistant Professor of Military Science (1969)
Texas A & M University '63, B.S.; Capt., U.S. Army

HEIMBUCH, BONNIE - 1968 - Assistant Professor of Mathematics (1968), Anchorage Community College
Nebraska State College '48, B.A.; University of Texas '67, M.A.

HEINER, LAWRENCE E. - 1964 - Assistant Mineral Engineer (1967), Mineral Industry Research Laboratory
University of Alaska '61, B.S.; '66, M.S.

HENRY, JAMES M., JR. - 1969 - Instructor of Education (1969)
Carson Newman College '59, B.A., B.S.; University of Alaska '69, M.Ed.

HENRY, NANCY G. - 1969 - Instructor of Education (1969)
Carson Newman College '57, B.A.; University of North Dakota '65, B.S.; University of Alaska '69, M.Ed.

HERING, MILLICENT B. - 1966 - Assistant Professor of Library Science (1966)
Colorado State College '45, A.B.; University of Denver '65, M.A.

HESSION, JACK - 1968 - Senior Research Assistant (1968), Institute of Social, Economic and Government Research
San Diego State College '61, B.A.; '67, M.A.

HILLIARD, GRACE - 1969 - Nursery School Supervisor (1969)
Anchorage Community College '61, A.A.; University of Alaska '64, B.Ed.

HILLIARD, ROBERT J. - 1969 - Director of Student Affairs (Dean of Students), and Assistant Professor of Political Science (1969)
Southern Oregon College '52, B.S.; Kent State University '62, M.A.

HIPPLER, ARTHUR E. - 1967 - Associate Professor of Anthropology (1969), Institute of Social, Economic and Government Research
University of California at Berkeley '63, A.B.; '68, Ph.D.

HITCHCOCK, KAY - 1967 - Assistant Professor of English (1967), Anchorage Community College
University of Alaska '60, B.A.; '62, M.A.

HOBSON, K. H. - 1965 - Lecturer and Supervisor of Laboratories (1967), Department of Civil Engineering

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Colorado State University '66, B.S.; '67, M.S.

HOGAN, WILLIAM - 1967 - Manager of Business Services (1969)
Cornell University '55, B.S.; Columbia University '59, M.S.

HOHENTHAL, WILLIAM D. - 1969 - Professor of Anthropology (1969)
University of California at Berkeley '41, A.B.; '51, Ph.D.

HOKE, DAVID O. - 1966 - Assistant Professor of Mathematics (1966), Anchorage Community College
Manchester College '61, B.A.; University of Arizona '64, M.A.

HOLLEMAN, DAN FOY - 1969 - Radiobiologist (1969), Institute of Arctic Biology
Howard Payne College '61, B.S.; New Mexico Highlands '65, M.S.; Colorado State University '66, M.S.

HOLLERBACH, CHRISTA - 1968 - Lecturer of French (1968)
University of Marburg '58; Wissensch Staatsexamen
Studienseminar Freiburg '61, Paedag Staatsexamen

HOLLERBACH, WOLF - 1965 - Associate Professor of French and Spanish (1967)
Universite de Rennes '61, Doctorat d'Universite, University of Bonn '62, Wissensch Staatsexamen

HOLMGREN, MELVIN H. - 1966 - Associate Design Engineer (1967), Geophysical Institute
Worcester Polytechnic Institute '54, B.S.

HOOD, DONALD W. - 1965 - Director and Professor of Marine Science (1965), Institute of Marine Science
Pennsylvania State University '40, B.S.; Oklahoma State University '42, M.S.; Texas A & M University '50, Ph.D.

HOOK, JERRY - 1959 - Assistant Geophysicist (1966), Geophysical Institute
University of Alaska '58, B.S.; '63, M.S.

HOPPNER, LLOYD - 1967 - Lecturer of Business Administration (1967)
University of Nebraska '63, B.S.; '65, J.D.

HORNER, RITA A. - 1969 - Assistant Professor of Marine Science (1969)
University of Wisconsin '56, B.S.; University of Minnesota '58, M.S.; University of Washington '69, Ph.D.

HOSKINS, LEO CLARON - 1965 - Associate Professor of Chemistry (1968)
Utah State University '62, B.S.; Massachusetts Institute of Technology '65, Ph.D.

HULBERT, JOHN RYAN - 1968 - Instructor of English (1968)
Springfield College '65, B.S.; University of North Carolina '68, M.F.A.

HUNKE, NAOMI SAVAGE - 1966 - Assistant Professor of English (1968), Anchorage Community College
Pacific College '50, B.A.; Grand Canyon College '60, B.S.; Arizona State University '62, M.A.

HUNT, WILLIAM R. - 1967 - Assistant Professor of History (1967)
Seattle University '51, B.S.S.; University of Washington '58, J.D.; '66, M.A.; '67, Ph.D.

HUNTER, KENNETH R. - 1968 - Assistant Professor of Psychology (1968)
University of Bridgeport '63, B.S.; Utah State University '64, M.S.; University of Hawaii '68, Ph.D.

IRANY, JAMES Z. - 1967 - Assistant Professor of Sociology (1968), Anchorage Community College
Wisconsin State College '53, B.S.C.; University of Wisconsin '56, M.S.W.

IRVING, LAURENCE - 1962 - Advisory Scientific Director and Professor of Zoophysiology (1966), Institute of Arctic Biology
Bowdoin College '16, A.B.; '59, (Hon.) D.Sc.; Harvard University '17, A.M.; Stanford '24, Ph.D.; University of Oslo '56,(Hon.) M.D.; University of Alaska '68, (Hon.) D.Sc.

JAMES, JAMES E., JR. - 1969 - Assistant Ice Physicist (1969), Arctic Environmental Engineering Laboratory
Harvard University '61, B.S.

JOHNSON, GENE WILLIAM - 1965 - Student Counselor (1965), Anchorage Community College
Montana State College '60, B.S.; Rutgers '64, Ed.M.

JOHNSON, PHILLIP R. - 1966 - Assistant Engineer (1966), Arctic Environmental Engineering Laboratory
University of Alaska '64, B.S.; '65, M.S.

JOHNSON, ROLAND E. - 1967 - Senior Research Assistant (1967), Geophysical Institute
Howard University '55, B.S.; '64, M.S.

JOHNSTONE, ALAN DAVID - 1967 - Senior Research Assistant (1967), Geophysical Institute
Oxford University '58, B.A.; Chelsea College of Science and Technology '67, M.S.

JONES, LAURA E. - 1956 - Director of Admissions and Registrar (1956)
University of Denver '41, B.A.

JONES, ROYAL MAURICE - 1969 - Associate Professor of Economics and Business (1969), Anchorage Community College
Clemson University '60, B.S.; University of Maryland '62, M.S.; '67, Ph.D.

JOYNER, JOSEPH M. - 1968 - Assistant Professor of Political Science and History (1968), Southcentral Regional Center
University of Kentucky '50, A.B.; Northeastern University '65, M.A.

KAVEN, ROLAND - 1966 - Agent Agriculture (1966), Cooperative Extension Service (College)
Michigan State University '35, B.S.

KAWASAKI, KOJI - 1967 - Senior Research Assistant (1967), Geophysical Institute
University of California '60, B.A.; University of Alaska '64, M.S.

KEIM, CHARLES J. - 1954 - Professor of Journalism and English (1963)
University of Washington '48, B.A.; '50, M.A.

KEIM, DORCAS - 1969 - Coordinator, Practical Nursing Program (1969), Anchorage Community College
University of Washington '47, B.S.

KELSEY, JOSEPH R. - 1969 - Instructor of History (1969), Ketchikan Community College
University of Washington '66, B.S.; '68, M.A.

KENYON, ROBERT A. - 1968 - Assistant Professor of Sociology (1969), Anchorage Community College
Colorado University '56, B.A.; Oklahoma University '65, M.A.

KENNEDY, EDMUND J. III - 1968 - Head, Department of Military Science and Professor of Military Science (1968)
Louisiana State University '52, B.S.; Lt. Col., U.S. Army

KESSEL, BRINA - 1951 - Dean, College of Biological Sciences and Renewable Resources and Professor of Zoology (1961)
Cornell University '47, B.S.; University of Wisconsin '49, M.S.; Cornell University '51, Ph.D.

KHAN, M. SALEEM - 1969 - Assistant Professor of Economics (1969)
Panjab University (Pakistan) '61, B.A.; '63, M.A.; Johannes Gutenberg University (W. Germany) '67, Ph.D.

KIM, STEVE W. - 1968 - Associate Professor of Environmental Health Engineering (1968), Institute of Water Resources
Seoul National University '57, B.S.; '60, M.S.; University of California '63, Ph.D.

KINNEY, PATRICK J. - 1967 - Associate Professor of Marine Science (1969), Institute of Marine Science
South Dakota School of Mines '57, B.S.; Iowa State University '63, Ph.D.

KLEIN, DAVID R. - 1962 - Leader, Alaska Cooperative Wildlife Research Unit and Professor of Wildlife Management (1962)
University of Connecticut '51, B.S.; University of Alaska '53, M.S.; University of British Columbia '63, Ph.D.

KLEINFELD, JUDITH - 1969 - Research Associate (1969), Institute of Social, Economic and Government Research
Wellesley College '66, B.A.; Harvard University '67, Ed.M.

KLEVEN, JULIA G. - 1968 - Instructor of Library Science (1968
Mesa Junior College '64, A.A.; Colorado State College '66, B.A.; University of Washington '69, M.L.S.

KNAPP, DAVID R. - 1962 - Assistant Director (1968), Anchorage Community College
University of Nebraska '52, B.S.; '55, M.Ed.

KNIGHT, GEORGE R. - 1956 - Associate Professor of Civil Engineering (1966)
University of Alaska '55, B.S.; Harvard University '56, S.M.; '61, E.M.

KOO, JANG - 1969 - Assistant Professor of Japanese (1969)
Tongkook University (Korea) '56, B.A.; '58, M.A.; University of Texas '65, M.A.

KOSCHMANN, FRED - 1964 - Resident Director (1964), Juneau-Douglas Community College
Oklahoma City University '36, B.F.A.; Eastern Washington State College '38, B.A.; Dubuque Presbyterian Seminary '47, B.D.; Seattle Pacific College '62, M.Ed.

KRAUSS, MICHAEL E. - 1960 - Professor of Linguistics (1968)
University of Chicago '53, B.A.; Western Reserve University '54, B.A.; Columbia University '55, M.A.; University of Paris '56, Certificat Etudes Superierues; Harvard University '59, Ph.D.; Baccalaureatus Philologiae Islandicae, Haskoli Islands '60

KREBS, SUSAN D. - 1968 - Assistant Professor of English (1968)
University of Arizona '63, B.S.; Stanford University '66, M.A.

KREJCI, RUDOLPH W. - 1960 - Head, Department of Philosophy, and Professor of Philosophy (1969)
Leopold Franzens University, Innsbruck '59.

KYNELL, KERMIT SYPPLI - 1969 - Assistant Professor of Political Science (1969), Anchorage Community College
Stanford University '52, B.A.; '53, M.A.

LAFFERTY, CHARLES W. - 1969 - Director, Division of Statewide Services and Professor of Education (1969)
Kansas State University '37, B.S.; '40, M.S.; '57, Ed.D.

LAKE, JOSEPH B. - 1969 - Office of Administrative Data Processing Systems (1969)
University of Michigan '52, A.B.; Accounting Certificate, University of Indiana Extension '62

LANDE, WINIFRED D. - 1967 - Associate Professor of Education (1968)
University of Idaho '52, B.A.; '55, M.S.

LANDO, BARBARA M. - 1969 - Assistant Professor of Mathematics (1969)
Georgian Court College '62, B.A.; Rutgers University '64, M.S.; '69, Ph.D.

LANDO, CLIFTON A. - 1969 - Assistant Professor of Mathematics (1969)
Lehigh University '62, B.A.; Rutgers University '64, M.S.; '69, Ph.D.

LaPOINT, GRANT C. - 1963 - Associate Design Engineer (1969), Geophysical Institute
Merrimack College '62, A.S.E.E.

LAURENT, EUGENE W. - 1961 - Director (1969), Southcentral Regional Center
Wisconsin State Teachers College '40, B.S.; University of New Mexico '47, M.A.

LEEKLEY, JAMES R. - 1966 - Associate Biologist and Officer in Charge (1967), Petersburg Fur Farm
Oregon State University '38, B.S.

LENT, PETER C. - 1969 - Assistant Leader, Alaska Cooperative Wildlife Research Unit, and Assistant Professor of Wildlife Management (1969)
University of Alaska '60, B.A.; Simmons College '67, M.S.

LESH, NANCY - 1968 - Librarian (1968), Anchorage Community College
Willamette University '66, B.A.; Simmons College '67, M.L.S.

LICARI, LOUIS - 1968 - Resident Director (1968), Sitka Community College
St. Cloud College '58, B.S.; '64, M.A.

LIEBENTHAL, EDWARD W. - 1951 - Agent, Agriculture and Associate Professor of Extension (Homer) (1969)
University of Wisconsin '48, B.S.

LINDHOLM, GEORGE F. - 1965 - Assistant Engineer (1965), Geophysical Institute
University of California at Los Angeles '40, A.B.

LINGNER, CAROL - 1969 - Agent, Home Economics, and Instructor of Extension (Juneau) (1969)
Washington State University '66, B.A.

LOGSDON, CHARLES E. - 1968 - Professor of Plant Pathology (1968), Alaska Agricultural Experiment Station (Palmer)
University of Kansas City '42, B.A.; University of Minnesota '54, Ph.D.

LOKKEN, DONALD A. - 1969 - Assistant Professor of Chemistry (1969)
University of Wisconsin '63, B.A.

LONGERICH, HENRY P. - 1967 - Assistant Professor of Chemistry (1967)
Millikin University '63, B.S.; Indiana University '67, Ph.D.

LONGERICH, LINDA - 1967 - Senior Research Assistant (1967), Institute of Marine Science
Millikin University '64, B.A.; Indiana University '67, M.S.

LOYENS, WILLIAM J. - 1966 - Head, Department of Anthropology, and Associate Professor of Anthropology (1969)
Gonzaga University '52, B.A.; '53, M.A.; University of Santa Clara '59, M.A.; University of Wisconsin '66, Ph.D.

LU, CARY M. - 1966 - Assistant Director of Accounting Services (1969)
Chinese University of Hong Kong '61, B.A.; University of Alaska '64, B.B.A.; '69, M.B.A.

LU, FREDERICK C. J. - 1967 - Assistant Professor of Mineral Engineering (1967)
Provincial Chenkung University '58, B.S.; Nova Scotia Technical College '64, M.Eng.; Pennsylvania State University '67, M.S.

LUDWIG, JAMES R. - 1968 - Instructor of Radio and Producer-Director of KUAC (1968)
State University of New York '63, B.S.; Syracuse University '65, M.S.

LUICK, JACK R. - 1965 - Professor of Nutrition (1968), Institute of Arctic Biology
University of California '50, B.S.; '56, Ph.D.

MACHETANZ, FRED - 1963 - Distinguished Associate in Art (1963)
Ohio State University '30, B.A.; '35, M.A.

MAGGS, JAMES E. - 1967 - Senior Research Assistant (1967), Geophysical Institute
Stanford University '65, B.S.; University of Alaska '67, M.S.

MARK ANTHONY, LEO - 1956 - Professor of Mining Extension (1969)
University of Alaska '52, B.S.

MARTIN, JAMES A. - 1969 - Instructor in Physical Education and Aquatics Supervisor (1969)
Northern Michigan University '66, B.S.

MARTIN, KENNETH K. - 1963 - Head, Student Counseling and Testing, and Associate Professor of Education (1966),
North Texas State University '52, B.S.; '53, M.Ed.; University of Denver '63, Ph.D.

MATHER, KEITH B. - 1961 - Director, Geophysical Institute, and Professor of Physics (1963)
Adelaide University '42, B.Sc.; '44, M.Sc.; University of Alaska '68, (Hon.) D.Sc.

MATTHEWS, J. BRIAN - 1966 - Associate Professor of Marine Science (1969), Institute of Marine Science
University of London '60, B.Sc.; '63, Ph.D.

MATTHEWS, JAMES W. - 1957 - Associate Director and Associate Professor of Extension Service (1969)
North Dakota State University '52, B.S.; University of Wisconsin '61, M.S.

MATTHEWS, MARY E. - 1966 - Assistant Professor of Library Science (1969)
University of Rochester '65, B.A.; Columbia University '66, M.S.

McCARTHY, PAUL H. - 1964 - Assistant Professor of Library Science (1967)
St. John Fisher College '62, B.A.; Syracuse University '64, M.L.S.

McDONALD, BEATRICE G. - 1962 - Associate Professor of Business Administration and Secretarial Sciences (1965), Anchorage Community College
Salem State Teachers College '33, B.S.Ed.; Boston University '54, M.Ed.

McKAY, ALEXANDER - 1968 - Associate Professor of Mechanical Engineering (1968)
McGill University '55, B.E.; '61, M.E.

McMULLIN, JANET HEALEY - 1969 - Student Counselor (1969), Anchorage Community College
University of Washington '58, B.S.

McROY, C. PETER - 1967 - Assistant Professor of Marine Science (1967), Institute of Marine Science
Michigan State University '63, B.S.; University of Washington '66, M.S.; University of Alaska '70, Ph.D.

McWHIRTER, RICHARD A. - 1966 - Senior Instructor of Electronics Technology (1969)
University of Alaska '69, A.E.T.

MENDENHALL, WILLIAM W., JR. - 1955 - Professor of Civil Engineering (1967)
Cornell University '49, B.C.E.; '60, M.S.

MERRITT, ROBERT P. - 1962 - Associate Professor of Electrical Engineering (1963)
Oregon State College '49, B.S.; Stanford University '68, M.S.

MESSER, MARVIN A. - 1965 - Executive Officer (1965), Arctic Environmental Engineering Laboratory

MIKOW, DUANE J. - 1965 - Head, Department of Music, and Associate Professor of Music (1968)
Western State College of Colorado '51, B.A.; University of Colorado '57, M.Mus.Ed.

MILLER, JOHN M. - 1958 - Station Manager, Minitrack (1961), Geophysical Institute
University of Alaska '60, B.S.

MILLER, L. KEITH - 1962 - Associate Professor of Zoophysiology (1969), Institute of Arctic Biology
University of Nevada '55, B.S.; '57, M.S.; University of Alaska '66, Ph.D.

MILLER, ORLANDO W. - 1957 - Associate Professor of History (1966)
Muhlenberg College '47, B.A.; Columbia University '48, M.A.; '66, Ph.D.

MITCHELL, WILLIAM W. - 1963 - Associate Professor of Agronomy (1967), Alaska Agricultural Experiment Station (Palmer)
University of Montana '57, B.A.; '58, M.A.; Iowa State University '62, Ph.D.

MONSERUD, SALLY - 1967 - Associate Professor of English (1969), Southcentral Regional Center
Augustana College '29, B.A.; Washington State College '34, M.A.

MONSON, THOMAS J. - 1968 - Instructor of Accounting (1968), Anchorage Community College
Brigham Young University '67, B.S.; '68, M.A.

MOORE, SARAH BETH - 1969 - Assistant Professor of German (1969)
Carleton College '64, B.A.; Cornell University '68, M.A.; '69, Ph.D.

MORACK, JOHN L. - 1968 - Assistant Professor of Physics (1968)
Union College '61, B.S.; Oregon State College '67, Ph.D.

MOREHOUSE, THOMAS A. - 1967 - Associate Professor of Political Science (1969), Institute of Social, Economic and Government Research
Harvard College '60, B.A.; University of Minnesota '61, M.A.P.A.; '68, Ph.D.

MORGAN, O. RAY - 1968 - Agent, Agriculture and Youth Programs, and Assistant Professor of Extension (Juneau) (1969)
University of Kentucky '54, B.S.; '58, M.S.

MORIARTY, RICHARD V. - 1967 - University Engineer, Maintenance and Operations (1969)
University of Alaska '50, B.S.

MORPHEW, ROBERT M. - 1968 - Coordinator of Administrative Data Processing Systems (1968)
Iowa State University '57, B.S.

MORRISON, PETER R. - 1962 - Director, Institute of Arctic Biology, and Professor of Zoophysiology (1966)
Swarthmore College '40, A.B.; Harvard University '47, Ph.D.

MORROW, JAMES E. - 1960 - Professor of Zoology (1963) Collections (1963)
Middlebury College '40, A.B.; '42, M.S.; Yale University '44, M.S.; '49, Ph.D.

MOSS, ROBERT - 1969 - Research Associate (1969), Institute of Arctic Biology
University of London '63, B.S.; Aberdeen University '67, Ph.D.

MUELLER, WALTER J. - 1970 - Dean, College of Arts & Letters and Professor of German (1970)
Wesleyan University '34, B.A.; '35, M.A.; Cornell University '38, Ph.D.

MURCRAY, WALLACE B. - 1955 - Associate Professor of Physics (1969), Geophysical Institute
University of Denver '50, B.S.; '55, M.S.

MURPHY, R. SAGE - 1966 - Head, Environmental Health Engineering Program, Professor of Environmental Health Engineering, and Director, Institute of Water Resources (1969)
Southern Methodist University '57, B.S.C.E.; '59, M.S.C.E.; Pennsylvania State University '63, Ph.D.

MURRAY, DAVID F. - 1969 - Assistant Professor of Botony (1969)
Middleburg College '59, A.B.; University of Alaska '61, M.S.; University of Colorado '66, Ph.D.

MURRAY, JERE - 1968 - Assistant Professor of Computer Science (1968), Computer Center
Georgia Institute of Technology '60, B.S.; '63, M.S.; '65, Ph.D.

MURRAY, ANN P. - 1969 - Assistant Professor of Environmental Health Sciences (1969) Institute of Water Resources
Pennsylvania State University '63, B.S.; University of Alaska '69, M.S.

MURRAY, JOHN S. - 1967 - Assistant Professor of Physics (1967)
Oregon State University '60, B.S.; '66, M.S.; University of Alaska '67, Ph.D.

MUSGROVE, GLADYS - 1960 - Agent, Home Economics, and Associate Professor of Extension (Nome) (1966)
Washington State College '49, B.A.; Colorado State University '58, M.A.

NAIDU, A.S. - 1969 - Assistant Professor of Marine Science (1969)
Andhra University '59, B.S.; '60, M.S.; '68, Ph.D.

NASKE, CLAUSE M. - 1965 - Assistant Professor of History (1969)
University of Alaska '61, A.B.; University of Michigan '64, M.A.

NATARAJAN, KOTTAYAN V. - 1962 - Assistant Professor of Marine Science (1965), Institute of Marine Science
Banaras University '55, M.S.; University of Alaska '65, Ph.D.

NAVA, JOSEPH - 1967 - Executive Officer (1969), Institute of Arctic Biology
University of Alaska '65, B.S.

NAYUDU, R. Y. - 1967 - Professor of Marine Science, and Deputy Director at Douglas Station (1969)
Fergusson College '45, B.S.; '47, M.S.; University of Washington '59, Ph.D.

NEILAND, BONITA - 1961 - Associate Professor of Botany (1965)
University of Oregon '49, B.S.; Oregon State College '51, M.A.; University of Wisconsin '54, Ph.D.

NELSON, Richard D. - 1969 - Associate Professor of Mechanical Engineering (1969)
Cornell University '62, B.S.; University of California '64, M.S.; '68, Ph.D.

NICHOL, JANIS B. - 1969 - Instructor of Biology (1969), Anchorage Community College
Colorado State University '58, B.S.; '62, M.S.

NIELSON, HANS C. - 1967 - Assistant Geophysicist (1969), Geophysical Institute
Royal Technical University of Denmark '65, M.S.

NORTHRIP, CHARLES M. - 1963 - Assistant Professor of Speech, Drama and Radio (1965)
University of Florida '60, A.A.; '62, B.S.; '63, M.A.; Ohio University '69, Ph.D.

NYQUIST, DAVID - 1969 - Assistant Professor (1969), Institute of Water Resources
University of Nevada '61, B.S.; '63, M.S.; Utah State University '67, Ph.D.

OEHRING, JAMES C. - 1963 - Grant and Contract Accountant (1968)
University of Illinois '59, C.P.A.

OHTAKE, TAKESHI - 1964 - Associate Professor of Geophysics (1964), Geophysical Institute
Tohoku University '52, B.Sc.; '61, D.Sc.

OKESON, ALVIN S. - 1962 - Resident Director (1964), Matanuska-Susitna Community College
Concordia College '56, B.A.; St. Cloud State College '64, M.S.

O'MAHONEY, WILLIAM J. - 1969 - Coordinator and Instructor, AVEC Program (1969), Anchorage Community College

ORSINI, JOSEPH L. - 1969 - Assistant Professor, Engineering Management (1969), Southcentral Regional Center
Princeton University '60, B.S.; University of Alaska '64, M.S.

ORTHMANN, NAN ELLEN - 1969 - Assistant Professor of Music (1969)
Lawrence University '66, B.S.; Eastman School of Music '67, M.M.

ORVIK, JAMES MUIR - 1969 - Research Coordinator and Assistant Professor of Education (1969)
San Diego State College '63, B.A.; '65, M.S.

OSTERKAMP, THOMAS - 1968 - Assistant Professor of Physics (1968)
Southern Illinois University '62, B.A.; Saint Louis University '64, M.S.

PARMELEE, BENJAMIN L. - 1968 - Instructor of Electronics Technology (1968)

PARR, CHARLES H. - 1962 - Assistant Professor of German and Russian (1967)
University of Alaska '63, B.A.; '65, M.A.; U.S. Army Institute of Advanced Russian Studies.

PARTHASARATHY, RAHGAVAIYENGAR - 1958 - Professor of Physics (1962), Geophysical Institute
Annamalai University '50, B.Sc.; '52, M.A.

PELOSI, MELBA F. - 1953 - Head, Department of Office Administration, and Associate Professor of Office Administration (1965)
North Texas State Teachers College '46, B.S.; '52, M.B.E.

PEYTON, HAROLD R. - 1955 - Professor of Engineering (1968), Arctic Environmental Engineering Laboratory
Oregon State College '49, B.S.; '57, M.S.; University of Alaska '67, Ph.D.

PEYTON, LEONARD J. - 1962 - Assistant Zoophysiologist, and Coordinator for Environmental Services (1967)
Utah State University '51, B.S.

PHILIP, BETTY ANNE - 1967 - Associate Professor of Zoochemistry (1968), Institute of Arctic Biology
Agnes Scott College '52, B.A.; Yale University '54, M.S.; '60, Ph.D.

PHILIP, KENELM W. - 1965 - Associate Professor of Physics (1969), Geophysical Institute
Yale University '53, B.S.; '58, M.S.; '63, Ph.D.

PHILLIPS, PHYLLIS - 1966 - Assistant Professor of Speech Pathology (1969)
University of Oregon '65, B.A.; '66, M.S.

PIERCE, CHARLES A. - 1969 - Assistant Professor of Police Administration (1969)
Michigan State University '68, B.S.

PITTMAN, THEDA SUE - 1967 - Assistant Professor of Broadcasting (1969)
Wichita State University '66, B.S.; Indiana State University '67, M.S.

POLLOCK, JOHN W. - 1969 - Assistant Professor of Library Science (1969), Juneau-Douglas Community College
Harvard University '46, S.B.; San Jose State College '66, M.A.

POND, ROBERTA L. - 1968 - Assistant Professor of Psychology (1968), Anchorage Community College
Abilene Christian College '59, B.A.; Pepperdine College '61, M.A.

POSSENTI, RICHARD G. - 1966 - Assistant Professor of Psychology (1967)
St. Joseph College '51, B.S.; University of Alabama '55, M.A.

POST, HARRY H. - 1968 - Assistant Professor of Psychology and Education (1968) Southcentral Regional Center
Drew University '52, A.B.; New Jersey State College '59, M.A.; Boston University '69, Ed.D.

POURNY, MONIQUE JACQUELINE - 1969 - Assistant Professor of French (1969)
University of Calgary '66, B.Ed.; '67, M.A.

PROBASCO, PETER M. - 1966 - Agent, Agricultural Farm Management, and Associate Professor of Extension (Palmer) (1969)
University of Minnesota '56, B.S.; '61, M.A.

PROKOPOWICH, LUCIEN - 1969 - Assistant Professor of Military Science (1969)
University of Massachusetts '53, B.S.; Maj., U.S. Army

PROZESKY, DONALD P. - 1968 - Assistant Professor of Geography (1969), Institute of Social, Economic and Government Research
McGill University '66, B.S.

PULPAN, HANS - 1968 - Assistant Professor of Geophysics (1968), Geophysical Institute
Montainistische Hochschule Leoben, Austria '61, Dipl. Eng.; University of Illinois '64, M.S.; '68, Ph.D.

PURINTON, ROYCE D. - 1969 - Senior Research Assistant (1969), Institute of Marine Science
Bates College '61, B.S.; University of Massachusetts '63, M.A.

RAE, KENNETH M. - 1961 - Vice President for Research and Advanced Study, and Professor of Marine Science (1963)
University College, London '35, B.Sc.; '58, Ph.D.

RAO, PEMMASANI DHARMA - 1966 - Associate Professor of Coal Technology (1968), Mineral Industry Research Laboratory
Andhra University '52, B.Sc.; '54, M.Sc.; Pennsylvania State University '59, M.S.; '62, Ph.D.

RASCHE, GERTRUDE G. - 1965 - Professor of English (1965)
University of Wisconsin '29, B.A.; Yale University '31, M.A.; Cornell University '39, Ph.D.

RASCHE, HERBERT H. - 1967 - Head, Department of Geography, and Professor of Geography (1967)
University of Wisconsin '29, B.A.; '34, M.A.; Harvard University '53, Ph.D.

RAUSCH, ROBERT - 1968 - Associate of Wildlife Management (1969)
Ohio State University '42, B.A.; '45, D.V.A.; Michigan State University '46, M.S.; University of Wisconsin '49, Ph.D.

RAY, CHARLES K. - 1957 - Professor of Education (1960)
University of Colorado '51, B.A.; Columbia University '55, M.A.; '59, Ed.D.

RAY, DIPAK K. - 1964 - Visiting Professor (1969), Geophysical Institute
Calcutta University '52, B.Sc.; '54, M.Sc.; University of Alaska '67, Ph.D.

REEBURGH, WILLIAM S. - 1968 - Assistant Professor of Marine Science (1968), Institute of Marine Science
University of Oklahoma '61, B.S.; Johns Hopkins University '64, M.A.; '67, Ph.D.

REED, SUELLEN H. - 1969 - Acquisition Circulation Librarian (1969), Anchorage Community College
University of Alabama '69, B.S.

REGNIER, PHYLLIS R. - 1969 - Home Economics Agent, and Instructor of Extension (Homer)
University of Illinois '64, B.S.; '69, M.Ed.

REINWAND, KURT F. - 1968 - Head, Department of Journalism, and Assistant Professor of Journalism (1969)
Central Michigan University '66, B.S.; '67, M.S.

RENNER, LOUIS L. - 1965 - Associate Professor of German (1969)
Gonzaga University '50, A.B.; '51, M.A.; University of Santa Clara '58, M.S.T.; University of Munich '65, Ph.D.

RESTAD, SIGMUND - 1968 - Executive Officer (1968), Alaska Agricultural Experiment Station (Palmer)
University of Minnesota '53, B.A.; '54, M.A.

RICE, ELBERT F. - 1953 - Professor of Civil Engineering (1957)
University of Idaho '48, B.S.; Oregon State College '49, M.S.; '55, Ph.D.

RICH, LEROY E. - 1964 - Bookstore Manager (1964)
Colorado State University '54, B.A.

ROBERTS, JOE HUNTER - 1968 - Instructor of Sociology (1968)
Muskegon Community College '62, A.B.A.; Western Michigan University '66, B.S.; University of Oregon '68, M.S.

ROBERTS, THOMAS D. - 1966 - Head, Department of Electrical Engineering, and Associate Professor of Electrical Engineering (1969)
University of Alabama '59, B.S.; Oregon State University '65, Ph.D.

ROBINSON, BILLIE JEANNE - 1969 - Practical Nursing Instructor (1969), Anchorage Community College
University of Hawaii '58, B.S.

ROGERS, GEORGE W. - 1961 - Professor of Economics (1968), Institute of Social, Economic and Government Research
University of California at Berkeley '42, B.A.; '43, M.A.; Harvard University '50, Ph.D.

ROMICK, GERALD J. - 1956 - Associate Professor of Geophysics (1967), Geophysical Institute
University of Alaska '52, B.S.; '64, Ph.D.; University of California at Los Angeles '54, M.S.

ROSENBERG, DONALD H. - 1964 - Assistant Professor of Marine Science (1966), Institute of Marine Science
Oregon State University '60, B.S.; '63, M.S.

ROSENMANN, MARIO G. - 1963 - Assistant Professor of Zoophysiology (1968), Institute of Arctic Biology
University of Chile '50, B.S.

ROUSSEAU, CHARLES G. - 1969 - Teaching Technician (1969), Anchorage Community College

ROWINSKI, LUDWIG J. - 1957 - Director of the University Museum, and Associate Professor of Museum Science (1968)
Cornell '51, B.S.; University of Alaska '58, M.S.

ROYER, THOMAS - 1969 - Assistant Professor of Marine Science (1969), Institute of Marine Science
Albion College '63, B.A.; Texas A & M University '66, M.S.; '68, Ph.D.

RUTHROFF, WINIFRED V. - 1967 - Instructor of English (1967), Juneau-Douglas Community College
Colorado State College '45, B.A.; San Jose State College '64, M.A.

RYBERG, H. THEODORE - 1963 - Director of Libraries, and Professor of Library Science (1963)
Gettysburg College '55, A.B.; Western Reserve University '57, M.S.

SALISBURY, LEE H. - 1955 - Head, Department of Speech, Drama and Radio, and Professor of Speech and Theatre (1967)
New York University '49, B.S.; Columbia University '50, M.A.

SAMUELSON, HULDAH B. - 1958 - Agent, Home Economics, and Assistant Professor of Extension (Anchorage) (1963)

SAN CHEZ, ANNE - 1969 - Instructor of English (1969)
Washington State University '49, B.A.; St. Margaret's House '55, M.A.; Church Divinity School of Pacific '56, B.D.; University of Alaska '69, M.A.T.

SANDBERG, HARLEM D. - 1965 - State 4-H and Youth Leader, and Associate Professor of Extension (College) (1969)
University of Minnesota '55, B.S.; Michigan State University '64, M.A.

SARGENT, CHARLES - 1953 - Executive Director, Office of Planning and Development, and Professor of Civil Engineering (1967)
University of Idaho '48, B.S.C.E.; Stanford University '58, M.S.

SAUNDERS, A. DALE - 1959 - Assistant Professor of Economics (1968), Alaska Agricultural Experiment Station (Palmer)
Purdue University '48, B.S.; Montana State College '50, M.S.

SCARBOROUGH, WILLIAM B. - 1969 - Marketing Specialist, and Associate Professor of Extension (College) (1969)
New Mexico State University '50, B.S.; '65, M.S.

SCHAEFER, THOMAS E. - 1969 - Acting Head, Department of Business Administration and Associate Professor (1969)
Santa Clara University '58, B.A.; Loyola University '59, M.A.; Georgetown University '62, Ph.D.; University of San Francisco '68, M.B.A.

SCHELL, DONALD M. - 1969 - Senior Research Assistant (1969), Institute of Marine Science
New Bedford Institute of Technology '62, B.S.; University of Alaska '64, M.S.; '69, Ph.D.

SCHINDLER, JOHN F. - 1961 - Assistant Director, Naval Arctic Research Laboratory, and Assistant Biologist
Michigan State University '53, B.S.; '54, M.S.

SCOTT, DON - 1969 - Head, Student Activities (1969)
Otterbein College '65, B.S.; California State College, Los Angeles '68, M.S.

SCOTT, JAMES A. - 1968 - Executive Officer (1968), Institute of Social, Economic and Government Research
University of Alaska '63, B.B.A.; '69, M.B.A.

SENUNGETUK, RONALD WILLIAM - 1961 - Assistant Professor of Design (1963), Statewide Services
Rochester Institute of Technology '58, A.A.S.; '60, B.F.A.

SEVERNS, VIRGIL D. - 1961 - Agent, Agriculture, and Associate Professor of Extension (Yuko-Kwim District) (1968)
Kansas State University '51, B.S.; '56, M.S.

SHARMA, GHANSHYAM DATT - 1963 - Associate Professor of Marine Science (1969), Institute of Marine Science
Benaras Hindu University '52, B.S.; Swiss Federal Institute of Technology '58, Diploma of Engineering Geology; University of Michigan '61, Ph.D.

SHERIDAN, J. ROGER - 1964 - Head, Department of Physics, and Associate Professor of Physics (1969)
Reed College '55, B.A.; University of Washington '64, Ph.D.

SHORT, EUGENE - 1962 - Dean, Anchorage Community College, and Associate Professor of Education (1962)
College of the Pacific '41, A.B.; Stanford University '58, M.A.

SIEMENS, WILLIAM G. - 1969 - Assistant Professor of Psychology (1969), Anchorage Community College
Wheaton College '57, B.A.; Pepperdine College '58, M.A.; Claremont Graduate School '68, Ph.D.

SILVER, ALAN HOWARD - 1969 - Instructor of Physical Education (1969)
Pierce Junior College '65, A.A.; Fresno State College '68, B.A.; California Polytechnic '69, M.S.

SIMPSON, DONVAL R. - 1969 - Project Coordinator for THEMIS (1969), Institute of Arctic Biology
Berea College '50, A.B.; Appalachian State University '57, M.A.; Louisiana State University '66, M.A.

SIMPSON, GLEN C. - 1969 - Instructor in Art and Design (1969)
Rochester Institute of Technology '68, B.F.A.

SIMPSON, JAMES L. - 1962 - Assistant Professor of Education (1966), Ketchikan Community College
Lewis and Clark College '50, B.S.; '54, M.Ed.

SLAUGHTER, CHARLES W. - 1969 - Associate in Land Resources (1969)
Washington State University '62, B.S.; Colorado State University '68, Ph.D.

SLOTNICK, HERMAN E. - 1955 - Head, Department of History, and Professor of History (1966)
University of Idaho '39, B.A.; University of Washington '58, Ph.D.

SLOTNICK, MARY H. - 1964 - Assistant Professor of English (1966)
University of Washington '45, B.A.; University of Alaska '59, M.A.

SMITH, G. WARREN - 1968 - Head, Department of Chemistry and Chemical Engineering, and Associate Professor of Chemistry (1968)
Grinnell College '62, B.A.; Cornell University '66, Ph.D.

SMITH, JEWEL BUSCH - 1967 - Assistant Professor of Home Economics (1967)
University of Wisconsin '46, B.S.; University of New Mexico '57, M.A.

SMITH, RALPH B. - 1962 - Assistant Professor of History (1962)
Ohio State University '47, B.A.; '56, B.F.A. and B.Sc. in Ed.; Rice University '48, M.A.

SMITH, ROBERT L. - 1965 - Dean, College of Business, Economics and Government, and Associate Professor of Political Science (1968)
College of St. Joseph '54, B.A.; University of Oklahoma '55, M.A.; American University '64, Ph.D.

SMITH, RONALD L. - 1968 - Assistant Professor of Zoology (1968)
Occidental College '64, B.A.; University of Miami '67, M.S.; '68, Ph.D.

SMITH, STEPHEN LOWELL - 1969 - Assistant Professor of Journalism (1969)
University of Montana '65, B.A.; '69, M.A.

SMITH, WILLIAM H. - 1964 - Associate Professor of Library Science (1969)
Iowa State College '58, B.S.; Simmons College '60, M.S.L.S.

SMITH, WILLIAM LEONARD - 1967 - Assistant Professor of Physical Education (1967)
Western State College '54, B.A.; '58, M.A.

SNYDER, ROBERT - 1968 - Assistant Professor of Forest Economics (1968), Institute of Social, Economic and Government Research
University of Illinois '61, B.S.; Oregon State University '62, M.F.

SOLLI, GEORGE A. - 1965 - Associate Engineer, Planning Office (1968)
University of Connecticut '58, B.S.E.

SOMMER, WASSILY - 1967 - Instructor of Art (1969), Anchorage Community College
Fleischer School '55; Philadelphia Museum of Art '56; Pennsylvania Academy of Fine Arts '59

SPARTZ, GEORGE - 1967 - Associate Professor of Sociology (1967)
Montana State University '50, B.A.; University of Utah '53, M.S.W.

SRIVASTAVA, BRAHMA NAND - 1965 - Associate Professor of Physics (1969), Geophysical Institute
St. Andrews University '54, B.Sc.; University of Allahabad '56, M.S.; '62, Ph.D.

SRIVASTAVA, R. N. - 1969 - Senior Research Assistant (1969), Geophysical Institute
Delhi University '59, B.S.; '62, M.S.; University of Georgia '69, M.S.

STANLEY, GLENN M. - 1963 - Associate Professor of Geophysics (1969), Geophysical Institute
Oregon State College '50, B.S.; '55, M.S.

STEVENSON, FREDERICK MURRAY - 1969 - Instructor of Physical Education (1969)
University of Manitoba '68, B.P.E.; Colorado State University '69, M.Ed.

STICKNEY, ROLAND F. - 1966 - Associate Professor of Education (1967), Southcentral Regional Center
Plymouth Teachers College '54, B.Ed.; Boston University '55, M.Ed.; '66, Ed.D.

STONE, DAVID B. - 1966 - Associate Professor of Geophysics (1967), Geophysical Institute
University of Newcastle Upon Tyne '63, Ph.D.

STOWELL, ANN BUSS - 1966 - Assistant Professor of French and German (1966), Anchorage Community College
University of Minnesota '28, M.A.

STRINGER, WILLIAM - 1965 - Senior Research Assistant (1965), Geophysical Institute
New Mexico State University '62, B.S.; University of Alaska '66, M.S.

STUART, CHARLOTTE - 1967 - Assistant Professor of Accounting (1967), Southcentral Regional Center
University of Wichita '58, B.A.; '61, M.B.A.

SUBBARAO, KAIGALA VENKATA - 1969 - Assistant Professor, Institute of Marine Science (1969)
M.R. College '59, B.Sc.; Andhra University '61, M.Sc.;
S.V. University '65, Ph.D.

SUCHANNEK, RUDOLPH G. - 1966 - Senior Research Assistant (1966), Geophysical Institute
University of Hamburg '53, B.S.; '57, M.S.

SULLIVAN, JAMES W. - 1967 - Statistical Programs Specialist (1968), Institute of Social, Economic and Government Research
University of Illinois '57, B.S.

SULLIVAN, ROBERT A. - 1967 - Assistant Professor of Mathematics (1967)
St. Bonaventure University '52, B.S.; '61, M.S.

SULLIVAN, TROY G. - 1965 - Associate Professor of Education (1967), Southcentral Regional Center
North Texas State Teachers College '48, B.S.; '50, M.S.;
'65, Ed.D.

SUNNELL, AGNES S. - 1960 - Home Economics Leader, and Associate Professor of Extension (College) (1961)
University of Washington '30, B.S.; Washington State University '44, M.S.

SVENNINGSON, ALLEN R. - 1967 - Associate Professor of Physical Education (1967)
Winona State College '58, B.S.; Colorado State College '61, M.S.

SWARTZ, L. GERALD - 1957 - Head, Department of Biological Sciences, and Associate Professor of Zoology (1962)
University of Illinois '53, B.S.; '54, M.S.; '58, Ph.D.

SWEET, LARRY - 1966 - Associate Supervisory Engineer (1969), Geophysical Institute
Washington State University '63, B.S.

SWICK, WILLIAM A. - 1963 - Coordinator, Civil Defense Education Program (Anchorage) (1965)
Allegheny College '48, B.A.; Syracuse University '55, M.S.Ed.

SWIFT, DANIEL W. - 1963 - Associate Professor of Geophysics (1964), Geophysical Institute
Haverford College '57, B.A.; Massachusetts Institute of Technology '59, M.S.

SYKES, DWANE J. - 1967 - Head, Department of Land Resources and Agricultural Science, and Associate Professor of Land Resources (1967)
Utah State University '60, B.S.; Iowa State University '63, Ph.D.

TARNSTROM, GUY L. - 1969 - Senior Research Assistant (1969), Geophysical Institute
Reed College '65, B.S.

TAURIAINEN, MICHAEL J. - 1969 - Assistant Engineer (1969), Arctic Environmental Engineering Laboratory
University of Alaska '67, B.S.

TEAL, JOHN J. - 1964 - Research Professor of Animal Husbandry and Human Ecology (1965)
Harvard University '44, B.S.; Yale University '46, M.A.

TEAS, JOHN A. - 1961 - Associate Design Engineer (1969), Geophysical Institute
Texas Technology College '61, B.S.E.E.

TERRY, ROBERT A. - 1969 - Assistant Professor of English (1969)
Hendrix College '60, B.A.; University of Arkansas '63, M.A.; University of Arizona '69, Ph.D.

THEOPHILUS, DONALD R JR. - 1968 - Academic Vice President, and Professor of Education (1968)
University of Idaho '53, B.A.; Harvard Business School '58, M.B.A.; University of Michigan '67, Ph.D.

THOMAS, DINAH WOLFE - 1967 - Instructor and Curator (1969), University Museum
State University of Iowa '61, B.A.

THOMAS, MARGIE JEAN - 1969 - Assistant Professor of Library Science (1969)
Florida State University '64, B.A.; Columbia University '66, M.S.

THOMPSON, ELDON - 1964 - Design Engineer (1969), Geophysical Institute
University of Alaska '64, B.S.E.E.

THOMPSON, WILLARD M. - 1969 - Professor of Business Administration (1969)
State University of Iowa '38, B.A.; '41, M.A.; New York University '53, Ed.D. Ed.D.

TIEDEMANN, JAMES B. - 1966 - Head, Department of Mechanical Engineering, and Professor of Mechanical Engineering (1966)
University of Wisconsin '45, B.S.; '49, M.S.; '55, Ph.D.

TOMCZAK, THERESA HELEN - 1966 - Assistant Professor of Physical Education (1966)
State University College of New York '61, B.S.; Syracuse University '66, M.S.

TREMARELLO, ANN - 1959 - Assistant Director of Admissions, and Assistant Registrar (1961)
University of Alaska '57, B.B.A.

TREMARELLO, JOSEPH MICHAEL - 1969 - Head, Student Services (1969)
University of Alaska '58, B.Ed.; '68, M.Ed.

TRIPLEHORN, DON MURRAY - 1969 - Associate Professor of Geology (1969)
Ohio Wesleyan University '56, B.A.; Indiana University '57, M.A.; University of Illinois '61, Ph.D.

TURNER, JOHN L. - 1966 - Assistant Professor of Education (1966)
McMurray College '51, B.S.; North Texas State University '55, M.Ed.; New Mexico State University '66, Ed.S.

TURNER, KENNETH - 1967 - Master of R/V ACONA (1967), Institute of Marine Science
Kildalls Nautical School

TURNER, PATRICIA - 1967 - Assistant Professor of Office Administration (1969)
Southern Methodist University '51, B.B.A.; North Texas State University '54, M.B.E.

TUSSING, ARLON - 1965 - Associate Professor of Economics (1967), Institute of Social, Economic and Government Research
University of Chicago '50, A.B.; Oregon State College '52, B.S.; University of Washington '65, Ph.D.

TYSON, BARBARA J. - 1968 - Assistant Professor of Physical Education (1968)
Texas Woman's University '57, B.S.; Brigham Young University '63, M.S.

UNDERWOOD, MARTIN B. - 1967 - Head, Safety and Security (1967), Physical Plant
Boston College '47, B.S.

VAN CLEVE, KEITH - 1967 - Assistant Professor of Forestry (1967)
University of Washington '58, B.S.; University of California at Berkeley '60, M.S.; '67, Ph.D.

VAN FLEIN, HELMUT G. - 1963 - Head, Department of Art, and Associate Professor of Art (1965)
Schwaebisch Hall Teachers College '44, B.Ed.; Paedagogisches Institute Esslingen '48, M.Ed.; Art Academy Stuttgart '51, M.F.A.; University of Colorado '58, M.F.A.

VAN HYNING, JACK M. - 1968 - Associate Professor of Fisheries Biology (1968)
University of Washington '48, B.S.; University of Miami '51, M.S.; Oregon State University '68, Ph.D.

VANKOOTEN, MARJORIE A. - 1969 - Practical Nursing Instructor (1969), Anchorage Community College

VAN VELDHUIZEN, PHILIP A. - 1963 - Associate Professor of Mathematics (1966)
Central College '52, B.A.; State University of Iowa '60, M.S.

VAN WICKLE, THOMAS C. - 1969 - Instructor of Electronics Technology (1969)

VAUDRIN, WILLIAM H. - 1968 - Instructor of English (1968), Anchorage Community College
Anchorage Methodist University '66, B.A.

VERMILLION, MAURICE - 1969 - AVEC, Diesel Mechanics Instructor (1969), Anchorage Community College

VINCENT, JOHN L. - 1969 - Vocational Technical Coordinator (1969), Anchorage Community College
University of Notre Dame '55, B.A.

VLASAK, PETRE - 1969 - Research Associate (1969), Institute of Arctic Biology
Charles University of Prague '64, B.S.; '69, Ph.D.

WAGNER, JAN - 1969 - Senior Research Assistant (1969), Institute of Water Resources
Cleveland State University '67, B.S.

WALLIS, DON D. - 1968 - Senior Research Assistant (1968), Geophysical Institute
University of Alberta '65, B.Sc.; University of Calgary '67, M.Sc.

WALSH, ANN LOUISE - 1966 - Head, Department of Home Economics, and Associate Professor of Home Economics (1968)
University of California at Santa Barbara '44, B.A.; Oregon State College '60, M.S.

WARINER, DEAN - 1969 - Assistant Director (1969), University Relations
San Diego State College '65, B.A.

WATSON, GORDON W. - 1969 - Fisheries Resources Specialist (1969), Institute of Social, Economic and Government Research
University of Utah '51, B.S.; University of Michigan '68, M.S.

WATSON, ROWAN - 1969 - Electronics Technician (1969), Anchorage Community College

WEBER, ALBERT F. - 1963 - Senior Instructor of Electronics Technology (1969)
University of Alaska '69, A.E.T.

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