Arizona State University General Catalog 1977-78|1978-79

BULLETIN ARIZONA STATE UNIVERSITY

Arizona State University

General Catalog 1977-78|1978-79

A co eges and departme ts e tab sh certa n academ req rement wr h t be met before a degree s gra ted The e equ rements c ncern such th ngs as c rr cu a a d courses ma ors and m nor an camp s res dence Adv ors d rect r department cha rs a d deans are ava a e to he p the student nderstand and ar ange to meet th ese req rements but the student s resp ns b e for fu f the At the e d f a stude t s u se f st dy f requ eme ts fo graduat n have not been sat sf ed the degree w ot be g anted For th s reaso t s mpo ta t fo a tu dents to acqua t themse ves w th a regu at ons and to rema n current y n formed throughout the r co ege career and to be respons b e for comp et ng re qu rements Courses programs and requ rements descr bed n the cata og may be suspended de eted restr cted supp e mented or changed in any other manner at any t me at the so e d scret on f the U vers ty and the Ar zona Board f Rege ts The cata og does not estab sh a contra tua re at onsh p but t summar zes the tota requ rements wh ch the stude t must present y meet bef re qua fy ng for a fac u ty recommendat on to the Ar zona B ard of Regents to award a degree

Requests for add t ona nformat or sh d be addressed to

DIRECTOR OF ADM SS ONS
AR ZONA STATE UN VERS T
TEMPE AR Z NA 85 81

Ar zona State Un ve s ty reserves t e r ght t change w thout ot e any of the mater a s format n requ rements regu at ons pub shed n th cata og

Ar z na State Un ve ty d e ot d cr m nate the bas s f sex race creed c or age ha d capped r veteran status or nat na or g n n the educat n pr grams or act v t es wh ch t operates a d s requ red by T t e X f the Educat on Amendments of 1972 and the regu at ons adopted pursuant theret T t e V f the C v R ghts Act f 1964 Sect n 503 of the Rehab tat r Act of 1973 and Sect on 402 of the V etnam Era Vetera s Read ustme t Ass stance Act of 1974 not to d scr m nate n such man e The requ rement not to d scr m nate n educa t on programs and act v t es extends to emp oyment there n and to adm ss on thereto nqu r es concern ng the app at o of sa d T t e IX and the pub shed regu at ons to th s Un vers ty may be referred to the n vers ty s Aff rmat ve Act on Off cer or the D rect r of the Off ce for C v R ghts of the Departme t f Hea th Educat on and We fare

Ar zona State n ver ty c mp es w th the Fam y Educat na R ghts a d Pr vacy Act of 1974 as amended see page 14

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Colleges, Schools, Divisions and Departments of Instruction

COLLEGE OF LIBERAL ARTS

Departments: Aerospace Studies, Anthropology, Botany and Microbiology, Chemistry, English, Foreign Languages, Geography, Geology, Health Physical Educat on Recreation and Dance, History, Home Economics, Mass Communications, Mathematics, Military Science, Philosophy, Phys cs, Political Science, Psychology, Center for Public Affairs, Sociology, Zoology

COLLEGE OF ARCHITECTURE

COLLEGE OF BUSINESS ADMINISTRATION

Departments: Accounting, Administrative Services, Economics, Finance, Management, Marketing, Quantitative Systems, Center for Hea th Services Administration

COLLEGE OF EDUCATION

Departments: Elementary Education, Secondary Educ ition, Educational Administration and Supervision, Counselor Educ ition, Center for Higher and Adult Education, Educational Psychology, Special Educat on, Educational Techno ogy and Library Science

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

School of Engineering: Chemical and Bio Engineering, Civil Eng neering, Electr cal and Computer Engineering, Engineering Science, Industrial and Management Systems Engineering, Mechanical Engineering.

Divisions of Agriculture, Construction and Technology.

COLLEGE OF FINE ARTS

Departments: Art, Communic ition and Theatre, Mus c, Center for the Humanities

COLLEGE OF LAW

COLLEGE OF NURSING

CENTER OF CRIMINAL JUSTICE

GRADUATE COLLEGE

SCHOOL OF SOCIAL WORK

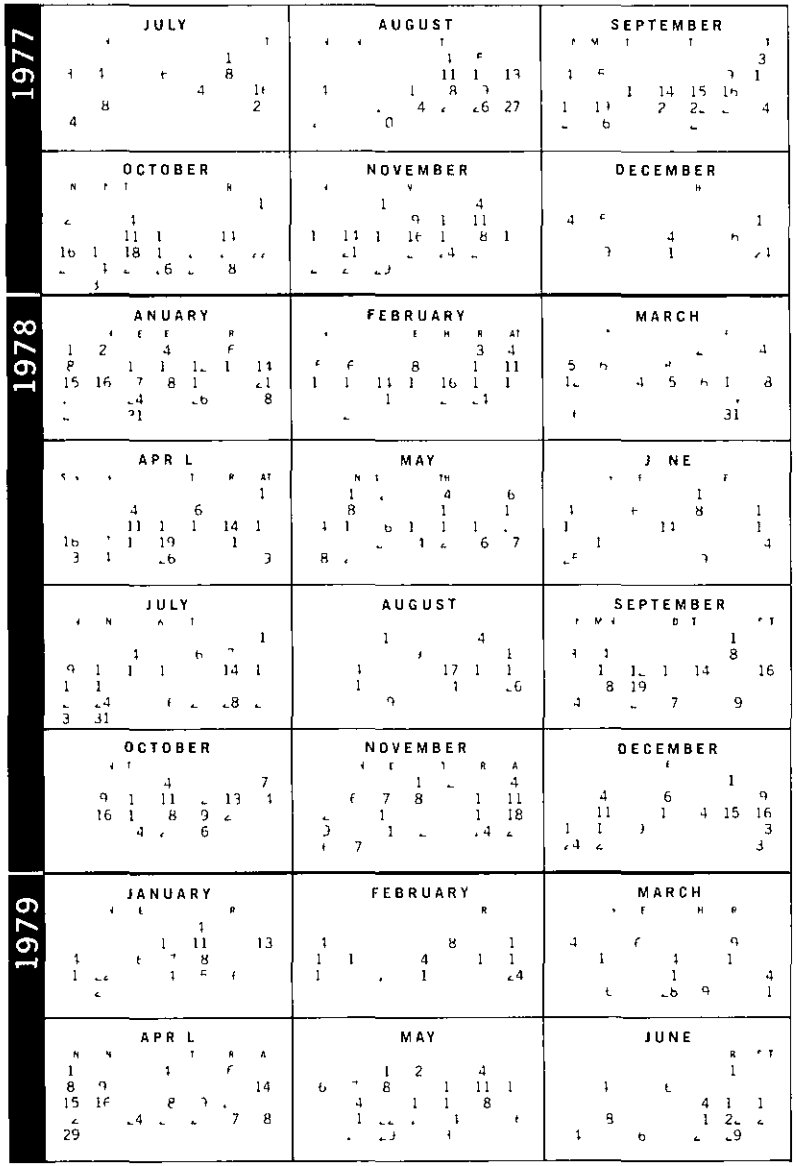
UNIVERSITY EXTENSION AND SUMMER SESSIONS

University Calendar

Fall Semester	1977	1978
Priority Date for Receipt of Undergraduate Admissions or Readmission Credentials	Aug 1, M	July 31, M
First Freshman Assembly	Aug 22, M	Aug 21, M
Orientation and Advisement for New Students	Aug 22 25, M Th	Aug 21 24, M-Th
Registration and Fee Payment	Aug 24 25, W-Th	Aug 23-24, W Th
Instruction Begins	Aug 29, M	Aug 28, M
Late Registration and Drop Add	Aug 31 Sep. 1, W Th	Aug 30-31 W Th
Labor Day Classes Excused	Sep 5, M	Sep. 4, M
Candidates for Bachelor's Degree Must File Application for Graduation by	Sep. 23, F	Sep. 22, F
Last Day To Withdraw from a Course Without Academic Penalty	Oct. 7, F	Oct. 6, F
Veterans Day Classes Excused	Nov. 11, F	Nov. 11, Sa
Thanksgiving Recess Classes Excused	Nov 24 27, Th-Su	Nov. 23 26, Th-Su
Instruction Ends	Dec. 16, F	Dec 15, F
Final Examinations	Dec. 19 23, M-F	Dec. 18 22, M F
Christmas and Mid Year Recess	Dec. 24 Jan. 15, Sa-Su	Dec 23-Jan. 14, Sa Su

Spring Semester	1978	1979
Priority Date for Receipt of Undergraduate Admissions or Readmission Credentials	Dec. 23 F	Dec 22 F
Orientation and Advisement for New Students	Jan 16 18, M-W	Jan. 15 17, M-W
Registration and Fee Payment	Jan 17 18, Tu W	Jan. 16 17, Tu W
Instruction Begins	Jan 19, Th	Jan 18, Th
Late Registration and Drop Add	Jan. 25-26 W-Th	Jan. 24-25, W-Th
Candidates for Bache or's Degree Must File Application for Graduation by	Feb. 15, W	Feb. 14, W
Washington's Birthday Classes Excused	Feb 20, M	Feb 19, M
Last Day To Withdraw from a Course Without Academic Penalty	Mar. 1, W	Feb. 28, W
Spring Recess Classes Excused	Mar 25 Apr 2, Sa Su	Mar. 17 25 Sa Su
Instruction Ends	May 12, F	May 11, F
Final Examinations	May 15-19 M F	May 14 18 M F
Commencement Exercises	May 19, F	May 18, F

Summer Sessions	1978	1979
First Five Week Registration	June 5, M	June 4, M
Instruction Begins	June 6, T	June 5, T
First Five-Week Session Ends	July 8, Sa	July 7, Sa
Second Five Week Registration	July 10, M	July 9, M
Instruction Begins	July 11, T	July 10, T
Second Five Week Session Ends	Aug 12, Sa	Aug. 11, Sa
Eight-Week Registration	June 5, M	June 4, M
Instruction Begins	June 6, T	June 5, T
Eight-Week Session Ends	July 29, Sa	July 28, Sa



Organization, History, General Information

Objectives

Arizona State University educates for leader ship and responsible citizenship. Increased competence, improved moral and ethical standards, expanded cultural horizons, and enhanced ability to seek answers to fundamental questions of human concern are the objectives of the University

Organization

Established in 1885 as the Arizona Territorial Normal School, Arizona State University is one of three major institutions governed by the Arizona Board of Regents, a body corporate and politic with perpetual succession under the Constitution and laws of Arizona The Board consists of eight citizens appointed by the Governor of the State for terms of eight years, with the elected Governor and State Superintendent of Public Instruction as members *ex officio*. The Regents govern the University of Arizona (Tucson), Northern Arizona University (Flagstaff), and Arizona State University

The Regents select and appoint the President of the University, who is the chief executive officer and the regular means of communication between the Board of Regents and the institution The President is aided in the administrative work of the institution by Vice Presidents, Deans, Faculties, Directors, Departmental Chairs and other officers.

The faculties and students of the University play an important role in educational policy, with a Faculty Senate, joint University committees and boards, and the Associated Students serving the needs of a large institution A comprehensive system of joint faculty, student, alumni and staff committees provides an exchange of ideas and collaboration on the part of all members of the University In the University's academic organization are the Colleges of Liberal Arts, Architecture, Business Administration, Education, Engineering and Applied Sciences, Fine Arts, Law and Nursing; the School of Social Work; Summer Sessions and University Extension; the Graduate College, and more than 50 units of instruction. These academic agencies develop and effectuate the teaching, research and service programs of the University, aided by the University libraries, museums, and other services.

History of Arizona State University

On February 26, 1885, House Bill 164, An Act to Establish a Normal School in the Territory of Arizona, was introduced in the Thirteenth Legislative Assembly of Arizona Territory by John Samuel Armstrong. The Bill, strongly supported by Charles Trumbull Hayden of Tempe, passed the House on March 6, the Council on March 11, and was signed by Governor F. A. Tritle on March 12, 1885 thereby founding the institution today known as Arizona State University. Instruction was instituted on February 8, 1886, when 33 students met in a single room under the supervision of Principal Hiram Bradford Farmer

The institution began with the broad obligation to provide "instruction of persons in the art of teaching and in all the various branches that pertain to good common school education, also, to give instruction in the mechanical arts and in husbandry and agricultural chemistry, the fundamental law of the United States, and in what regards the rights and duties of citizens."

With the growth of the state, especially the surrounding Phoenix metropolitan areas, the school has carried forward this charter, accompanied by successive changes in scope, name and governance On March 9, 1945, the three state institutions of higher learning came under the authority of one Board of Regents. By vote of the people, on November 4, 1958,

the name Arizona State University replaced the previous name, Arizona State College

Accreditation and Affiliation

Arizona State University is accredited by the North Central Association of Colleges and Secondary Schools Professional programs in the various colleges, schools, divisions and departments are accredited by the corresponding national bodies Arizona State University is a member of the National Association of Universities, and is affiliated with the American Council on Education and other international, national and regional associations

University Campus

Environment

Location. Arizona State University is near the heart of metropolitan Phoenix, in the city of Tempe. Within a few minutes' drive of the campus are the municipalities comprising the fast growing Phoenix area Scottsdale, Mesa, Chandler, Glendale and other communities

Historic and Scenic Features. Nearby are such landmarks as the Apache Trail, the man made lakes of the Salt River Project, Roosevelt and Coolidge Dams, and the Casa Grande National Monument More distant are the internationally famous Grand Canyon of the Colorado, Glen Canyon Dam and Lake Powell, scenic Oak Creek Canyon, American Indian communities, and the Arizona Sonoran desert

Grounds

Campus. Most of the major buildings on the 566 acre campus have been erected during the past 25 years Broad lawns and sub tropical trees provide year round greenery

University Field Laboratory. A 320 acre farm is located six miles southeast of the campus. It is used for experimental and practical work in various phases of agricultural science

Camp Tontozona. Located in the famed Mogollon Rim country near Kohl's Ranch northeast of Payson, this continuing education facility of the University serves the needs of academic departments conducting teaching and research in mountain terrain.

University Libraries and Collections

Year of construction in parentheses

Charles Trumbull Hayden Library (1966).

The University's main library houses 1,250,000 bound volumes and 750,000 units of microfilm in 225,000 square feet of enclosed space. The five story structure has seating for 1,500 persons, including 150 study carrels and 65 faculty studies Among the special collections are the Arizona Collection, Curriculum Laboratory, the Papers of Carl Hayden, Barry Goldwater and John J. Rhodes, the Solar Energy Society Collection, and the Jimmy Starr historical collection on American film

Architecture Library. In addition to a major collection of books and periodicals, this library also contains the Paolo Soleri archives

Arizona Historical Foundation Library. Under a cooperative agreement with ASU, the Foundation's library of several thousand volumes is housed in the Charles Trumbull Hayden Library.

Law Library. A growing collection of some 145,000 volumes is located in the John S Armstrong Law Building The facility is designed to house 200,000 volumes

Music Research Facility. In addition to the major collection of music scores, books and periodicals housed in the Music Library, the Music Building also contains the Pablo Casals International Cello Library, the Laura Boulton Collection of World Music and Musical Instruments, the Wayne King Collection and the International Percussion Library

University Buildings

Memorial Union. The Memorial Union is a community center for all members of the University students, faculty, administration, staff, alumni, and their guests The Union offers a variety of services and facilities as well as a diverse program of cultural, educational, social and recreational activities The building offers comfortable lounges, two ballrooms, a TV room, a movie house and an art gallery. Diversified dining and meeting rooms are available for use by officially registered University organizations, departments, and colleges. Reservations for the use of these facilities are made with the Memorial Union Reservation Office

On the main level of the Memorial Union is an all University Information Desk including lost and found, a notary public, lending library, and campus courtesy phones. Other services in the MU include the various food services, the MU Activities Center, the MU Recreation Center, the University Bookstore, University Housing Office, the MU Barber shop, and the Associated Students Offices and Activity Center.

The MU Activities Center includes two photography labs, a music listening unit, photocopying machine, ditto and mimeograph service, free manual typewriters, staplers, and other office supply materials. The Union program staff and student committees who plan programs throughout the year are also located here Programs include "pop ups" live, mid day entertainment, film festivals, seasonal events, art exhibits nationally prominent and local speakers, and short courses in crafts, photography, and other interest areas. Students are involved in the planning and the implementation of these activities and the

committee participation is voluntary and open to any student enrolled at ASU

The Recreation Center is open for the enjoyment of all members of the University. This fully equipped Center provides pool tables, bowling lanes and a variety of table games at a low cost for leisure time activities and fully organized tournaments. Campus tournaments in billiards, table tennis, chess, air hockey, bridge and foosball are held during the fall semester. The winners proceed to a regional tournament and, if successful to the national level. ASUMU bowling team try outs are held at the beginning of each semester, and the teams participate in state and national tournaments. Sponsorship is provided by the Association of College Unions International, and the MU Recreation Center is an active participant in this program. The MU Chess Club is very active, with memberships available in the Center and sets provided for the members' use. The Memorial Union Chess Association is an affiliate of the U.S. Chess Federation.

Physical Education bowling classes are taught each semester on the Brunswick Astroline lanes and faculty, staff and student leagues fill the evenings with open bowling during most of the regular hours.

Academic Services Building (1951). University Extension and Summer Sessions; Payroll and Personnel Departments, Career Services, Computer Services, facilities, News Bureau.

Administration Building (1951). University administration and business offices.

Agriculture Building (1948). Divisions of Agriculture, Center of Criminal Justice.

Anthropology Building (1914). Department of Anthropology.

Architecture Building (1970). College of Architecture.

John S. Armstrong Law Building (1967). College of Law.

Art Building (1970). Department of Art.

George M. Bateman Physical Sciences Center (1959, 1965, 1968, 1976). Departments of Chemistry, Geology, Mathematics, Physics, Philosophy; Center for Meteorite Studies, Cancer Research Center.

Business Administration Building. 1968 and 1970). College of Business Administration, Center for Executive Development.

Central Plant (1960). Central heating and cooling.

Ceramics Annex (1975). Art Department.

Danforth Meditation Chapel (1947). Ecumenical campus ministry offices and chapel.

Education Complex: Hiram Bradford Farmer Education Building (1961), Ira D. Payne Hall (1969); Education Lecture Hall (1969). College of Education.

Engineering Center (Wings A through F, 1957; Wing G, 1964). College of Engineering and Applied Sciences, University Computer Center; Engineering Research Center.

Environmental Center (1959, 1972). Lower Colorado River Research Laboratory and Climatology Laboratory.

Fine Arts Annex (1909). Studios and offices of the Art Department.

Forest Hydrology Building (1964). Rocky Mountain Forest and Range Experiment Station of the U.S. Forest Service.

Dixie Dees Gammage Hall (1941). College of Fine Arts; Institutional Studies, Nursing, and College of Education offices.

Grady Gammage Memorial Auditorium (1964). (See Education Resources and Services below.)

Garage and Motor Pool (1972).

Charles A. Haigler Hall (194). Intercollegiate Athletics; Intramurals; Media Research and Development; Division of Agriculture.

Charles Trumbull Hayden Library (1966). (See previous description.)

Home Economics Building (1951 and 1968). Department of Home Economics. Adjacent building houses research facility for the Center for Family Life Studies.

Frederick M. Irish "A" (1940). College of Business Administration and Department of Administrative Services.

Robert R. Krause Hall. 1955). Center for the Humanities.

Language and Literature Building. 1965 and 1971). Departments of English, Foreign Languages and Geography; Speech and Hearing Clinic.

Life Sciences Center (1959, 1963, 1971). Departments of Botany and Microbiology, and Zoology, Animal Resource Center.

Lyceum Theater (1939). University Theatre.

McAllister Office Complex (1975). Art, Music, Communication and Theatre, Technology, DWI Project, University Veterinarian.

A. J. Matthews Center (1930). University Art Collections, Vice President for Student Affairs; Student Services, Nursing.

Carrie Matthews Hall. 1958). Offices for faculty of various departments.

Memorial Union (1956, 1970. See previous description.)

Moeur Administration Building (1939). Registrar; Director of Admissions, Graduation Office, Orientation Office.

John R. Murdock Hall (1969). Lecture Halls.

Music Building (1971). Department of Music, Music Research, Music Theatre.

L. S. Neeb Hall (1969. Lecture Hall.

Nursing Building (1966). College of Nursing.

Old Main Building (1894). Departments of

Aerospace Studies and Military Science

William Guthrie Packard Stadium (1974) Baseball field.

Payne Laboratory School (1928) Departments of Communication and Theatre, and Art.

Physical Education Building East (1966) Dance; women's athletics, Department of Health, Physical Education, Recreation and Dance.

Physical Education Building West (1952). Department of Health, Physical Education, Recreation and Dance; Parking, Tuition Status and other offices; Intramural Coordinator.

Physical Plant (1966). Planning and Construction; University Police; maintenance shops.

Psychology Building (1972) Department of Psychology.

Purchasing and General Stores (1951)

Social Sciences Building (1960). College of Liberal Arts; Departments of History, Political Science, Sociology; Centers of Asian Studies, American Studies, Latin American Studies, Public Affairs

Ritter School Building (1976) Audiovisual Services, Central Mailing, Mail Service, Printing Service, Psychological Testing Assessment, Bureau of Publications.

Rural Road Offices (1975). Studios, offices and instructional laboratories for Art Department

Joe Selleh Field and Sun Angel Stadium (1967, 1976). Track and field facility

Charles A. Stauffer Communication Arts Building (1973). Departments of Mass Communications and Communication and Theatre, KAET Channel 8 studios

Student Health Service (1969) Infirmary

Sun Devil Stadium (1958) Football stadium

Swimming Pool (1957)

Technology Center (1964, 1967). Division of Technology.

Tontozona Outdoor Education Center (1974)

University Activity Center (1974). University convocation hall; Intercollegiate Athletics offices.

University Archives Building (1907). University Archivist

129 E. University Drive (1965, 1976) Special Services. Solar Energy Research (College of Architecture).

West Hall (1936) School of Social Work

Whiteman Tennis Center and Sun Devil Club Stadium (1976).

George W. Wilson Hall (1956) Graduate College; Graduate Admissions, University Counseling Services, Administrative Systems and Programming; University Research and Grants

Residence Halls

M. O. Best (1956, 1967)

Charles Trumbull Hayden (1951).

Frederick M. Irish "B" (1940)

James H. McClintock "A" (1951), "B" (1956).

Manzanita (1967).

Mariposa (1969). Graduate student resident center; Alumni Center; Development Office

Ocotillo Hall (1967)

Palo Verde East (1963).

Palo Verde Main (1958) Sorority housing.

Palo Verde West (1964)

Sahuaro (1958).

Adelphi Drive Housing (1954). Five units for small-group housing.

Alpha Drive Housing (1962). Ten units for small group housing.

Education Resources and Services

Grady Gammage Memorial Auditorium, Center for the Performing Arts at Arizona State University, was designed by Frank Lloyd Wright and was named for the late President Gammage. This versatile auditorium seats 3,000 and has won wide acclaim for its design and acoustics. In addition to the great hall and related facilities (including the Aeolian Skinner organ contributed by Hugh W. and Barbara V. Long, largest pipe organ in the state), the building contains classrooms and workshops for the College of Fine Arts.

University Art Collections. On display in Mathews Center, the collections include paintings in oil, watercolor and tempera, numerous works of sculpture and ceramics, and an extensive print collection. The Collection of American Art, founded by the late Oliver B. James, is permanently on display. Selections from the collections of Mr. and Mrs. Read Mullan, Mr. and Mrs. Orme Lewis, Lewis and Lenore Ruskin, Mrs. Henry Luce, Edward Jacobson, and Mr. and Mrs. Joseph Thomas are shown periodically. Special showings of significant traveling exhibitions are scheduled throughout the year.

Computer Services. Accessible through several remote locations on campus, this facility serves the research, teaching, experimental and administrative data processing needs for the campus. All inquiries should be directed to the Office of the Assistant Vice President for Computer Services located in the Academic Services Building.

Television Station KAET. KAET Channel 8, Phoenix, is licensed and owned by the Arizona Board of Regents and operated by Arizona State University. Studios of the award winning station are located in the Stauffer Communication Arts Building. The station is affiliated with Public Broadcasting Service

(PBS), and broadcasts daily from 7:00 a.m. to midnight. Program information is available from the KAET program manager.

Audiovisual Services. This University agency is responsible for selection, design, acquisition, production, storage, repair and circulation of instructional media and support equipment. Located in the Ritter School Building, it consists of the Film Library, equipment circulation, photography service, closed circuit television, equipment repair and media production departments. A media production lab is open to the University community.

Undergraduate Program

Student Membership in the University

The major purposes of a University include the exchange of knowledge and the pursuit of wisdom, conducted in an environment which encourages reasoned discourse, intellectual honesty, openness to constructive change and respect for the rights of all individuals. By accepting membership in this community, one neither surrenders rights nor escapes fundamental responsibilities as a citizen, but acquires rights as well as responsibilities to the whole University community.

Attendance at the University is a voluntary entrance into the academic community, and the student voluntarily assumes obligations of performance and behavior reasonably imposed by the institution relevant to its lawful processes and functions.

Under the Constitution and laws of the State of Arizona, jurisdiction and control over Arizona State University are vested in the Arizona Board of Regents. The Board of Regents and its agents the President, administration and faculty are granted broad legal authority to regulate student life, subject to basic standards of reasonableness. In exercising this authority, the University is guided as well by considerations of educational policy.

In developing responsible student conduct, the University prefers counseling, guidance, admonition and example. However, when these means fail to resolve problems of student conduct and responsibility, charges may be heard by the University Trial Board, whose members are students and teaching faculty, to determine if there has been a violation of predefined standards of conduct. On the basis of its findings, among the sanctions that the Board may prescribe are the following: 1) warning, 2) admonition, 3) censure, 4) reprimand, 5) suspension of or forfeiture of campus privileges for a definite period of time, 6) probation for a definite period of time, 7) suspension for a definite period of time, and 8) expulsion.

The student has the right to make timely appeal of the Board's decision upon the following grounds: 1) prejudicial error committed during the hearing whereby the aggrieved was deprived of a fair trial, 2) noncumulative material and relevant evidence, new or newly discovered, which, with reasonable diligence, could not have been produced at the trial, 3) the decision or judgment is not supported nor justified by the evidence, 4) the penalty or sanction imposed was excessive, and 5) the penalty or sanction was insufficient. Pending final action on charges brought against a student by the University, the status of a student is not altered; nor is the student's right to attend class suspended, except for reasons relating to the safety of students, faculty or University property.

The immediate concern of the University is with student behavior on campus and at University sponsored events off campus.

Misconduct for which students are subject to University discipline falls into the general areas of:

1) Academic dishonesty—cheating in examinations, laboratory work, written work (plagiarism), forging or altering University records; that is, any attempt to gain credit for work not performed by the student;
2) Violation of University Regulations;
3) Individual and group offenses as defined in the *Code of Conduct*.

Details of expected student conduct and administrative procedures in handling disciplinary problems are further elaborated in the *Code of Conduct*.

Family Educational Rights and Privacy Act of 1974 (Buckley Amendment)

Eligible students may inspect and review the r education records. Certain records may re main confidential f the student waives the right of inspection. Waivers signed may be revoked at any time by in eligible student. The subsequent access applies only to those confidential statements and records placed in the file after the date of revocation

Definitions

Eligible Student. For the purposes of tl is Act, an *eligible student* is defined as any indi vidual formally admitted tc and n atriculated at Arizona State U n versity or the parents of a *dependent* eligib e student Dependency is de fined by Section 152 of the Internal Revenue Code of 1954 An individual who has made application to the Un versity but has not been formally admitted shall *not* be included

Students must declare at registration the r dependent status and indiv duals to whom in formation may be released.

Education Records. I ducation records are records (1) directly related to a student, and (2) maintained by the U n versity or by a party acting for the Univers ty The term does not include those records spec fically exc uded by Section 99 3 of the Act

Directory Information. Directory infor ia tion will include the student s name, loc or campus address, loca te ephone nun ber home or off-campus address, date and p ace of b rth, citizenship, tuition and fee status, class evel, major field of study, col ege of enrc llment, participation in officially recognized act v ties and sports, weight and height of n embers of athletic teams, dates of attend ince degrees and awards received, and the most recent pre v ous educationa agency or institution attended by the student. Students h ive the right to request that any of the above informa tion not be disclosed.

Personally Identifiable. Data included are (a) the name of a student, the student's par- ent, or other family member, b) the address of the student, (c) a personal dent fier, such as the student's Soc al Security number or student number, (d) a st of personal ch ir ac teristics or, (e) other informat on which would make the student's ident ty easily traceab e

Record. Any information or d ita recorded n any medium, including, but not lin ted to handw riting, print, tapes, f n , microf m, and microfiche

Location of Policy and Records

The fo lowing school officials ma ntain educa tional records pertaining to students Registrar; Comptroller, Dean of the Gr iduate College; Directors of Admissions, Career Ser vices, Financial Aids, Housing, Specia Services, and University Testing Service; Deans of the Co leges, Chairs of the Depart ments and Academic Advisors; Dean of Students; International Student Adviser; NCAA Facu ty Representative· Coord nators of Intramura s and Orientation The comp ete policy and a list of the records c n f lc and their ocation are availab e at the Reserve Book Desk, Level I, Hayden L brary

Access to Records

All eligible students will h ive access to records as prescribed by the Act

Personally identifiable nfori ation may be disclosed to parents of those students wh > re port *dependency status* at registr ation Based on that report, the University either wil or will not make records available to parents. These forms will be retained by the Regis trar's office

Parents may challenge a student s report by producing the most current copy of their In ternal Revenue Form 1040. If that form ists the student in question as a dependent, the parents will be required to sign an affidavit which affirms that the student is their depen- dent. The affidavit will be retained by the Registrar's Office. Upon receipt of the affida vit, the University will make student records available to parents as spec fied under the Act

Proof of Identification. Before access is al lowed to educational records, the student must display some form of persona identification At the minimum this identif cati n should in- c ude a picture of the student

Copies of Student-Related Records. One copy of student re ated materials to which a student has not waived rights of access may be provided to the student upon written request to the Un versity officia responsible for that record.

Undergraduate Admission

Arizona State University welcomes application for admission from al persons who fee they can qua ify for admission and can benefit fron the University's broad spectrun of educationa programs and serv ces.

Prospective students are encouraged to write to the Admissions Off ce for general informa tion about the U n versity, including applic tion materials. They are lso nvited to come to Room 136 of the Mc ur Administra tion Building, visit with friend y and professional admissions personnel, and enjoy a tour of the campus if their time permits Ap pointments are recommended and may be made by writing to the Adn issions Office at the Moeur Building or call ng 602 965-7788. Frequently, w th advance notice a meeting can be arranged with an ac idem c idv sor in the applicant's field of interest Requests for spe cific information relating to academic programs or student services should be ad dressed to the appropriate department.

division, or college in care of the University

University orientation programs for new students and parents are provided at numerous times during the year including the beginning of each semester and special early programs. Each orientation program includes advisement, placement testing, campus tours, chest X-rays, special events, and an introduction to University resources and procedures. Newly admitted students will be sent information preceding each available orientation program. Participation in orientation activities is not mandatory, but is highly recommended to help students adjust to the academic and social environment of the University.

The High School/College Relations Office maintains close year-round contact with administrators, counselors, and students in Arizona high schools and colleges to help inform prospective new freshmen and transfer students of the educational programs and services offered by the University.

Admissions Procedures for New Freshman and Transfer Applicants

Persons interested in admission to an undergraduate program at Arizona State University need the following items on file in the Admissions Office: 1) Application for Admission (including Health Questionnaire and Domicile Affidavit); 2) official transcript(s), 3) American College Test (ACT) scores (as needed), and 4) the $10 application fee (for applicants residing out of the State of Arizona only). Early submission of materials is encouraged for early decision and participation in early orientation and registration. Priority deadlines are listed in the University Calendar (page 6). Applications received after those dates may not be honored for the semester desired. A completed application for admission is good only for the semester for which admission is requested.

Application. Prospective students must submit a completed and signed application on the official application form to the Admissions Office. All applicants for undergraduate admission residing out of the State of Arizona pay a nonrefundable application fee of $10 at the time application for admission is made.

Health History Questionnaire. Every new applicant should complete the Arizona State University Health History Questionnaire and return it to the Admissions Office with the application for admission. Applicants suffering from uncompensated psychiatric illness who may be a hazard to others may be denied admission. All students should have a free chest X-ray taken at the Student Health Service prior to matriculation.

Domicile Affidavit. The Domicile Affidavit also must be completed and returned to the Admissions Office with the application in order to determine the applicant's fee and tuition status as in state or out of state. Failure to complete the Affidavit or to supply the information requested will result in the applicant's classification as out of state for purposes of fee and tuition payment. Information on fee status may be found on page 26 of this catalog. Further inquiry may be made to the Fee Status Officer, 124 P E Building West, or by calling 602 965 7712.

Transcripts. Official transcripts of academic records from high school and all institutions of higher education previously attended must be *mailed* by the records office of the issuing institutions *directly* to the Admissions Office. Hand-carried transcripts will not be accepted. High school transcripts must show grade point average, rank in class, and date of graduation. Applicants with 24 hours or less of transferable work must also submit official high school records.

All transcripts or credentials submitted from other institutions become the property of Arizona State University. Admission credentials and transcripts of applicants who do not enroll in the University will be retained for one year only.

ACT. The American College Test must be taken by all new freshman applicants on a national test date. High school applicants should meet this requirement by taking the ACT in their junior or senior year. Applicants for transfer who have not completed at least 9 semester hours of acceptable credit with a grade point average of 2.00 on a 4.00 scale must submit ACT scores prior to admission. A report of the test scores must be sent to the Admissions Office directly from the American College Testing Program, P. O. Box 168, Iowa City, Iowa 52240.

Undergraduate Admission Standards

Undergraduate admission standards are established by the Arizona Board of Regents. *Colleges, schools, and departments within the University may establish more restrictive standards which should be noted in the respective college sections of this catalog.*

Academic Admission Requirements for New Freshmen

Graduation from Secondary School. To be eligible for admission to Arizona State University, all applicants must have graduated from a secondary school with satisfactory scholarship as defined in "Scholarship Requirements" in the following section.

Scholarship Requirements. A first time freshman applicant for admission to Arizona State University may be admitted who:

1. Ranks in the upper 50% of the high school graduating class; *OR*
2. Is an in-state applicant and obtains a mini-

mum composite standard score of 21 on the American College Test, *OR*

3 Is an out-of-state applicant and obtains a minimum composite standard score of 23 on the American College Test

Also an applicant may be admitted if a special admissions committee reviews the credentials of an applicant and finds at least one of the following criteria

1 Has attained a high school grade point average minimum of 2.5 overall on a 4.0 scale;

2 Has shown an upward grade trend during high school career or an upward grade trend in the senior year,

3 Obtains positive recommendations from secondary school administrators and or a positive recommendation from a university counselor based upon academic potential, work experience, leadership ability, or extra curricular activities,

4 Attains an average score on the General Education Development test (GED) of at least 55 (GED applicants will also file records of high school work completed),

5 Demonstrates an ability to complete freshman level academic courses by attaining a minimum grade point average of 2.0 on a 4.0 scale in academic courses in English, social science, mathematics, science, foreign languages or the humanities, as shown by at least 9 credit hours in a community college and or summer or evening sessions of a university

Classification of Secondary School Subjects.

Group I	English Courses with major emphasis upon grammar, composition, and literary analysis
Group II	Foreign Languages. Classical or modern foreign language. Two units or more are recommended.
Group III	Mathematics One unit of algebra and one unit of mathematics other than arithmetic, business mathematics, or general mathematics.
Group IV	Social Studies History, civics, economics, sociology, geography, and government (including United States and Arizona Constitution).
Group V	Laboratory Sciences Courses in biology, chemistry, and physics, in which at least one regular laboratory period is scheduled each week
Group VI	Fine Arts Historical, theoretical and performance courses in art, music, speech and drama, and humanities
Group VII	Agriculture, bookkeeping, general science, home economics, arithmetic, general mathematics, journalism industrial arts, secretarial training, physical education, military science, and other subjects commonly offered for credit by secondary schools

Recommended Secondary School Subject Units. The following recommended pattern of subjects is that which, on the basis of experience, can be reasonably expected to provide satisfactory preparation for college when these subjects have been completed with better than average grades. *Academically talented students are strongly urged to take additional courses* from Groups I through V beyond those recommended The definition of a unit is that used by the North Central Association of Colleges and Secondary Schools

English (from Group I or English 3 and one Foreign Language 2	4
(from Groups I and II)	or 5
Mathematics (from Group III	2
American History and Social Studies (from Group IV)	2
Laboratory Science (from Group V)	2
Electives (from Groups I through VII depending upon English option	6 or 5
	16 or more

The School of Engineering recommends 3 units in mathematics, including advanced algebra, geometry and trigonometry Calculus is recommended The laboratory sciences chosen should include at least one unit in physics and one unit in chemistry. One unit of biology is strongly recommended

The College of Nursing recommends 2 units of mathematics, including algebra, advanced algebra and one additional unit of mathematics Laboratory sciences should include one unit of biology and one unit of chemistry or their equivalent An additional unit of physics is recommended.

Conditional Admission Prior to Graduation from High School. Conditional admission may be granted to high school seniors who submit a six semester or seven semester transcript which shows academic quality and rank in class in keeping with admission standards, and who complete the steps in the undergraduate admission procedures Regular admission will be confirmed when a verification of the high school graduation showing final grade point average, rank in class and date of graduation has been received in the mail by the Admissions Office directly from the high school The conditional admission may be cancelled if the final verification shows that the applicant has not met the University requirements for admission.

Honors-at-Entrance. Honors at Entrance certificates recognizing outstanding scholarship are awarded to entering freshmen who

rank in the top 10% of their high school graduating classes. This designation is honorary in nature and does not include a financial award For information on academic programs and opportunities for students of exceptional ability, refer to the College of Liberal Arts section of this catalog (page 49).

Special Enrollment Permit for High-Ranking High School Seniors

("Able and Ambitious Program"). The high school senior with only a limited amount of work remaining for completion of high school graduation, who ranks in the top 10% of the class, may be granted a *special enrollment permit* as an unclassified student to enroll for *a maximum of six hours per semester* at the University. To qualify for the special enrollment permit, the following conditions must be met

1. An application for the special enrollment permit must be submitted to the Admissions Office. Applicants sign an agreement as a part of the application for the special enrollment permit that they will continue in high school while enrolled in the limited program at Arizona State University and that they will graduate with their high school class.
2. An official transcript of the high school record showing senior standing and rank in class must be sent directly to the Admissions Office by the high school
3. The principal or counselor of the high school must send a written recommendation to the Admissions Office authorizing the enrollment of the high school senior at Arizona State University at the same time the student is completing the high school program.

Admission of Unclassified Applicants—Undergraduate. Persons 19 years of age or over who wish to enroll for six semester hours or less per semester of undergraduate course work may register as unclassified students. Unclassified applicants are not required to file transcripts or domicile affidavits They must, however, file an Unclassified Student Application for Admission form. Unclassified students are not candidates for any degree Applicants disqualified or otherwise not eligible for regular admission may not attend as unclassified students.

Unclassified students who wish to work toward meeting requirements for a bachelor's degree must file an application for admission to a degree program with the Admissions Office and meet all admission requirements in effect at the time admission is sought as degree-pursuing students. A maximum of 15 hours work completed as an unclassified student may be applied toward fulfilling degree requirements, provided the courses meet specific requirements within a degree program

After students have been registered as regular degree-pursuing students, they may not thereafter be permitted to register in an unclassified status

Academic Admission Requirements for Transfer Applicants

Scholarship Requirements. Applicants for transfer admission must have a grade point average of 2.00 or higher on a 4 00 scale for all work attempted at previous institutions of higher education and be in good standing and eligible to return to those institutions Applicants for transfer who have not completed at least 9 semester hours of acceptable credit must submit American College Test scores prior to admission and meet the scholarship requirements outlined for new freshman applicants on page 15. Applicants who have 24 hours or less of transferable work must also submit official high school records.

Veterans Exception. By Arizona statute, in determining the admissibility to the University of a veteran, honorably discharged, who has served in the Armed Forces of the United States for a minimum of two years, who has previously enrolled at a university or community college in Arizona, no failing grades received by such veteran at an Arizona university or community college prior to military service may be considered. Military service records must be submitted, including form D D 214.

Acceptance of Transfer Credit. Transfer credit will be awarded for course work successfully completed at institutions of higher education listed with an A, B, or C rating by the American Association of Collegiate Registrars and Admissions Officers or by the North Central Association of Colleges and Schools Transfer credit is not granted for courses in which the lowest passing grades (D) were received Grades and scholastic honor points earned at other colleges and universities, while part of the student's permanent record, are not included in the calculation of the student's cumulative grade point average at Arizona State University

Successfully completed courses evaluated on a nontraditional grading system (e g , pass-fail, credit no-credit, etc) will be accepted for transfer; however, some colleges at the University may not accept such credit toward fulfillment of graduation requirements or may have more restrictive requirements. Refer to appropriate college sections of this catalog.

Credits from Community Colleges. Credits transferred from community, junior, or two-year colleges will be accepted as lower division credits up to a maximum of 64 semester hours. *The applicability of credits toward degree requirements will be determined by the department division, or college in which the student is enrolled*

Community college students planning to transfer to Arizona State University at the end of their first or second year should plan their community college courses to meet the requirements of the curriculum selected. Students attending Arizona colleges or universities should consult through their academic advisor the "Arizona Higher Education Course Equivalency Guide" to determine the equivalency of courses between the institutions they are attending and Arizona State University.

Students will be permitted to follow the degree requirements specified in the Arizona State University catalog in effect at the time they began their community college work providing their college attendance has been continuous.

Conditional Admission Prior to Receipt of Final Transcript. Students enrolled in other colleges or universities will be considered for conditional admission on the basis of having met all admission requirements, except for the final transcript of work in progress. The final transcript must be received in the Admissions Office directly from the records office of the issuing institution immediately upon completion of the work in progress. Hand-carried transcripts will not be accepted. Admission will *be confirmed only after receipt* of the final transcript showing the applicant has met the University requirements for admission. Any registration procedures previously undertaken will be cancelled, and any registration fees paid will be returned if the applicant does not qualify.

Appeal Procedure. Transfer students who wish to appeal the acceptance of transfer credit should appeal to the standards committee of the college at Arizona State University in which they are enrolled. The decision of this committee with respect to acceptance of credits will be final.

Applicants for transfer admission who have failed to maintain an academic record which meets the scholarship requirements for admission to Arizona State University or who have been disqualified in the college or university previously attended because of scholarship, conduct, or other reasons, will be denied admission. Applicants who are denied admission may appeal to the University Undergraduate Admissions Board for reconsideration of their applications. The decision of that Board will be final.

Undergraduate Admission of International Applicants

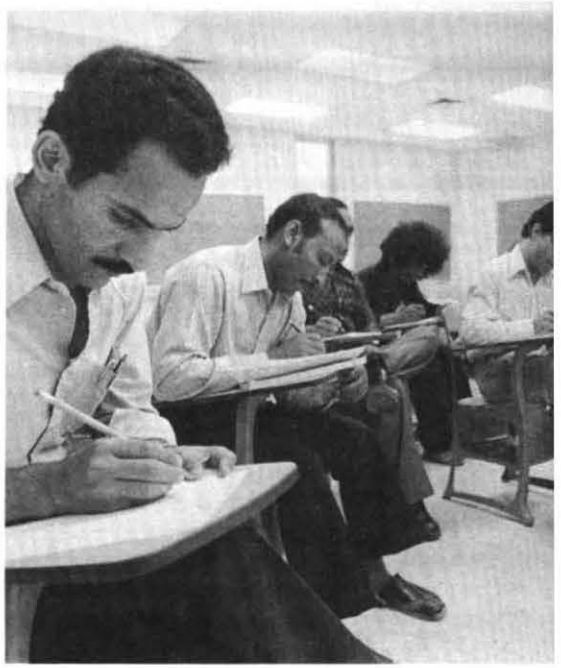
For admission purposes, international applicants are defined as all persons who are not citizens of the United States of America.

International applicants seeking admission to Arizona State University, in addition to meeting the standards for undergraduate admission, either as freshman or transfer applicants, must fulfill the following requirements:

1) Demonstrate proficiency in the English language. The University requires all international applicants whose native language is not English to take the Test of English as a Foreign Language (TOEFL). A minimum passing score of 500 is required for admission.

   The scores must be submitted directly to the Admissions Office from TOEFL, Box 899, Princeton, New Jersey 08540, or from official testing centers of accredited institutions of higher education as defined in the section titled "Acceptance of Transfer Credit" above.

   Proficiency may be demonstrated also by passing a full academic year of college-level, freshman English (i.e., the equivalent to ENG 101, 102) with a "C" grade or better at an accredited institution of higher education in the U.S.A.



   Applicants who have completed the program in Arizona State University's English Skills Program may demonstrate proficiency in English by passing a nationally recognized and validated proficiency examination administered by the University's Department of English in lieu of passing the TOEFL.

2) Provide a personal data sheet certifying that they possess adequate financial resources to support themselves while in residence at the University. International applicants on scholarship must provide a letter of financial responsibility from the sponsoring agent or organization.

3) Meet all appropriate immigration standards and requirements.

4) Have all required admissions materials and credentials reach the Admissions Office at least two months prior to the beginning of the semester for which application is being made.

International Student Information. International students must:

1) Be awarded a Certificate of Admission from Arizona State University before a visa will be issued.
2) Have insurance coverage against illness and accident before being permitted to register. Insurance must be maintained throughout the student's enrollment in the University and may be obtained at the time of registration
3) Upon admission obtain registration materials and information from the International Student Adviser's Office

English Skills Program. Arizona State University offers an intensive English training program for non-native speakers of English Inquiries about the curriculum, fee schedule, etc., should be addressed to Dr. John Edwards, University Extension Office, Arizona State University, Tempe, AZ 85281 Acceptance into the English Skills Program is totally separate from admission to the University.

Admission of Disabled Applicants

Individuals with physical disabilities are encouraged to apply for admission to Arizona State University. They are expected to meet the same academic requirements as all other applicants and students

Admissions and continuance at the University are contingent on the student's ability to participate in the educational program using existing facilities Disabled students must have the physical capacity, with or without assistance, to fulfill their academic responsibilities If deemed necessary by a physician, attendant care, services, or assistance required by a physically disabled applicant must be obtained prior to the starting of classes. *It is the responsibility of the student to arrange for the attendant care services, or assistance required.*

It is recommended that all prospective disabled students contact the Office for Disabled Students, Matthews Center Room 138, or call 602/965-6466.

The Office for Disabled Students may write to a disabled applicant for additional information after the application is received to determine if any special arrangements necessary for admission have been made.

Admission to Summer Sessions

Summer Sessions courses are equivalent in academic credit and performance standards to regular semester courses. Persons enrolling in them should meet the University's admissions and scholarship requirements. Students can enroll in Summer Sessions without formal admission or readmission to Arizona State University; therefore, attendance during Summer Sessions does not indicate admission or readmission to a degree program at the University. Admission and readmission procedures and standards are described in appropriate sections of this catalog. Only those high school seniors who meet the provisions outlined in the section, Special Enrollment Permit for High-Ranking High School Seniors (page 17), will be permitted to enroll in Summer Sessions.

Readmission to the University

An undergraduate student who has not attended Arizona State University for one regular semester or more and desires to return to the University, must apply for readmission to Readmission, Registrar's Office. Official transcripts of all academic work taken since last attendance must be sent directly to Readmissions, Registrar's Office, Arizona State University, from the records office of the issuing institution. Failure to report intervening college or university attendance at the time of application is considered misrepresentation and falsification of University records and is cause for official withdrawal from the University, cancellation of credits earned, or both.

A student whose cumulative grade point average is below that required for good standing (page 35) will be denied readmission. A student who has been denied readmission may appeal to the University Undergraduate Admissions Board. The decision of that Board is final

A student who has attended Arizona State University as an unclassified student and wishes to be readmitted as an unclassified student must also meet the requirements of good standing (page 35). An applicant disqualified or otherwise not eligible for regular admission may not attend as an unclassified student.

Conditional Readmission Prior to Receipt of Final Transcript. An applicant currently enrolled in another institution may be considered for conditional readmission pending receipt of final grades for work in progress. A final transcript showing these grades must be received—directly from the issuing institution by the Registrar's Office no later than the 20th class day after the start of the semester.

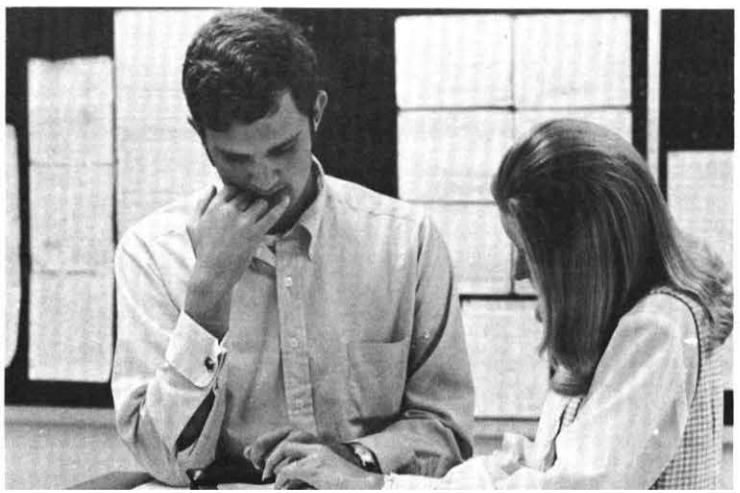
Final approval for readmission will not be given prior to the receipt of the pending transcript. If the transcript is not received within the time stated, the student is subject to withdrawal from the University. Any registration procedures previously undertaken will be cancelled, and any registration fees paid will be returned if the applicant does not qualify for readmission

Special Programs for Advanced Placement and Credit

Advanced Placement. Students who have taken an advanced placement course of the College Entrance Examination Board (CEEB) in their secondary school, *and* who have taken an Advanced Placement Examination of CEEB may receive credit with a score of 5, 4 or 3. No credit will be given for any examination with a score of 2 or 1. Sophomore standing in a discipline or area will be awarded with a score of 5.

When the scores are received by the University directly from CEEB, credit will be awarded as follows:

Exam	Score	Credit Hours
Art-Studio	5 or 4	6 (ART 141 and 142)
	3	3 (ART 141)
Art-History	5 or 4	6 (ARH 101 and 102)
	3	3 (ARH 101 or 102)
Biology	5 or 4	8 (BIO 101 and 102)
	3	4 (BIO 101)
Chemistry	5 or 4	7 (CHM 113 and 115)
	3	4 (CHM 113)
English	5 or 4	6 (ENG 101 and 102; exempt from ENG 104)
	3	Department will evaluate examination and recommend
Classics (Vergil, Lyric, Prose)	To be evaluated upon receipt	
French, German or Spanish—Language	5 or 4	8 (GER, FRE or SPA 201 and 202; placement in 311)
	3	No credit, placement in GER, FRE or SPA 311
French-Literature	5 or 4	8 (FRE 201 and 202; placement in FRE 321)
	3	No credit, placement in FRE 321
History-American or European	5 or 4	6 (HIS 103 and 104 or 101 and 102)
	3	Department will evaluate examination and recommend
Mathematics-Calculus AB	5 or 4	5 (MAT 120)
	3	5 (MAT 120)
Mathematics-Calculus BC	5 or 4	10 (MAT 120 and 121)
	3	5 (MAT 120)
Music	5 or 4	6 (MHL Literature)
	3	3 (MHL Literature)
Physics B	5 or 4	6 (PHY 111 and 112)
	3	3 (PHY 111)
Physics C	Same as for Physics B; or upon Departmental approval, credit may be granted for PHY 115 and 116 instead with a 5 or 4 score, or PHY 115 with a score of 3	



College-Level Examination Program (CLEP). Students who have taken a College-Level Examination of the College Entrance Examination Board may receive University credit. The following table of credit applies to all students enrolling in the University for the first time in August 1975 and any student enrolling thereafter. CLEP examination credit will *not* be given where (a) it duplicates credit previously earned by the student at the University or accepted by the University for work done elsewhere, or (b) it is more elementary than a course in which the student has already received credit. All examinations are given monthly by the University Testing Service.

General Examinations: To obtain credit or placement, students must receive a standard score of 500 or higher for the General Examinations. *Students who have completed 60 semester hours of credit are not eligible to receive any credit for the CLEP General Examinations.*

Subject Examinations: A standard score of 50 or higher must be received to obtain credit for any subject examination. The 60-semester-hours-of-credit limitation does not apply to subject examinations.

General Examinations	Credit Hours	Equivalency
English Composition	None	See subject examination in English Composition or English Placement Examination
Humanities	6	General Studies Credit
Mathematics	3	MAT 106
Natural Sciences	8	General Studies or Major Credit
Social Science History	6	General Elective Credit
Subject Examinations	**Credit Hours**	**Equivalency**
Accounting	6	ACC 101 and 102
American Government	3	POS 300*
American History	6	HIS 103 and 104
American Literature	3	General Studies (Seniors may use for ENG 341 or 342)
Analysis and Interpretation of Literature	3	General Studies (no credit in English major)
Biology	4	General Studies or major elective
Clinical Chemistry	None**	Petition Botany Microbiology Dept. if transfer from an Arizona community college
College Algebra	3	MAT 117
College Algebra and Trigonometry	4	MAT 118
Computers and Data Processing	3	General Elective Only
Economics	3	FCC 201 no credit or advanced placement if major is Economics or any major in College of Business Administration
Educational Psychology	3	EDP 310*
English Composition	None	Exempts ENG 100 and 102, enter ENG 104
English Literature	3	General Studies Seniors may use ENG 221 or 272)
Freshman English	None	Recommend English Composition Subject Exam
Foreign Languages College French, College Spanish)	0	Placement at Foreign Language level.
FORTRAN IV	2	ECE 122 *or* ASE 226 *or* ASE 371
General Chemistry	7	CHM 113 and 115
General Psychology	3	PGS 100
Hematology	None**	Petition Botany Microbiology Department if transferring from Arizona community college
History of American Education	3	SPF 411*
Human Growth and Development	3	CDE 232
Immunology and Blood Banking	4	MIC 420*
Introduction to Business Management	None	No Credit
Introduction to Calculus	5	MAT 120
Introduction to Marketing	3	General Elective (no credit in major is in College is Business Administration)
Introduction to Sociology	3	SOC 101
Introduction to Business Law	3	General Elective
Microbiology	4	MIC 201 and 202
Money and Banking	3	General Elective no credit or advanced placement if major is Economics or any major in College of Business Administration)
Nursing (Anatomy, Physiology, Microbiology; Behavioral Sciences for Nurses; Fundamentals of Nursing; Medical Surgical Nursing)	0	Not acceptable toward BS in Nursing.
Statistics	3	MAT 226 *or* EDP 454*
Tests and Measurements	3	EDP 454*
Trigonometry	2	MAT 118
Western Civilization	6	HIS 101 and 102 Not HIS 100

*Lower division credit. **See note, petition needed.

All equivalency is subject to future review and possible catalog change.

For further information regarding CLEP, contact the University Testing Service at Payne Education Hall 302, or call 602 965 3104.

The ACT Proficiency Examination Program PEP). Students who contemplate taking the new American College testing PEP examinations should be advised that no credit equivalency has been established by Arizona State University

Comprehensive Examinations

The purpose of the comprehensive examination is to give the student an opportunity to establish credit in a field in which the student has had adequate preparation or experience, but in which academic credit has not been earned.

Examinations are administered through the office of the chair of the department in which the course is offered

A student desiring credit by comprehensive examination should indicate the desire to take such an examination during the first two semesters in residence at Arizona State University No comprehensive examination will be given to a student who has accumulated 100 or more semester hours of credit A student pursuing a second baccalaureate degree may not receive credit for a comprehensive examination, but with prior approval of the college the student may use the examination to waive a course requirement, if a grade of C or better was earned on the examination.

A student may establish a maximum of 30 hours of credit by comprehensive examinations and or correspondence courses

Only matriculated students may petition to establish credit by comprehensive examination

Applications will be accepted only for courses listed in the current University catalog, *and only for courses in which a comprehensive examination is regarded as a satisfactory measure of accomplishment*

A fee for such examination shall be charged (refer to section *Fees Deposits and Expenses* An examination may cover only one course For example, English 101 and 102, are two courses requiring separate examinations No examination will be prepared until the fee is paid

An application blank may be secured from the office of the chair of the department in which the course is offered The student will fill out the application giving the number, title, and the number of semester hours of credit for the course in which an examination is desired. The completed application shall carry the recommendation of the student's advisor. The application is filed in the department office in which the course is offered, and the chair must grant approval to take the examination

Ordinarily, an application will be approved for only one course at a time If a student applies for examinations in sequence of two closely-related courses, such as English 101 and 102, permission may be granted to take the second examination upon successful completion of the first.

The number of hours of credit granted shall be the hours specified for the course in the current catalog.

All examinations shall be of a comprehensive type. They shall be prepared and graded by the instructor of the course and chair of department and other experts appointed by the chair of the department.

Letter grades of A, B, C, D and E will be used in grading examinations. If the grade is A, B or C, a mark of Y will be entered on the student's permanent record If the grade on the examination is D or E, no entry will be made on the permanent record Entries on the permanent record of credit by examination shall be so indicated The student will be notified of the result of the examination The student will not be given a second opportunity to establish credit by examination for the same course.

Comprehensive examinations may not be taken in any course for which the student has received admission or transfer credit from any educational institution Admission and transfer credit are established through the Admissions Office.

Comprehensive examinations may not be taken in the elementary level of a field in which the student has received credit for advanced work. This includes the prohibition of comprehensives in courses required as prerequisites for a course in which the student has received credit

Proficiency Examinations. A proficiency examination may be required for the waiver of a course requirement or for the validation of transfer credits in professional programs

Information regarding policies and regulations governing the waiver of course requirement or validation of transfer of credits in professional programs may be obtained from the office of the dean of the college in which the student is registered

Correspondence and Extension Courses. A maximum of 30 semester hours of credit earned in correspondence and or comprehensive examination may be applied toward the baccalaureate degree at Arizona State University Credit earned in correspondence courses may not be applied toward advanced degrees (Refer to Correspondence Study, page 283)

Extension course credit may be applied toward bachelor's or advanced degree requirements. A maximum of 12 semester hours of extension course credit may be applied toward a master's degree at Arizona State University. Students are advised to seek academic curriculum advisement (see page 29)

United States Armed Forces Institute Correspondence Courses. Correspondence courses (not including end of course tests or group study courses) completed through the USAFI program will be accepted providing that satisfactory grades have been received. Official reports must be mailed directly to the Office of the Registrar or Director of Admissions from USAFI. (For limitation of correspondence course work, see page 283)

Reserve Officers Training Corps (ROTC). Arizona State University offers basic and advanced courses in Military Science and Aerospace Studies. The basic courses are designed to provide training in basic leadership techniques, to develop an understanding of the roles of the Army or Air Force in the defense of the United States, and to prepare the student for the advanced courses. The advanced courses, offered only to selected students, provide training which qualifies the student to perform the duties of commissioned officers in the Army or Air Force. Upon graduation, each student who satisfactorily completes the advanced course will receive a commission in the Army or Air Force Reserve. See page 61, Aerospace Studies, and pages 104-105, Military Science.)

Fees, Deposits and Other Charges

Registration and Tuition Fees

Full-time Students

Students registered for 7 or more hours are considered full-time for fee purposes. Amounts listed are per academic semester. For further information on classification for fee status, see page 26 (Fee Status Classification, Procedures and Policies)

In-State Fee Status	$225.00

Out of State Fee Status

Students registered for 12 hours and over pay a registration fee of $280.00 and a tuition fee of $540.00. Students registered for 7-11 hours pay a registration fee of $280.00 and a prorated tuition fee. The following is a schedule of the total registration and tuition

12 hours and over	$820.00
11 hours	775.00
10 hours	730.00
9 hours	685.00
8 hours	640.00
7 hours	595.00

Part-Time Students

Students registered for less than 7 hours ... $26.00 hour

Audit Registration not for credit

Fees for auditing classes are the same as fees paid for credit.

Summer, Extension and Correspondence

Further information is included in catalog section, University Extension and Summer Sessions.

Summer Sessions	$26.00 hour
Extension	26.00 hour
Correspondence	8.00 hour

Additional Fees

Fees listed are per academic semester and are in addition to the general University registration and tuition fees.

Private Music Instruction

½ hour of instruction per week	$40.(
1 hour of instruction per week	60.00
1½ or more hours of instruction per week, music majors only	60.0

Musical instrument rental charge

Charge for use of University owned musical instruments	10.00

Consult Music Department for specific information

Law College Enrollment	$32.00

Special Classes

SPE	401	Technical Evaluation of the Exceptional Child	$10.00
SPE	574	Educational Evaluation of Handicapped	0.0)
PED	105	Ice Skating	25.00
PED	105	Trail Riding	5.0
PED	105	SCUBA	5.0
PED	120	Beginning Bowling	12.(0
REC	150	Camp Program Activities	15.00
AVE	411	Audiovisual Materials and Procedures	15.00
REC	463	Senior Internship	10.00
REC	498	PS· Outdoor Living Instruction	10.00
SWG	630	Social Research	10.00
SWG	680	Social Research	10.00

Late Registration

Regular Semester ... $10.00

A late registration fee is assessed when a student registers after the regular start of classes.

Housing Charges Per Academic Year)

Residence Halls with cafeteria services

	Fall	Spring
Palo Verdes, Manzanita	$649	$508
Sahuaro	$63	$496
Mariposa Graduate Housing	$ 3	$55
	$1 64	$851

Options Available)

Amounts are based on fiscal 19 6 7 rates for double occupancy with 15 meals a week. Single occupancy rooms may be requested as well as any 10 meal a week option. The Housing Office should be contacted on current price status and options.

Residence Halls without cafeteria services:

	Fall	Spring
Ocotillo (options available	$4 0 $628	$266 $4 9
Irish	$270	$180
Hayden, McClintock A, Best A&B	$32>	$217
Best C, McClintock B	$337	$225

Meal Tickets:

The Memorial Union Club, as well as the Residence Hall Cafeterias, offer meals on a five-day basis with additional serving for most meals at no extra cost. Several options are available. Also, weekend meal tickets may be purchased. Individual meals are available a la carte at a higher rate.

All meal tickets can be purchased from the

University Cashier in the Administration Building

Reservations

Application forms for dormitories may be obtained by request from the Arizona State University Housing Office, Tempe, Arizona, 85281. Reservations may be obtained by filing an application together with a $50 deposit. For further information on Housing, refer to catalog section on Student Services Housing

Other Fees and Charges

Admission Application $10 00

All out-of-state undergraduate applicants must pay a non-refundable fee when application for admission is made

Transcripts . . . . . $ 1 00

Request for transcripts should be made one week in advance of time desired.

Graduation
Undergraduate . . . . . $ 7 00
Graduate 10 00

Late Graduation
Undergraduate $12.00
Graduate 15 00

If the graduation charge is not paid on or before the date specified in the section of the catalog headed Graduation Requirements, a late fee of $5.00 is added to the charge

Graduation Reapplication
Undergraduate . . . . . $ 7 00
Graduate $10 00

Charge for reapplication when requirements were not met on original application are the same amount as the original application This applies to both undergraduate and graduate students.

Course Withdrawal . . . . . $ 1.00

Charged following the last day of registration (per course withdrawn)

I.D. Replacement $10 00

Charge for replacement of a lost or mutilated I.D. card. Replacement because of wear or deterioration will be free of charge.

Returned Check Service . . . . . $ 5 00

Students who have checks returned to the University by the bank for any reason will be assessed a $5 00 service charge

Cap and Gown Rental . . . . approx $ 7.50

Cap and gown for Commencement exercises are available at the University Bookstore and vary in price depending on the degree

Comprehensive Examination . . . $ 7.50

Paid by all students seeking to establish credit by examination (per semester hour)

Lost Receipt and Registration Material $ 1 00

Parking . . . . . $ 5.00

A parking decal must be purchased for each motor vehicle used by a student or employee on the University campus. For further information refer to catalog subsect on General Information Parking.

Deposits (refundable)
Housing $50 0
Science breakage
depending on course $5 0 to $25 00

Refunds

Registration and Tuition Fees

Students withdrawing from school or individual classes will receive a refund based on a percentage of the total semester fee paid in accordance with the following schedule:

Before first day of semester	Deduct $10 00
1 thru 14 calendar days	80% refund
15 thru 21 calendar days	60% refund
22 thru 28 calendar days	40% refund
29 thru 35 calendar days	20% refund
After the 35th calendar day	No refund

Summer Session Refunds

Students withdrawing from any Summer Session or individual classes in a given session will receive a refund based on a percentage of fees paid and in accordance with the following schedule:

Before first day of session	Deduct $5.00
1st and 2nd days of session	80% refund
3rd day of session	60% refund
4th day of session	40% refund
5th day of session	20 refund
After 5th day of session	No refund

Refunds will be based on the first five class days beginning with the first day of the Summer Session, not on the first five meetings of any given students' classes.

Percent of refund will be determined by date withdrawal is presented to the Business Office. If an application for change in fee status is pending through the Fee Status Classification Office, percent of refund may be determined by the date a notification to withdraw is filed with the Assistant Comptroller, Business Office Administration 107 For further information, see page 26 (Fee Status Classification, Procedures and Policies)

Additional Fee Refunds

Private Music Instruction. If a student must drop a music course because of illness or other emergency beyond the control of the student, not more than half of the instruction charge may be refunded

Law College Enrollment Same as for registration and tuition fees

Special Class Fees. Refunds, if any, will be determined by the department offering the course Determination will be based on progress in the course and type of activity

Late Registration Not refundable.

Additional University Charges

Refund of these payments will be determined on the individual circumstances. Under

ordinary conditions they are not refundable

Housing Charges

Refunds to students departing from resident halls prior to end of the academic year are computed on the following basis

Deposits. Housing deposits are refunded as prescribed by the housing contract that each student signs when they apply for residence hall accommodations Students should refer to this document for specific information on refunds When checkout occurs prior to the last two weeks of the Spring semester, students forfeit their $50 room deposit

Rent. Students will be charged 10% of the total semester rate for each week or partial week of registered occupancy

Board Students will be charged for meals through the last day of the week in which formal check out occurs Students departing during the last two weeks of the semester shall be charged the full semester rate for meals No refund will be made for meals missed

Check out is based on the date the Housing Department is notified on a check out form, not the last day of occupancy

All refunds will be made net of any amounts due the University If the last day of the refund period falls on a weekend or holiday, the refund must be picked up during the regular office hours on the preceding day For further information, see General Information Forfeiture of Refunds, this page

Minimum Estimated Expenses for an Academic Year

	In State Status	Out of-State Status
Full time Student Registration and Tuition	$ 450	$1,640
Books and Supplies	180	180
Room and Board University Housing (Housing limited)	,200	1,200
	$1 830*	$3,020*

*Amounts are approximate since cost of books, supplies, room and board are variable All students should add incidental personal expenses and other special charges pertinent to their field of study

General Information

Change in Fees

The Board of Regents reserves the right to change fees and charges without notice.

Payment of Fees

Registration and related fees are payable in full on the day of registration (See Veteran's Deferred Payments).

Method of Payment

Payments to the University should be made by currency, traveler's check, bank money order, cashier's check or certified check Personal or company checks in the exact amount of the charges will be accepted

Veteran's Deferred Payment

As provided by the Veteran's Readjustment Assistance Act, veterans may apply for deferred payment of registration fees A "Certificate of Eligibility" must be presented Contact the Business Office in advance to be assured of meeting the necessary requirements.

Forfeiture of Refunds

All refunds and deposits due students for any reason are subject to forfeiture unless obtained on or before June 30 of the year in which they were originally paid. Refunds will not be made without student identification. Should June 30 fall on a day when the Business Office is closed, the refund must be picked up during the regular office hours preceding

Checks Returned by the Bank

Checks returned by the bank for any reason will cause that student's classes to be subject to immediate cancellation. A returned check will be subject to a $5.00 service charge. Registration fee payment checks returned will cause the student to be subject to withdrawal on the date the check is returned and the student will pay fees based on the percentage refund available as of that date (See Refunds)

Delinquent Financial Accounts

Students with outstanding financial obligations will be refused all University services until such obligations are paid. They will be denied subsequent enrollment, transcripts, grades, transfer of credit, and graduation During the semester, enrollment in classes is subject to cancellation for failure to respond to certified letter notifications of delinquent accounts.

Parking

Faculty, staff and students associated with the University on an academic year calendar are responsible for the parking of motor vehicles throughout the year. Decals are issued from August to August. Violations of the parking restrictions are subject to citation and fines Parking fines are payable at the Cashier's Office, Administration Building. Appeals to parking citations may be filed with the Parking Administrator, Physical Education Building West, and after payment may be further appealed through the Parking Appeals Board. Unpaid parking citations will become part of delinquent accounts and are subject to the above paragraph.

Fines

If you violate the regulations for parking, then you are subject to the appropriate penalty:

1 Parking in an unauthorized parking area or lot	$ 2.00
2. Parking by faculty, staff, or students in a visitor area	2 00
3. Obstructing a drive or driveway	10.00
4 Obstructing a properly parked vehicle	10 00
5. Removing a barricade or other traffic control device	10 00
6. Parking on a pedestrian path, sidewalk or safety zone	10.00

7.	Parking in a drive or driveway posted for emergency vehicles	15 00
8	Parking outside parking stall lines	2 00
9.	Improperly park ng a bicycle	2 00
10.	Failing to register a vehicle or to display a parking decal	5 00
11	Improperly displaying a parking decal	5 00
12	Improperly transferring a parking deca	5 00
13.	Falsifying information on registration	25 00
14.	Using an altered or subst tuted decal	25 00
15.	Parking in a non-designated parking zone	2 00
16.	Parking on pedestrian path	7 00
17	Parking in disabled parking place	5 00
18	Overtime parking	2 0

Fee Status Classification Procedures and Policies

The Arizona Board of Regents is required by law to establish for the universities under its jurisdiction and control uniform guidelines and criteria for the classification of students for payment of registration and tuition Attention is invited to relevant provisions of the constitution, statutes, and laws of Arizona, including Sections 3 and 6, Article 7 of the Constitution (which provisions have been held by the Supreme Court of Arizona to govern domicile for all purposes), Sections 15-724, 15-725, and 15 -791 through 15 795 Arizona Revised Statutes, as amended.

A. A person not qualifying to enroll as a student with in-state status must pay out of state fees, in addition to other established fees and charges that are required for all students The following provisions govern the assess ment of fees A student with out-of-state fee status must pay a registration fee of $280 00 and a tuition of $540.00 per academic semes ter for 12 or more hours or a registration fee of $280.00 and a tuition of $45 00 per hour for enrollment of 7 11 hours. Out of state fee classification is not applicable for students enrolling for less than 7 units.

B. A person may not be classified with in state status for the purposes of registration and payment of fees and expenses at the uni versity until he has been domiciled in this state for one year next preceding the last day of registration for credit published by the uni versity

C. Mere presence of a person in the State of Arizona for one year does not necessarily establish a domici e for classify ng that person with in state fee status No person shal be deemed to have gained or lost a domicile by reason of his presence or absence while a stu dent at any institution of learning.

D. The person must have his fee status determined prior to registration and payment of fees. The responsibility of registration under proper status is placed upon the individual. Prompt filing of the required domiciliary in formation will enable the Un versity to determine classification prior to registration. The Board of Regents has promulgated a pub lication, entitled "Inform ation and Guidelines for Determining Fee Status," which is incor porated by reference in this catalog, and the attention of all persons concerned with cl assi fication for fee purposes is directed to this publication ava lable in the offices of the Registrar and Director of Admissions at the Moeur Bui ding and the Fee Classification Office. (These materia s include: a defini tions related to domicile, (b) guidelines, ru es and regulat ons applied to determine domicile, and (c) information on procedures for appeal)

An affidavit must be completed and filed prior to any decision concerning domicile The affidavit is required upon original registration or upon a desired change in classification or after an absence for a semester or more.

In all cases where the records ind cate the student's domicile is not in Arizona, out-of-state fees will be assessed. Any student found to have made a false or misleading statement concerning his domicile shall be subject to dismissal from the University.

E. The Fee Classification Office of the University has been designated to determine domicile. If there is any question as to domi cile, the matter should be brought to the attention of the classification office and passed upon prior to registrat on and payment of fees The same classification office can, during reg istration period published by the University or at other times, pass upon the domicile of a person.

F. The president of the University has ap pointed an appeals committee to hear the cases of individuals who believe that the deci sion regarding their domicile is not consistent with the laws of the State of Arizona or the guidelines promulgated by the Arizona Board of Regents. An appeal shall be filed in the Fee Classification Office. It shall be written, signed by the student, and accompanied by a sworn written statement of all facts relative to the matter. Notice of appeal shall be filed at any time within 35 days fr n the last day of registration published by the University The person appealing shal have the right to appear and testify before the committee and to be represented by an advisor

G. Students should refer to their admission certificate for initial notification of fee status. In addition the student enrol ment form should be examined each semester for verifica tion of fee status.

H. If the student enrollment form and or admissions certificate indicates an out of state fee status, out-of state fees must be paid un- less an application for change in fee status has been filed with the Fee Classification Office and a decision has been rendered for in-state status prior to the fee payment due date It is

the responsibility of the student to file an application early enough that a decision can be rendered before the fee due date. Generally a minimum of 30 days is required. For information on refunds see catalog subsection Refunds, Registration and Tuition Fees.

I. All questions and discussions relating to classification for fee status should be directed to the Fee Classification Office, Arizona State University, PEBW 124, Tempe, Arizona 85281 or call (602) 965-7712.

Scholarships and Other Student Financial Aids

Individuals who wish more detailed information on any scholarships, grants, loans or other financial assistance programs, are urged to write or call the Office of Financial Aids, Matthews Center, 602 965 3355.

Regents' Scholarships. The Board of Regents has created a number of scholarships which are awarded annually by Arizona State University to new and currently-enrolled students who meet the qualifications established by the Regents. Financial need and academic achievement of the applicants are factors considered in selecting recipients of these scholarships. The Regents' scholarships, also known as "tuition waiver scholarships," are worth the amount of registration and tuition fees. The following classifications are included in the Regents' scholarship program.

(a) **Academic Scholarships.** These scholarships are available to students who are residents of Arizona and give promise of high scholastic achievement. They provide for the remission of in state fees. A significant number of these scholarships are designated for qualified minority students enrolled under the sponsorship of the following programs: EOP (Educational Opportunity Program), UB (Upward Bound), MOP (Migrant Opportunity Program), and eight Arizona Reservation Indian Scholarships.

(b) **Activity Scholarships.** These scholarships are available to new and currently enrolled, in- or out-of state students who give promise of satisfactory scholastic achievement, of outstanding success for skills or talent in the institution's program of approved activities, and of developing desirable qualities of character and leadership. Although the promise of superior performance in extra curricular activities is one of the factors considered in awarding these scholarships, the recipients must, nevertheless, have met the fundamental requirements of academic ability. The scholarships listed immediately below make up this category:

Band Scholarships. These scholarships waive the registration fee and, in the case of out-of-state students, nonresident tuition. A limited number also provide for the remission of fees for private music lessons.

Choral Scholarships. These scholarships provide for the remission of the registration fee and, in the case of out of state students, nonresident tuition. In addition, they may provide for the remission of fees for private music lessons.

Orchestra Scholarships. These scholarships provide for the remission of the registration fee and, in the case of out-of-state students, nonresident tuition. In addition, they may provide for the remission of fees for private music lessons.

Voice and Piano Organ Scholarships. These scholarships vary in that they are usually for private music lessons only. They also provide for the remission of nonresident tuition where applicable.

(c) **Athletic Scholarships.** These scholarships provide for the remission of the registration fee and, in the case of out-of-state students, nonresident tuition. In addition, recipients of these scholarships may qualify for room and board awards within the guidelines provided by the various conferences and associations.

(d) **International Student Scholarships.** Graduate and undergraduate scholarships are available to qualified students from foreign countries who have a previous scholastic record of merit at Arizona State University (minimum, one year for undergraduates). These scholarships cover registration and special class fees and nonresident tuition.

All the Arizona State University Scholarships listed above may be renewed annually upon re application by the student and approval of the appropriate departments.

Sponsored Scholarships. In addition to the Arizona State University Scholarships described above, several other scholarships are offered through the donors and departments which are sponsored through private or public sources, including the BIA (Bureau of Indian Affairs) program.

University-Industry Scholarship Program. The objective of the University Industry Scholarship Program is to encourage qualified in state minority and low income students to attend Arizona State University. Students admitted to this program will be awarded financial grants covering registration fees in addition to other aid depending upon student needs. This program combines the forces of the Valley business community and the University in helping these students to enter the University and to succeed.

University Short-Term Loans. Emergency short-term loans are available on a limited basis to full-time students to meet the needs for educationally related expenses. These short-term loans are made and are repaid within each semester or Summer Session. A loans carry a nominal service charge.

Federal Programs. Arizona State University participates in the following federal programs

BEOG Basic Educationa Opportunity Grant
SEOG Supplementary Educational Opportunity Grant
CWSP College Work-Study Program
NDSL National Direct Student Loan
FISL Federally Insured Student Loan
NSP Nursing Scholarship Program
NSLF Nursing Student Loan Fund
LEEP Law Enforcement Education Program Grants and Loans
SSIG State Student Incent ve Grant

For the most part, students may obtain aid from these sources if they have a demonstrated need and to the extent that (1) funds are available, and (2) if the student is admitted to and enrolls in classes at the University (Financial Aid is a separate process from admission to the University Each requires its own application.)

Estimate of Student Expenses. The budget for each student is dependent upon marital and dependency status, in state or out-of-state residency and classification in terms of living on-campus, near campus, or commuting from home The budget covers five areas registration fees and tuition, books and supplies, room and board, transportation, and personal allowance.

General Eligibility Requirements for All Types of Financial Aid.

1 Only students who are United States citizens, nationals, or permanent residents are eligible for financial aid Exceptions are (a) International Student Scholarships and b) Short Term Loans
2. A student must be in good standing and making satisfactory progress toward a degree
3 A student must be carrying at least a half time academic workload for most federal aid programs and full-time academic workload for scholarships.
4. A student who attends the University only during the Summer Sessions is not eligible for financial assistance.
5. The essential condition for most financial assistance is that need must be clearly established

To determine financial need, Arizona State University uses the American College Testing Program Family Financial Statement (FFS) However, any nationally recognized needs-analysis program will be accepted

Veterans Affairs Office

Coordination of separate University services assisting student veterans of the Armed Forces of the United States is centered in the Veterans Affairs Office Counseling is available to the student veteran regarding admissions, financial aids, registration, veteran benefits and academic and personal advisement Veterans Affairs programs serve the State of Arizona by advising all interested veterans regarding educational benefits and their optimum use. The program also assists veteran students to obtain suitable paid tutors, when needed, using their federal benefits

Veterans must make adequate grade-point average and semester hour progress towards their academic program for continued funding by the Veterans Affairs Office The University must report this progress each semester.

Veterans programs are maintained by a cooperative arrangement between Arizona State University, the State of Arizona and the United States Office of Education.

Special Services

Special Services provides a major educational thrust for low income and ethnic minority students through its programs

Disabled Student Program. This program coordinates in one central office various resources and services to meet the varied needs and interests of physically disabled students (See page 19.)

Educational Opportunities Program. The Educational Opportunities Program provides direct academic tutorial support to any student experiencing academic difficulties. Services include a learning skills center which houses diagnostic testing, course advisement, orientation and a remedial math laboratory. Mini courses are available in specific problem areas requiring individual concentration and self-instruction under the guidance of a tutor. EOP strives to develop within each of its participants a sense of academic discipline while reinforcing academic proficiency and pride in personal achievement

Talent Search Program. The Talent Search Program is charged with the task of identifying and encouraging able persons of low income to continue their education in post secondary institutions. It seeks to assist potential students through dissemination of information enabling those individuals to investigate all avenues of educational opportunity

Upward Bound. Upward Bound assists the underachieving, talented high school student by providing an innovative and stimulating curriculum during his high school years, through a specially designed program within the university atmosphere. Its goal is to provide the academic foundation and motivation for the successful transition to the college campus upon high school graduation.

Registration

Academic Advisement and Student Responsibility. A curriculum is a program of study which fulfills the degree requirements of a student's major. Each college provides for academic advisement to assist the student in developing the program of study and selecting a program of courses for each semester. A student receives advisement in the college offering the major in which the student is enrolled or desires to enroll. It is the student's ultimate responsibility to seek advisement and meet all requirements for the completion of the degree.

Registration Dates. Registration and fee payment take place in accordance with the dates, times and procedures published in the *Schedule of Classes* for each semester. See pages 6-7 for the University calendar.

Schedule of Classes. The *Schedule of Classes* is the official publication of the Registrar's Office each semester. It is the student's guide to the semester's course offerings, dates, times, places, procedures for registration, and other important information pertaining to that semester.

The *Schedule of Classes* is distributed without charge and should be consulted as the official source of information for each semester.

Unit of Credit. The semester hour is the unit of credit. It represents one 50 minute class exercise per week per semester with two hours of outside preparation.

Course Loads. A normal full time course load for an undergraduate student is 12 semester hours. The maximum course load for which a student may register is 18 semester hours, except for students in the Colleges of Engineering and Applied Sciences and Architecture, which is 19 semester hours. A student who wishes to register for more than these maximums must petition the standards committee of the college in which they are registered and have an overload petition on file with that college prior to registration.

Concurrent Enrollment. Provided that the other university regulations concerning enrollment or graduation requirements or transfer of credits are not violated, a student may be enrolled at other institutions and or correspondence courses, and or extension classes while enrolled at Arizona State University. However, the student is urged to seek advisement prior to concurrent enrollment to assure orderly progress toward a degree. If total credits exceed the maximum course load, prior permission must be granted by the college standards committee. (See Course Loads.)

Attendance. Arizona State University has an attendance policy, administered solely by the instructor within each class. An instructor may require attendance as a course requirement. The student is responsible only to the instructor of the course for attendance. The student must contact each instructor directly in case of absences.

Variable Credit Courses. Many courses at Arizona State University are offered for variable credit. The credit range authorized is stated in this catalog. The credit range offered each semester is shown in the *Schedule of Classes*. Credit hours desired for a variable credit course must be indicated at the time of registration. If there is no indication, the student will be enrolled for the minimum credit hour offered.

Duplicate Registration. Although it may occasionally be necessary for a student to register twice for the same special course (see page 31) in one semester (Example: Seminar), the student may *never register twice* for the *same section* of the *same course*. This is considered a duplicate registration and is not permitted.

Adjustment to Course Schedule. Semester course programs should be carefully planned under the guidance of an academic advisor so that once registration has been completed, changes in enrollment will not be necessary. The following procedures are available for making adjustments to the student's course schedule during the semester if necessary. *No changes or registration transactions will be accepted in or after the last two weeks of the semester.*

Drop Add. This is a free adjustment period that occurs twice for each semester, early drop add for early registration and regular drop add after the start of classes. Consult the *Schedule of Classes* for dates and times for each semester.

It is only during this period that courses dropped will be removed from the permanent record. Also, there is a 100% adjustment of fees for changes in total hours registered as it affects the fee status, e., part time full time. Adjustments in the course schedule during this period are transacted through the department office where the course is offered by means of a course adjustment (drop add) form. A student may not drop *all* classes for which the student is registered. (See Official Withdrawal.)

Changes in fees (refunds and billings) will be reconciled approximately six (6) weeks after the semester begins when the Business Office conducts their fee audit.

Withdrawing from a Course During the Guaranteed W Period. The guaranteed W period begins immediately after the regular drop add period. No course may be *dropped* (removed from the permanent record) after the close of drop add. A student may only *withdraw* from courses after the drop add period. There is a

withdrawal fee of $1 for each course. During the guaranteed W period (the first six weeks of the semester) the mark of W will be automatically recorded for that course. Completed course adjustment forms are to be submitted to the Business Office with payment of the withdrawal fee. To withdraw from all courses registered, see Official Withdrawal from the University.

If the withdrawal results in a change of fee status, the student will be eligible for a refund in accordance with the refund schedule at the time of the withdrawal. The course from which a student withdraws is included in total hours registered for the semester.

Withdrawing from a Course After the Guaranteed W Period. After the six (6) week guaranteed W period, withdrawing from a course does *not* result in the automatic recording of the W. The instructor will assign a W or E depending on the student's status in the course at the time of withdrawal.

Completed course adjustment forms are filed with the cashier upon payment of the withdrawal fee of $1 per course. The form will be processed to record the notation W or E on the instructor's final class list. To withdraw from all courses registered see Official Withdrawal from the University.

No one will be permitted to withdraw from a course or conduct any registration transaction in the last two (2) weeks of the semester.

Official Withdrawal from the University. This is the only procedure whereby a student may withdraw from *all* classes for which the student has registered. A student may officially withdraw from the University after paying registration fees anytime before or during the semester until the last two weeks.

The student is the only person who may initiate a voluntary official withdrawal from the University. If the student is unable to withdraw in person, a letter requesting official withdrawal bearing the student's signature should be addressed to the Registrar's Office, Arizona State University. The date of official withdrawal is always the date the withdrawal form or letter is *received* in the Registrar's Office.

If a student withdraws before the end of the guaranteed W period, the W will be automatically recorded for all classes for which the student has registered. The student is eligible for a refund of fees paid in accordance with the refund schedule at the time of withdrawal.

If a student withdraws after the guaranteed W period, the instructor of each course for which the student has registered will receive a notice of the date of withdrawal and a W or E will appear on the final class list for each class. The instructor's assignment of a W or E depends upon the student's status in each course at the time of official withdrawal.

No one will be permitted to officially withdraw from the University or conduct any registration transaction in the last two (2) weeks of the semester.

Placement Examinations for Proficiency

English. Since ENG 101, 102 (3,3) First Year English *or* ENG 104 (3) Advanced First Year English are baccalaureate degree requirements for all students, demonstrated proficiency on the English Proficiency Examination enables a student to take ENG 104 (3) rather than the 6 semester hour sequence. The examination must be passed to enroll in ENG 104.

The English Proficiency Examination is administered by the Department of English (College of Liberal Arts). Students desiring further information concerning this examination should contact the Director of Freshman English, Language and Literature Building. For information about other advanced placement examinations in English, see pages 20-21.

Foreign Language. For information pertaining to foreign language placement examinations, see page 76 (Foreign Languages) and pages 20-21 (advanced placement).

Mathematics. The Department of Mathematics requires that all students take the Mathematics Placement Examination before registering for introductory mathematics courses. This examination is designed to determine the course level which will be of most benefit to the student. Examinations are given several times each semester and during the summer. For information concerning this examination, students should contact the Director of Mathematics Placement, Physical Science Center, A Wing.

Classification of Courses

The course numbering system has been designed to facilitate sorting and tabulating by machine methods.

Three letter designations relate to departmental offerings and subject fields. A complete list of the three letter designations, subject fields and departments or divisions in which courses are offered appears on pages 32-33 and each issue of the *Schedule of Classes*.

The University course numbering system is as follows:

100-299 (Lower Division Courses) are freshman and sophomore level courses and are designed primarily for these students. Certain courses are closed to freshmen unless they have had the designated prerequisites or are majoring in that department. This fact may be obtained from the catalog, the *Schedule of Classes*, or the student's curriculum advisor prior to registration.

300-499 (Upper Division Courses) are junior and senior level courses and are designed primarily for these students and other advanced students. Courses at the 400-level will apply to graduate degree requirements when appearing on an approved program of study. Prerequisites and other restrictions must be noted before registration. When approved for inclusion in an individual program of graduate study by the Graduate College, selected courses may serve the needs of individual graduate students.

500-799 are graduate level courses open only to graduate students under the conditions posed by their respective programs of study. Ordinarily 700-level courses are reserved for doctoral students. Undergraduate students at Arizona State University may enroll in graduate courses with the approval of their advisor, the course instructor, the chair of the department and the dean of the college offering the course. If the course is not used to meet an undergraduate graduation requirement, it may be eligible for use in a future graduate program on the same basis as work taken by an unclassified graduate student.

Special Topics 294, 494. The numbers 294 and 494 have been reserved for courses covering topics of immediate or special interest of a faculty member and students. Credit, 1-4 hours.

Pro-Seminar 498. Small group study and research for advanced students within their major area. Prerequisite: Major in the department or approval of instructor. Credit, 1-7 hours.

Independent Study 499. The course number 499 has been reserved for Independent Study courses in each of the instructional departments or divisions of the colleges at the undergraduate level. Independent Study courses are honor courses and may be taken only by outstanding senior students who have completed at least one semester in residence. To be eligible for an Independent Study course a student must have a cumulative grade point average of 3.00 or better in his major or field of specialization.

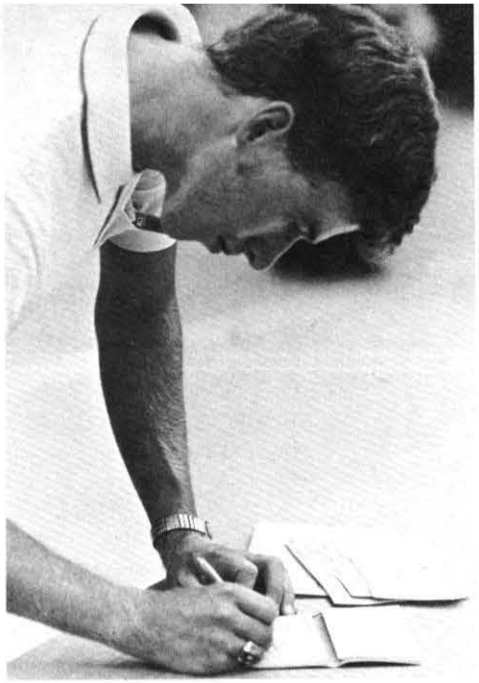
An Independent Study course is designed to provide an opportunity for the superior senior student or for the graduate student to do an original study or investigation in the major or field of specialization on an individual basis with a minimum of supervision or direction.

An Independent Study course is not a substitute for a catalog course, nor a means of taking a catalog course on an individual basis. Courses listed in the catalog may not be taken as Independent Study.

Application for Independent Study must be made well in advance of the regular registration period with the student's advisor. The application must be signed by the advisor, and approved by the instructor under whom the student will work and by the chair of the department in which the course is taken. A special class fee may be required. Credit 1-3 hours.

Special Liberal Arts Courses. Liberal Arts 100, 101, 150, 401, 402 are interdisciplinary courses offered by the College of Liberal Arts. LIA 100 (University Adjustment and Survival) and LIA 101 (Use of Research Libraries) are open to all students; LIA 150 (Introduction to Asia) is open to students who have not had any exposure to the Asian studies; LIA 401 (The Meaning of the 20th Century) follows a lecture structure and is open to all upper division students and to others by approval of the instructor; LIA 402 (Movements and Meaning in Latin America) offers lectures by a variety of specialists.

Honors Courses. The courses listed in the schedule as 298 and 492 (Honors Individual Study), 493 (Honors Thesis) and 497 (Honors Colloquium) are reserved for students in Honors Programs.



Special Courses. Special courses for Research Methods (500), Practicum (580), Field Work (583), Internship (584), Reading and Conference (590), Seminar (591), Research (592), Applied Project (593), Conference and Workshop (594), Special Topics (598), Thesis (599), Research Methods (600), Practicum (680), Field Work (683), Internship (684), Reading and Conference (690), Seminar (691), Research (692), Applied Project (693), Research Methods (700), Practicum (780), Field Work (783), Internship (784), Reading and Conference (790), Seminar (791), Research (792), Dissertation (799), are set forth in announcements of the Graduate College and are also listed in the respective departments, where offered.

Prerequisites. A student registering for a course must meet the prerequisites listed for it or otherwise satisfy the instructor that equivalent preparation has been completed.

Courses Offered. The University does not offer all of the courses listed in the catalog annually or each semester. The *Schedule of Classes* should be consulted for those courses offered each semester and during the summer terms.

Prefix Designations for Courses and Subject Field (by College)

Prefix	Discipline
	Architecture
AAD	Architectural Administration
ADE	Architectural Design and Technology Labs
ALP	Landscape Architecture and Regional Planning
ANP	Environmental Analysis and Programming
APA	Historic Preservation and Adaptive Use
APH	Architectural Philosophy and History
ARP	Evening and Special Courses
ATE	Architectural Technologies
AUP	Urban Planning
AVC	Visual Communications
	Business Administration
ACC	Accounting
ADS	Administrative Services
ADV	Advertising
BUE	Business Education
CIS	Computer Information Systems
ECN	Economics
FIN	Finance
HSA	Health Services Administration
INS	Insurance
MGT	Management
MKT	Marketing
OFA	Office Administration
QBA	Quantitative Business Analysis
REA	Real Estate
TRA	Transportation
	Criminal Justice
CRJ	Criminal Justice

Prefix	Discipline
	Education
AED	Adult Education
CED	Counselor Education
EDA	Educational Administration and Supervision
EDF	Educational Foundations
EDP	Educational Psychology
EDT	Educational Technology
EED	Elementary Education
HED	Higher Education
IED	Indian Education
IME	Instructional Media
LIS	Library Science
MCE	Multi Cultural Education
RDG	Reading Education
SAE	Safety Education
SED	Secondary Education
SPE	Special Education
SPF	Social Philosophical Foundations
	Engineering
AET	Aeronautical Technology
AGI	Agricultural Industry
ASE	Analysis and Systems
BAS	Bio-Agricultural Science
CEE	Civil Engineering
CHE	Chemical and Bio Engineering
CON	Construction
ECE	Engineering Core
EEE	Electrical Engineering
ELT	Electronic Technology
ERA	Environmenta Resources in Agriculture
ESE	Engineering Sciences

Prefix	Discipline
GRC	Graphic Communications
IEE	Industrial Engineering
IND	Industrial Design
ITE	Industrial Technology
MEE	Mechanical Engineering
MET	Manufacturing Engineering Technology
TST	Technical Science
	Fine Arts
ARA	Art Auxiliary Courses
ARE	Art Education
ARH	Art History
ART	Art
CDX	Communication Disorders
COM	Communications
HUM	Humanities
MHL	Music History Literature
MTC	Music Theory Composition
MUE	Music Education
MUP	Music Performance
REL	Religious Studies
THE	Theatre
THP	Theatre Performance and Production
	Liberal Arts
AES	Aerospace Studies
ASB	Anthropology (Soc. Beh.)*
ASM	Anthropology (Sci. Math.)*
AST	Astronomy
BIO	Biology
BOT	Botany
CDE	Child Development
CHI	Chinese

Prefix	Discipline
CHM	Chemistry
DAH	Dance History
DAN	Dance
DEA	Decorative Arts
ENG	English
ENT	Entomology
FAS	Family Studies
FLA	Foreign Languages
FON	Food and Nutrition
FRE	French
GCU	Cultural Geography
GER	German
GLG	Geology
GPH	Physical Geography
GRK	Greek
HEC	Home Economics Core
HEE	Home Economics Education
HES	Health Science
HIS	History
ITA	Italian
JPN	Japanese
LAT	Latin
LIA	Liberal Arts
MAT	Mathematics
MCO	Mass Communications
MIC	Microbiology
MIS	Military Science
PAF	Public Affairs
PED	Physical Education
PGS	Psychology (Soc Beh)*
PHI	Philosophy
PHS	Physical Science
PHY	Physics
POR	Portuguese
POS	Political Science
PSE	Science Education
PSY	Psychology (Sci Math)*
REC	Recreation
RUS	Russian
SOC	Sociology
SPA	Spanish
TXC	Textiles and Clothing
ZOL	Zoology
	Law
LAW	Law
	Nursing
HDE	Human Development
NCE	Continuing Education
NUR	Nursing
	School of Social Work
SWG	Social Work (Graduate Program)
SWU	Social Work (Undergraduate Program)

*Soc. Beh Social Behavioral Sci. Math Science Mathematics

Grading System

Scholarship Grades and Marks. Scholarship grades and marks are indicated by the letters and explanations given below. All grades and marks will appear on the grade report and the permanent record

A Excellent	NR No Report
B Good	E Failure
C Average	Y Satisfactory
D Passing	W Withdrawal
*CR Credit	I Incomplete
*NC No Credit	X Audit

Audit Enrollment. A student wishing to audit a course must first obtain approval of the instructor. The student must be properly registered and have fees paid for the course which is to be audited. Audit enrollment must be indicated at the time of registration An audited course is counted in the student load, however, no credit is earned for the course. The mark of X will be recorded for the completion of an audited course The mark of W may be recorded if the instructor determines that the student's participation or attendance was inadequate *Audit enrollment cannot be changed to credit enrollment nor credit enrollment to audit enrollment after the close of the drop/add period.*

Satisfactory. Each college or school within the University may elect to evaluate a student's performance by using the mark of Satisfactory (Y). The Y is appropriate for seminars, internships, projects, dissertations, workshops, theses, readings and conference and research

*Credit No Credit grading option registration is available only in College of Liberal Arts (see pages 53 54)

Mark of Incomplete (I). A mark of I is given by the instructor only when a student who is otherwise earning a passing grade is unable to complete a course because of illness or other conditions beyond the control of the student. It is the student's responsibility to contact the instructor, or the dean of the college in the instructor's absence, to arrange for timely completion of the course. If an I is not subsequently changed by the instructor, it becomes a part of the student's permanent record. See special regulations in the College of Nursing, the School of Social Work and other colleges with restrictions on the mark of I. A student does not re-register or pay fees for a course for which an incomplete (I) has been received in order to complete the course.

Mark of Withdrawal (W). The mark of W is automatically recorded in a course whenever a student withdraws from a course or officially withdraws from the University during the Guaranteed W period. An instructor may assign the mark of W for a course in which a student withdraws after the Guaranteed W period, depending on the student's status at the time of withdrawal.

Repeating a Course. An undergraduate student may repeat any course(s) in which a grade of D or E was received before the completion of the degree for which the course is a requirement. The student must be properly registered and have fees paid for the course which is to be repeated. When a course is repeated the original entry remains on the student's record and will only be counted once in earned hours for graduation. A student may, by formal application to the Registrar, request that a grade of D or E not be included in the cumulative grade point index. The course must have been repeated in residence at Arizona State University with a passing grade and prior to completion of the first bachelor's degree. See limitations on repeating courses in the Colleges of Architecture and Nursing and the School of Social Work.

A course in which a grade of C or better has been earned, may *not* be repeated and if repeated, will *not* be counted in earned hours or grade point index for graduation.

Instructor May Withdraw Student from Class. An instructor may withdraw a student from the class with a W or E, when the student's progress or conduct justifies such action:

1. Absences for reasons not justified.
2. Conduct detrimental to the student or other members of the class.
3. Lack of achievement or progress.

A student who feels that the instructor unjustly recorded a W or E for progress or conduct, may appeal to the standards committee of the college in which the course is offered. The decision of the college standards committee is final.

Change of Grade. The grade reported for a course is the sole and final responsibility of the instructor of the course.

A grade, once reported to the Registrar's Office, may be changed only (1) upon the authorization of the faculty member issuing the original grade or (2) when the instructor cannot be reached, by the standards committee of the college in which the course was offered. In either case, the approval of the dean of the college concerned is required.

A student who feels an unjust evaluation has been made, may appeal to the standards committee of the college in which the course is offered. The decision of the college standards committee is final.

A change of grade is made by the instructor or the standards committee of the college filing an Authorization for Grade Change form with the Registrar's Office. The reason for the change of grade shall be entered on the form and signed by the faculty member, the department chair, and the dean of the college involved.

Grade Points. For the purpose of computing the grade point index, grade points are assigned to each of the grades as follows: A, 4 points for each semester hour; B, 3 points; C, 2 points; D, 1 point; and E, 0 points.

Raw averages ending with 0.005 or higher are rounded upward to the nearest hundredth of a grade point.

Grade Point Average. The grade point average (GPA) is obtained by dividing the total number of grade points earned by the number of semester hours in the student's course load graded A, B, C, D, or E (net hours). Semester GPA is based on semester net hours. Cumulative GPA is based on total net hours.

Mid-Term Scholarship Report. Instructors are required to evaluate students at mid-term for scholarship deficiencies. A student who has been evaluated for a D or E at mid-semester will receive a Deficient Scholarship Report. The mid-term Deficient Scholarship Report is not recorded on the student's permanent record. Mid-term Reports are mailed to a student's local address of record.

Student Grade Report. A grade report will be sent to each student at the end of each semester to the home address of record.

It is the responsibility of the student to keep the Office of the Registrar informed of address changes.

Dean's List. The Dean's List is composed of all undergraduate students who meet the following requirements: (1) Twelve or more resident and graded credit hours (exclusive of credit, no credit) must be completed at ASU during the semester, (2) A semester index of 3.500 or better must be achieved (exclusive of credit, no credit).

Retention and Academic Standards

Class Standing of Students. Freshmen are those students who have 24 semester hours or less of credit, sophomores, those with 25 to 55 semester hours; juniors, those with 56 to 86; seniors, those with 87 or more, graduate students, those holding a bachelor's degree from an accredited institution of higher education

Good Standing. In order to be classified in good standing, a student who has earned 24 semester hours or less must have at least a 1.60 grade point average GPA, student who has earned 25 semester hours but less than 56 must have at least a 1.75 GPA; and a student must have achieved a 2.00 GPA no later than the semester in which a total of 56 semester hours has been earned. *To remain in good standing,* a student with 56 hours or more of credit *must maintain a cumulative GPA of 2.00.* Any college may establish higher GPA standards for one or more of its programs. The GPA for good standing is computed on the courses taken at Arizona State University only.

Probation. Any student who is not in good standing may be placed on probation by the college in which the student is enrolled at the end of the semester in which the standard is not achieved. A student on academic probation is required to observe any limitations or rules the college may require as a condition for retention.

Disqualification. A student who is placed on probation at the end of a semester is subject to disqualification by the college at the end of the following semester if the satisfactory GPA is not obtained. Disqualification is within the discretionary power of the college. *A disqualified student is notified by the dean of the college and is not allowed to register for at least one regular semester at the University.* A student who receives notice of disqualification may appeal to the college standards committee.

Any student who has earned sufficient hours, but has not achieved the minimum GPA (2.00) required for graduation, is subject to disqualification.

Reinstatement. The disqualified student must submit an application for reinstatement to the college in which last enrolled. To transfer to another college within the University, an application for reinstatement must be made to the University Undergraduate Admissions Board.

A disqualified student who has not registered for one semester or more *must apply for readmission as well as reinstatement.* A disqualified student should apply for reinstatement before filing an application for readmission at the Registrar's Office.

Appeals. A student who wishes to appeal the decision of a standards committee of a college, with respect to disqualification or reinstatement, may make application for a hearing before the University Undergraduate Admissions Board. Actions on appeals before Board will be communicated to the student by the Director of Admissions. The decision of this Board is final.

General Studies

Arizona State University students are required to demonstrate a satisfactory level of basic knowledge in the humanities and fine arts, social and behavioral sciences, and sciences and mathematics. Specific patterns of General Studies requirements are established by the colleges of the University within the overall program. Since requirements under this program vary somewhat from one curriculum to another, students should refer to the catalog description of the recommended General Studies program within the college in which they are enrolled. Specific disciplines listed within the three overall categories are *not necessarily applicable* to the General Studies program and graduation requirements of each college.

Students transferring from approved institutions of higher education ordinarily will be given general studies credit, hour for hour, for work done in those institutions insofar as it is equivalent in content to General Studies courses at this University.

All students who are candidates for a bachelor's degree are required to complete 36 to 57 semester hours in upper and lower division General Studies courses, depending upon the college and curriculum in which they are enrolled. The total number of semester hours required in each of the fields listed below is specific by the individual colleges.

Humanities and Fine Arts

Architecture, Art, Dance, English, Foreign Languages, Interdisciplinary Humanities, Music, Philosophy, Religious Studies, Communication and Theatre. THE and THP.

Students select with the advisor's approval, two or more courses within a pattern designed to enhance their ability to develop a discriminating appreciation and understanding of the humanities, fine arts and philosophical ideas. This pattern is intended to develop standards of critical judgment, ability to assess and evaluate humanistic ideas and values, and competence in the basic arts of communication and self expression.

Social and Behavioral Sciences

Aerospace Studies, Agriculture Industry, Anthropology-ASB, Business Administration, Criminal Justice, Cultural Geography, Economics, Educational Foundations, Engineering, Health Education, History, Home Economics, Mass Communications, Military Science, Political Science, Psychology PGS, Sociology

Communication and Theatre COM and CDX.

Students select with the advisor's approval two or more courses within the social and behavioral sciences This pattern is designed to expand knowledge and appreciation of American and other cultures to estimate the impact of science, technology, and changing business and economic conditions on human societies; and to increase awareness of the major social issues of the time.

Science and Mathematics

Anthropology-ASM, Bio-Agricultural Science, Botany, Chemistry, Engineering, Geology, Mathematics, Physical Geography, Physics, Psychology-PSY, Zoology

Students select with the advisor's approval two or more courses, one or more of which must have a laboratory These selections comprise a coherent pattern designed to explore the fundamental concepts of science and mathematics; to reveal the role of observation and experiment, inductive and deductive reasoning, and the quantitative approach in modern physical, biological and engineering science, and to bring into sharp focus the scientific forces that influence their destiny

To complete the total credit hours requirement in general studies, students with the advisor's approval shall select appropriate electives from the above fields or from other fields approved within the framework established by each college Requirements in the three fields of General Studies may be met by advanced standing credit or may be waived by virtue of acceptable performance on a proficiency examination In such cases, the prescribed requirements are correspondingly reduced by approval of the college See College General Studies requirement for graduation.

Interdisciplinary Studies

City and Regional Planning. The city and regional planning focus provides undergraduate students of various disciplines a familiarity with this area's concerns, theories, and techniques. These draw from course offerings related to planning in various departments of the University (Architecture, Geology, Civil Engineering, Public Affairs, Business Administration, History, Sociology, Home Economics)

Faculty members of the Interdisciplinary Committee on City and Regional Planning located through the dean's office of participating colleges advise students Students take a required number of courses from a list of primary electives as well as a single comprehensive core course, Interdisciplinary Urban Planning, that covers the principles of city and regional planning. The core course must be taken by all participating students

Students must fulfill all requirements within their college and major department. However, if requirements of the interdisciplinary program are met, the student will receive, in addition to the degree awarded by his own department, a certificate issued by the Interdisciplinary Committee on City and Regional Planning verifying an additional "concentration" in city and regional planning

The core course, Interdisciplinary Urban Planning, (AUP 571, GCU 494, or other departmental cross listing is directed cooperatively by representatives from various disciplines related to city and regional planning

With the approval of the college and or department, the student elects a minimum of 21 credit hours composed of the 3 credit core course plus at least 18 credit hours outside the student's major department from the list of electives available from the Chair of the Interdisciplinary Advisory Committee on City and Regional Planning

Environmental Studies. The Center for Environmental Studies was established to initiate, coordinate and encourage research, community service, and academic programs. The Center does not formally offer courses or a degree program It sponsors special courses, conferences and workshops on environmental topics Drawing from faculty and students throughout the University, the Center participates in research and community programs relating to environmental problem areas

Film Studies. The film studies program at ASU exists not only to provide information and experience but also to serve as a means of creative expression for the student and as a useful subject and tool in teaching.

The program is not designed to produce professional filmmakers However, it may provide practical preparation for students desiring further film study in other institutions Individual course descriptions may be found in this catalog under the several departments involved. Current offerings are listed each semester in the *Schedule of Classes* and in the special listings issued by each of the colleges offering courses

With the approval of the college and or department, a student may elect a 15 or 24 hour program of film as a related field or field of emphasis. The 15-hour related field is available within the requirements of the B A degree program; the 24 hour field of emphasis may be used as a minor in the B. A. in Education degree program with prior approval from the College of Education

Inquiries about this program should be directed to the Chair of the Interdisciplinary Film Committee or the Film Studies Advisor in participating colleges

Gerontology. Course work in gerontology is currently offered in nine departments throughout many disciplines. Gerontology by its very

nature is an interdisciplinary study of the economic, political, legal, social and health-related issues of the older person. The purpose of this interdisciplinary activity is to provide a student with sufficient background to work in a variety of gerontological occupations. A student majors in one of the currently existing disciplines but takes individual course work within the variety of departments which offer gerontology related courses.

Current offerings are listed each semester in the *Schedule of Classes*. Inquiries about the

program should be directed to Chair of the Multi Disciplinary Coordinating Committee on aging

Courses are offered on geronto ogy in the Colleges of Nurs ng, Law, Educ tion (Adu t Education), Fine Arts (Comn unicat ons), Liberal Arts (Home Economics, Recreation, and Sociology).

International Programs and Studies. Inter national matters and an understanding of other nations are reflected in course offer ngs throughout the Univers ty Special area eff phases are coordinated through the Center for Asian Studies (page 56) and the Center for Latin American Studies (page 58) These two centers also publish quarterly journa s, research reports, and scholarly monographs The Hayden Library has extensive collections on international subjects in selected areas.

University academic year student exchange programs exist with Mexican universities lo cated at Guadalajara, Hermosillo and Monterrey Summer school programs in Guatemala and Europe are also available Foreign students are also attracted annually to the in tensive English Skills Program for International Students (p ige 19)

Faculty within many disc p lines engage in research directly related to foreign nations and international matters Special sem nars and conferences hosted regu arly by the University deal with the international dimension and at tract scholars from around the world A number of additional specia international programs exist in the College of Bus ness Administration (page 132).

Women's Studies. An interdiscip n ry perspective on women serves as the vehicle for a critical exploration of the role and status of past and present women, assumptions about women accepted in Amer can culture, the va lidity of research on women, the effect on women of political, economic, and socia sys tems, and the contributions of women to world culture. The student has the opportunity to consider alternative ways of looking at the assumptions that affect the mage of women and to make a research contribution to the field.

Since Women's Studies extends into the so cial and behavorial sciences, the natural sciences, fine arts, and education and other professional fields, women's studies courses are found in many university departments. With the approval of the college and or department, a student may elect among th ese courses. Course topics include: Women and Society, Women's Communication, Education, Social History, View of Art; Women in U.S. History; Women and the Arts, 18th and 19th Century Feminine Images, Modern British and American Women Writers of Fiction, French Women and Art; Womankind (KAET telecourse); Minority Women; Advanced Children's Adolescent Literature; and Women and Mental Health Feminist Therapy.

University Baccalaureate Degree Requirements

The University grants the following bacca laureate degrees

Bachelor of Arts
Bachelor of Science
Bachelor of Architecture*
Bachelor of Science in Criminal Justice
Bachelor of Science in Engineering
Bachelor of Science in Nursing
Bachelor of Arts in Education
Bachelor of Music
Bachelor of Fine Arts
Bachelor of Social Work

*Profess onal five-ye ar program 170 sen ester hours)

Credit Requirements. A minimum of 126 semester hours is required for graduation with a bachelor's degree except for the Professional Bachelor of Architecture degree A minimum of fifty one (51) semester hours n upper d'v sion courses numbered 300 or 400 are required for graduation.

Not more than 30 semester hours of credit in correspondence courses, extens on and or by comprehensive examination wil be ac cepted for credit toward the bachelor's degree

English Proficiency. ENG 101 and 102 (6) or ENG 104 (3) are required for gradu it on from Arizona State University n any bacca laureate program. (See page 30

Grade Point Requirements. The cumulative grade point average must be 2.00 or better for all courses taken at Arizona State Un versity for a bachelor's degree

Resident Credit Requirements. Resident credit refers to a course wh ch is offered in a regular semester or sumn er sess on A mini mum of 30 semester hours earned in resident credit courses at Arizona State University is required of every candidate for the bache or's degree. The final 12 semester hours immedi ately preceding graduation must be of resident credit. Any candidate wishing an exception to this regulation must file a petit on w th the standards committee of the college n which enrolled. Petitions for an exception must be made in writing and addressed to the dean of the college. The decision of the college stand ards committee is final

Graduation with Academic Recognition. A student must have completed at least 60 se mester hours of resident credit courses at Arizona State University to qualify for graduation with academic recogn tion A student with a cumulative grade point average of 3 40 will graduate *cum laude* 3 60 w ll graduate *magna cum laude* and 3 80 or above will grad

uate *summa cum laude*. The cumulative grade point average for these designat ons will only include all course work taken at Arizona State University All designations of graduation with academic recognition will be ind cated on the diploma and on the student's permanent record.

Meeting New Course Requirements. A student in continuous attendance will gradu ate under the curriculum, course requirements and regulations for graduation as stated in the catalog in effect at the time of admiss on to the University or any subsequent catalog is sued while in attendance

A student who fails to register for one regular semester or more and is readmitted to the University, will graduate under the curricu lum, course requirements and regulations for graduation as stated in the cata og in effect at the time of readmiss on or thereafter wh e in continuous attendance to the University

Only one catalog may be ut lized wl en determining graduation requirements

Application for Graduation. A student *must apply* for graduation up n *completion of* 87 semester hours. A degree is never awarded unless the student has filed an application f or graduation. An application for gr aduation may be obta ned in the Graduation Office and two copies of the Ar zona State U niversity transcript in the Records Section The tran script and the application are to be taken tc the academic advisor or college coordinator f advisement for evaluation of work con pleted and designation of courses yet to be comp eted for degree requirements

The student must pay the $7 00 graduation fee at the Cashier's Office The app icat on with the fee receipt must be returned to the Graduation Office w'th n three weeks after obtaining the application and transcripts

Diploma information wil be verif ed in the Graduation Office at this time

If the student or advisor makes an ad ust ment in the designation of courses to be completed, an approved petition with the nec essary signatures is required and must be forwarded to the Graduation Office

The student will receive the degree on the conferral date of the semester in which all des ignated courses are completed. The student s responsible for completing all courses desig nated on the application. The Graduation Office is responsible only for verifying courses to be completed and all University degree re quirements

There will be no further contact fron tl e Graduation Office with the student unt l the final gr ades for all designated courses to be completed are receiv ed. At th it time, if all degree requirements have been fulfilled, the diploma wi l be ma led to the student. If all degree requirements are not n et, the app ica tion for graduation wi l be w thdrawn, and the student will be notified by a letter sent to the diplom a address

A graduation re applic ation fee s required t> apply for the degree at a future d ate

A student cannot ch nge the applic ation f or graduation from one degree r n ajor to an other after the beginning of the f na semester's work

Financial Clearance. *Bef re a st dent may receive a diploma or an transcript, financial clearance must be obta ned at the Business Office* Financial clearance indicates that the regular fees library, housing ch arges, dining hall, parking sanctions and other fees have been paid

Applications for Teaching Certificates. Applications for teaching certific ates should be obtained from the office of the Director of Student Services in the Co lege of Educ at on

Second Bachelor's Degree. To obtain a second bachelor's degree, the student must successfully complete an addit onal 30 hours or more of resident credit and must meet all requirements of the second degree The stu dent may pursue two bachelor's degrees at the same time only with the approval of the st and ards committee(s) of the college(s) involved The student seeking a second bachelor's de gree must meet admission criteri a for that degree

Graduate Degrees. See section of th s cata log headed Graduate College and College of Law for graduate degrees offered and st ate ments of requirements f r graduate degrees A separate catalog can be obta ned from the Graduate College

Western Interstate Commission for Higher Education (WICHE)

For Arizona residents who wish to attend pro fessional schools of med c ne, dentistry, veterinary medicine, physical therapy, occupa tional therapy, and optometry in one of the other western states, Ar zona l as jo ned with the other western states to cre ate the Western Interstate Commission for Higher Education through whose effort and agency qua fied Arizona residents m y attend schools n these other states at essentially the san e expense to the students as to residents of the state in which the school is located Students must have maintained at least average grades in their pre-professional work and must have been legal residents of Ar zona f or at le st the last five years Recip ents are required to re turn to Arizona to practice or to repay a portion of the funds expended in the r behalf

For further information, interested students should contact Dr Herbert D. Rhodes, Execu tive Secret ary, Arizon a Comm ss on for WICHE, c o Gr aduate College, University of Arizona, Tucson, Ar zona 85721, 602 884 3471, or Dr. Brice W Corder, Assistant Dean, College of Liberal Arts, Pre Med Office, SS 107, (602) 965 7497

Auxiliary Services

Housing

Residence halls make a genuine contribution to the educational progr im at Ar'zona State Un versity The primary ob ective of the resi dence hall program is to provide an atmosphere which will facilitate the indiv du t student's educational program. Progr in m ng is planned to complement the University's cur ricular offerings in the fo lowing areas academic programs, ath etic events, serv ice projects, social events, cultural offerings ind recreational programming

In order to provide a variety of living experi ences, there are graduate ind all class h ills Mariposa Hall is for graduate students Each hall provides mail service, a library, resource facilities, and desk services. In some halls caf eteria facilities are available. Telephones are provided in all student rooms.

Reservations. Application materials obtained from the Housing Office, Memorial Union Room 110, will include forms to be completed by prospective students desiring living quarters in University residence halls The housing packet includes an application form and con tract.

Housing applicants must forward the appli cation and contract together with a room deposit of $50 to the Housing Office. Room reservations are contingent upon the appli-cant's being admitted to the University by the Admissions Office However, prospective stu dents are urged to file their applications for housing before admissions acceptance is re-ceived

A residence hall preference may be stated at the time of making reservations Preferences are honored on a deposit date basis; thus, stu dents with specific residence h all requests should file their requests is ear y as possible with the Housing Office Assignments to halls are made by the Housing Office in accordance with policies established by the Univ ersity Room assignments are nade by the unit direc tor of the individual residence complex Students must be adm tted to the University before checking into a residence hall. Rooms must be claimed by d ites out ined in the con tract or reservations wi l be cancelled (See Housing Charges, page 21)

Only those disabled students who are able, through their own efforts or with ass stance provided by an attendant, to carry on routine tasks of daily living shall be permitted to live in the residence hall. Specia rooms are avail-able for disabled students. Requests for such rooms should be noted on the appl cation. (See also page 19.)

Residence Hall Regulations. Rules and reg ulations, other than those set forth in the University *Code of Conduct* may be formu lated by the Dean of Students Individual halls may formulate additional regulations for their respective situations (See also pages 23, 25.)

Health Service

Student Health Service. The Arizona State University Health Questionnaire form is a part of the admission requ rement for all new students (see page 15).

Also required is a 70 mm. screening chest film of all new students This s a public health procedure to help prevent the spread of disease of a contagious nature This will be done at the Health Service prior to registra-tion and during Orientation Week at no expense to the student. The above also can be obtained on announced summer dates for early registration.

Former students who have not been in atten dance at the University for two years or more must meet the same requirements as new stu dents.

Student Health Service Treatment. C inic

services are available to students during regularly posted hours, and at any hour for emergencies. No illness will be cared for in the residence halls, nor will any prescription be made for a student not reporting in person to the Health Service. Bedside care will be given in the infirmary for four days per confinement without charge. A nominal charge is made after that time should further care be needed. Extended treatment may require medical withdrawal from the University.

Students who do not have meal tickets at one of the University dining halls will pay for meals served while in the infirmary. Contagious illness will be cared for in the Health Service whenever possible, but diseases requiring long periods of isolation must be treated either at home or in a local hospital at the student's expense. Students suffering from uncompensated psychiatric illness may be required to withdraw temporarily or permanently from the University.

Illness or Injury to Campus Resident. A campus resident is required to report illness or injury immediately to the head resident of the residence hall. Failure to do so may result in one being asked to leave the hall. Health reports are sent to the family physician upon request of the student.

Financial Responsibilities. With the payment of the registration fee each semester, all regularly registered students are entitled to Student Health Service care according to established policies. Students may be referred to consultant specialists when the University physicians consider it advisable, but such fees must be borne by the student. When hospitalization is considered necessary, the University assumes no financial responsibility.

Student Insurance. Insurance policies available through Student Health Service help defray the cost of accidents or any necessary hospitalization. Students are expected to take advantage of these plans which supplement the Student Health Service. Insurance coverage is mandatory for international students. Graduate and undergraduate students enrolled at the University are eligible for health insurance enrollment.

Counseling Services

Counseling Service. A staff of counseling psychologists, clinical psychologists and social workers is available for confidential interviews. Appointments may be made to discuss personal-social adjustment, understanding of self and evaluation of long term goals. Increased self understanding often offers students the opportunity to make more effective use of their intellectual and personal resources.

Counseling does not involve telling the student what to do; the student makes the decisions. Thus, emphasis is placed on the ultimate responsibility of individuals conducting their own lives and making the most of their opportunities.

Group counseling is also available. This allows students the opportunity to explore and share their problems with other students.

The Counseling Service does not offer academic course or program advisement. This is a service offered by faculty advisors.

Extracurricular Activities

The Dean of Students Office, located in Matthews Center and a division of the Office of Student Affairs, offers opportunities for student development and participation through various activities, organizations and programs. The office is composed of the following program and service areas: Student Organizations, Student Activities, ASU Student Foundation, Student Conduct, Special Use Facility Scheduling, and advisement of Interfraternity Council, Panhellenic Council, American Indian Students, and Student Personnel Internships.

The descriptions below provide an overview of the activities of this office. For further information, contact the Dean of Students Office.

Student Organizations

Student organizations at Arizona State University offer students the opportunity to participate in leadership experiences and to explore areas of specific interest. Students are encouraged to consider the values of membership in an organized group. Each of the approximately 300 existing student organizations has its own membership requirements and University advisor. Below is a listing of student organizations currently at the University. More detailed information regarding these organizations may be obtained from the Dean of Students Office.

Councils

College of Architecture Council

College of Business Administration Student Council

College of Education College Council

Engineering Sciences College Council

Liberal Arts College Council

College of Nursing Council (Arizona Association of Student Nurses)

College of Law Council (Student Bar Association)

Scholastic Honorary and Honorary Groups

Alpha Epsilon Delta

Alpha Epsilon Rho

Alpha Iota Delta

Alpha Kappa Delta

Alpha Lambda Delta

Alpha Mu Gamma

Alpha Pi Mu

Alpha Zeta
Arete
Beta Beta Beta
Beta Gamma Sigma
Blue Key National Honor Fraternity
Chi Omicron Mu Communication National Honorary
Devils Advocates
Eta Kappa Nu
Kappa Delta Pi
Kaydettes
Mortar Board
Natani
Pershing Rifles, CO D 1
Phi Alpha Theta
Pi Alpha Alpha
Pi Kappa Delta
Psi Omega Pi
Psi Sigma Alpha
Pi Tau Sigma
Psi Chi, Psychology National Honorary
Sigma Delta Pi
Sigma Iota Epsilon
Sigma Lambda Chi
Sigma Theta Tau Nursing Honorary
Sophos
Spurs
Tau Beta Pi
Tau Beta Sigma
University Dance Theatre

Professional Organizations

Administrative Management Society
Advertising Club Alpha Delta Sigma
Alpha Chi Sigma
Alpha Eta Rho
American Chemical Society Student Affiliates
American Institute of Aeronautics and Astronautics, Student Branch
American Institute of Architects, Student Chapter
American Institute of Industrial Engineers, Student Chapter
American Nuclear Society, Student Branch
American Society for Personnel Administration
American Society for Public Administration
American Society of Civil Engineers at ASU, Student Chapter
American Society of Interior Designers
American Society of Mechanical Engineers, Student Chapter
Angel Flight, Tex May Squadron
Arizona Association of Student Nurses
Arizona Home Economics Association
Arnold Air Society, Tex May Squadron
Associated General Contractors, Student Chapter
Associated Students Center for Public Affairs
Association for Childhood Education International
Association of Electronic Students
Association of Graduate Assistants in the College of Education
Beta Alpha Psi
Collegiate Distributing Education Clubs of America
Criminal Justice Executive Council
DBA Association (Doctor of Business Administration)
Delta Phi Epsilon
Delta Pi Epsilon
Delta Sigma Pi
Desert Rangers
Economics Association
Elementary Kindergarten Nursery Educators NEA
Gamma Iota Sigma
Gamma Theta Upsilon
Graduate Nurse Organization
Industrial Arts College Club at ASU
Institute of Electrical and Electronic Engineers
Lambda Alpha Epsilon
Music Educators National Conference, Student Chapter
Park and Recreation Organization Students Prof
Phi Beta Lambda
Phi Chi Theta
Phi Delta Kappa
Phi Kappa Phi
Phi Mu Alpha Sinfonia
Pi Lambda Theta
Pi Sigma Epsilon
Range Ecology Club
Real Estate Association
Sigma Alpha Iota
Sigma Delta Chi
Society of Automotive Engineers Student Club
Society of Manufacturing Engineers
Society of Physics Students
Soil Conservation Society of America
Speech Communication Graduate Student Association
Student Association of Social Workers
Student Bar Association
Student Council for Exceptional Children
Student Marketing Club
Student Society of Medical Technology
Student Speech and Hearing Association
Women in Communications, Inc
Women in Public Administration
Women in Social Work

Special Interest General

Accounting Association
African Students Association
Agriculture Division Council
Anthropology Club
Arizona Friends of the Earth
Arizona Youth for Life
Arizonans for Peace
Army ROTC Drill Team
Association of Black Engineering and Other Professional Students
Benjamin Franklin Society problems of the aged
Black Student Union

Brazilian Club
Campus Civil L bert es Union
Campus Coa ition for the Equal R ghts Amendn ent
Chicano Business Student Associ ation
Chinese Student Assoc a on
Circle K Internationa
Co ege Democrats
Co lege Republicans
Communication Graduate Students Assoc ation
Communicology Assoc at n
Couples Club AFROTC)
Devils Discip es
El Grupo Estud antil de l Facu tad de Derech
Free Spirit
Friends of Cooperat ve Alternatives
Full Circle Campus Orga iz it on
GDI (Gamm Delt Iot Society)
Geology Club
German Club
Graduate All ance f r Students of Soc logy
Graduate Nurse Organiz ation
Graphic Arts Club
India Associat on
Integrity C ub
Inter Dorm Council
International Agriculture Club
Interpreters Theatre Org inizat n
Ita ian Language C ub
La Liga Panamer cana
Lambda Delta Sigma
Lat n American Assoc ation
League of Women Voters of E ast Mar copa Campus Unit
Libertarian Associat on
Los Hijos del Sol
Masters Student Organ z it n
Medievalist Club
Med Start
Movimiento Estudiant l Ch cano de Aztlan (MECHA)
MU Activities Board
MU Art Committee
MU Chess Associat on
MU Duplicate Bridge Club
MU Entertainment Comm ttee
MU Film Committee
MU Gallery Guides
MU Hostess Committee
MU Ideas and Issues Committee
MU Recreation Committee
National Organization for the Reform of Mar juan Laws (NORML)
Nationa Organization for Women, Tri C ty Chapter (NOW)
Native American Student Assoc at on
Northlight: Student Center for Light Sens t ve Media
Nutrition Club Student D etetic Associ t on
Organization of Arab Students
Phidelphia (Frat. Aux
Philosophy Club
Phoenix-US China Peoples Fr endship Ass iat n
Phoenix World Future Soc ety Group
Pre Veterinary Club
Quant tative Systems Club
Scabbard and Blade, Nat onal Soc ety
Silver Wing, Tubby Miller Squadron
Sisters of the Crossed Swords
Student Coalition Against Racism (SC AR)
Student Linguistic Circ e
Students Concerned About th e Project
Students International Meditation Society (SIMS
Sundancers
Sun Devil Forensic Squad
Sun Dolls
Tibetan Meditation Society
Transportation C ub
Undergraduate Social Serv ces Organiz ition
University Community for the Equal Rights Amendment
University Gospel Ensemble
University Players Council
Wildlife Society
Women's Center
Women Image Now WIN
Women In Law
Women's Precision Dri Team
Young Americans for Freedom
Young Socialist Alliance
Young Socialist Alternat ve

Religious Groups

Advance for Christ
Adventist Student Koinonia
All Saints Student Counc
American Baptist Campus Foundat on
American Indian Crus ade
Baha'i Associat on
Baptist Student Union
Campus Crusade for Christ
Canterbury Assoc ation
Catholic Action
Christian Science Co lege Organizat on
Comparative Religions Group
Conservative Baptist Youth
Divine Light Club TM
Eckankar
Gamma Delta
Grace Community Church Student Ass c ation
Hillel Union of Jewish Students
Intervarsity Chr stian Fellowship
LDS Inst tute Council at ASU
Lutheran Student Movement
Muslim Students Association
S gma Gamma Ch (L D.S
Sri Chinmoy Meditation Group
Temple Jesus Peop e
The Way at ASU
Three (3) H O Club of Kunda n Yoga
University Christian Fellowship

Wesley Foundation (Methodist)
Young Lions of Judah

Fraternities

Inter Fraternity Council
Alpha Epsilon Pi
Alpha Gamma Rho
Alpha Phi Alpha
Beta Theta Pi
Delta Sigma Phi
Kappa Alpha Psi
Kappa Sigma
Lambda Chi Alpha
Omega Psi Phi
Phi Delta Theta
Phi Gamma Delta
Phi Kappa Psi
Phi Sigma Kappa
Pi Kappa Alpha
Sigma Alpha Epsilon
Sigma Chi
Sigma Nu
Sigma Phi Epsilon
Theta Chi
Theta Delta Chi
Zeta Beta Tau

Sororities

Panhellenic Council
Junior Panhellenic Council
Alpha Delta Pi
Alpha Kappa Alpha
Alpha Phi
Chi Omega
Delta Delta Delta
Delta Gamma
Delta Sigma Theta
Gamma Phi Beta
Kappa Alpha Theta
Kappa Delta
Kappa Kappa Gamma
Pi Beta Phi
Sigma Sigma Sigma

Student Activities

Listed below are some of the student activities available at ASU. In addition, Associated Students, the Memorial Union, and Grady Gammage Memorial Auditorium offer a variety of activities. Information regarding these activities may be obtained through the particular department or group concerned.

Musical Activities. All students can become members of the performing organizations maintained by the Music Department. College credit is given for regular work in Symphony Orchestra, Bands, University Chorus, Concert Choir, Opera Workshop, Choral Union, Women's Chorus, and in special instrumental and vocal ensembles. Participation in any of the above groups without credit is also possible. Students in these organizations give local concerts, radio and TV performances and regional and national tours.

Dance. Programs and concerts are presented by members of the University Dance Theatre under the supervision of the dance faculty. Presentations are in the dance studio in the Physical Education Building East and Gammage Auditorium. Any student interested in performing is eligible to audition for the group.

Forensics. Arizona State University sponsors a Sun Devil Forensic squad associated with Pi Kappa Delta, national forensic honorary. Each year the squad travels to trophy tournaments sponsored by major universities throughout the United States. Participants engage in national competition in extemporaneous speaking, impromptu speaking, oral interpretation, and oratory as well as debate. Students may enroll for credit under COM 301 or participate in the forensic programming as an extracurricular activity.

Interpreters Theatre. Participants in this activity write, compile, and perform scripts for presentation in diverse settings, both on- and off-campus, under the supervision of a faculty member in the Department of Communication and Theatre. Students may enroll for credit, or may participate as an extra curricular activity.

Theatre. All plays are produced by the University Theatre under the supervision of the Department of Communication and Theatre. The University Theatre presents six to ten faculty directed productions during the regular school year. The Student Experimental Theatre produces six student directed productions. Productions are mounted in a variety of theatre spaces. All students are invited to participate in these activities.

Religious Activities. Arizona State University believes that one of its responsibilities is to maintain an atmosphere of religious freedom for the individual and to provide adequate opportunity for the development of spiritual maturity and the exercise of spiritual interests. Various religious centers in Tempe devote their facilities to meeting student needs. These centers provide students with the opportunity to participate in programs of religious worship and to meet other students through well planned social activities. (See Student Organizations for the list of religious groups.)

Interfraternity Council. (IFC) is the coordinating body of the 19 member fraternities on campus. The IFC provides a medium for communication and organization for the development of fraternity programming in such areas as scholarship, public relations, community and university service projects, membership recruitment and educational pursuits.

Panhellenic Council is the governing body for the 13 sororities at Arizona State Univer sity. Panhellenic continually works toward fostering communication between houses, en couraging and rewarding scholastic achievement, service and promoting the con tinual improvement and welfare of the members.

Student Conduct. Specific reference should be made to the *Code of Conduct,* which sets forth guidelines regarding student r ghts and responsibilities. For additional information, see the section on Student Membership n the University. (See page 13)

American Indian Student Program. This program offers general counseling, advise ment, student referral services and encouragement to the American Indian stu dent regarding academic performance and retention.

ASU Student Foundation. The purpose of this organization is two-fold The Foundat on raises funds for areas of the Universitv h ving wide student support and serves the University through public relat ons with students, alumn and the community Equally important is the Foundation's ability to involve and commit students to the betterment of Arizona State University and the State of Arizona

Legal Assistance Office. The purpose of the legal assistance office is to advise students of their legal rights and responsibilities The at-torneys do not represent students n court but do offer assistance in the areas of landlord tenant relations, domestic relations, consumer concerns and other areas where egal assist ance is indicated.

Associated Students

The Associated Students of Arizona State University (ASASU) is the body established by the Board of Regents through which stu dent activities, concerns and needs outside the classroom are partially met

ASASU, operating under the *Articles of Association,* is composed of an executive committee, first council and college councils Major ASASU programs include:

Funding: Budget allocations to the various student boards and college councils for student activities and programs.

Activities Boards: Programs designed by students, ranging from fi m and guest artist series; film, literary and music writing con tests, to rock, jazz and other musical concerts; dances and traditional spirit-oriented activities

Administrative Boards: Programs designed to measure student interest and concerns by the use of attitude surveys and other barome ters of social change on campus among students. In addition, the Boards facilitate the effectiveness of women's and minor ty student groups on campus

Student Tenants Association: An organiza tion established to prov de information regarding off campus living accommodations and to mediate differences between student tenants and landlords

Sports

Intramurals/Club Sports/Recreation. The Intramural Club Sports and Recreation pro gram at Arizona State University is designed to provide an opportunity for participation in a variety of sports and recreational activities for all students, faculty and staff. The objective is to give the participants a positive experience, stressing sportsmanship, fun and association with other people.

Intramurals sponsors more than 65 sports activities in the men's, women's and co ed programs. The 14 club sports include canoe ng and kayak, flying, hockey, karate, lacrosse, outing, rodeo, rugby, skiing, skydiving, soccer, volleyball, water polo and wheelchair basket ball In addition, slimnastics, the 100-Mile Club and the 500 Mile Bicycle Club are avail able. Open recreation is available daily at specified hours in the university pool, gymna-sia, handball courts, weight room and tennis courts. Information about the hours may be obtained by calling the *Hotline* 965 2626

The Intramural, Club Sports and Recreation office is located in the Physical Education Building West lobby, 965 5638

Intercollegiate Athletics. The University is a member of the Western Athletic Confer-ence, the National Collegiate Athletic Association, the National Association of Inter collegiate Athletics for Women and both its regional and Arizona associations Under the regulations of the Board of Regents, the re-spective association or conference listed above, and the University, intercol egiate athletics at Arizona State University is governed by a board of faculty, students, and staff Policies are administered by the Department of Inter collegiate Athletics All athletic grants in aid and scholarships are administered by the fac ulty committee on scholarships and student aid Intercollegiate compet tion includes such sports as football, basketball, baseball, tenn s, swimming, diving, gymnastics, golf, track and field, wrestling, softball, and volleyball

Honors and Awards

Requirements are listed after award or honor title.

Scholastic Achievement Awards

Alumni Association: *Moeur Award* G ven by Annie Lassator Moeur, graduate of Class of 1914, and the Alumni Association, this award is presented to the graduate of any four year curr culum who attains the highest standing n academic work during the four years immediately preced ng graduation.

Alumni Association Outstanding Graduate Award. Presented to the outstanding senior in each of the seven undergraduate colleges

Anthropology: Cynthia Lakin Memorial Award, R. K. Reynolds Scholarship.

Associated Students: Awards given in conjunction with the ASU Alumni Association: ASU Man of the Year, ASU Woman of the Year, ASU Male Scholar of the Year, ASU Female Scholar of the Year, *Who's Who Among Students in American Universities and Colleges*

Business Administration: Advertising Outstanding Senior Award; Arizona Society of Certified Public Accountants Award, Computer Information Systems Outstanding Student, Delta Pi Epsilon; Delta Sigma Pi Scholarship Key, Kansas City Life Insurance Award, Marketing Outstanding Student Award; Management Outstanding Undergraduate Student Award, Quantitative Business Analysis Outstanding Student Award, Real Estate Association of Arizona Professional Award, Real Estate Association of Arizona Building Award, Soroptimist Club of Tempe, Helen Kiser Memorial Award, National Business Education Award of Merit; Omicron Delta Epsilon (Economics Outstanding Student Award; Pi Omega Pi Award, Phi Chi Theta Award; Pi Sigma Epsilon Award, Sales and Marketing Executives Distinguished Collegiate Salesman Award, Transportation Outstanding Senior Award, Valley of the Sun Chapter, National Secretaries Association Ellarie Becker Memorial Award, *Wall Street Journal* Award

Chemistry: Chemical Rubber Company Freshman Chemistry Achievement Award, Monsanto Scholarship; American Chemical Society Division of Analytical Chemistry Undergraduate Award Monsanto Award, Merck Index Award, American Institute of Chemists Honor Medal, Chemistry Department Merit Award

Communication and Theatre: Pi Kappa Delta Awards, National Forensic Honorary

Education: ASU Alumni Outstanding Senior Award; Arizona Alpha Delta Kappa Scholarship, Carnation Teaching Incentive Award, Cooperating Teacher Award, Deanna Womack Caldwell Scholarship; Delta Kappa Gamma, Ruth B. Morris Scholarship

Engineering: American Institute of Chemical Engineers Scholastic Award, CHE Junior, ASASU Engineering Council, Outstanding Senior Award to a Student in the School of Engineering, Division of Agriculture, Division of Construction, and Division of Technology, ASME Achievement Award, Mechanical Engineering Senior, Associated General Contractors: Outstanding Senior in Construction, Chemical Rubber Company Engineering Science Achievement Award, Junior Engineering Student Eta Kappa Nu Outstanding Electrical Engineering Student Award, Senior, Honeywell Award, Engineering Junior, Gerald F. Jensen Construction Service Award Student of the Year Service to Others in his Major; Lewis S. Neeb Award, Senior Industrial Education, Outstanding Senior Civil Engineering Student, (American Society of Civil Engineers), CEE Senior, Outstanding Mechanical Engineering Graduate, Graduating Senior, Sigma Lambda Chi, Outstanding Senior in Construction, Tau Beta Pi Essay Award, Engineering honorary pledge, *Wall Street Journal* Award in Agriculture student

Fraternities and Sororities: Greek Week Man and Woman of the Year Awards Panhellenic Outstanding Pledge Award, Scholarship Plaques Woman of the Year

History: Guilford Dudley Memorial Award

Home Economics: *Scholarships* Altrusa Club, Arizona Costume Institute, Jane Brown, Cowden, Mildred Fitch, Phi Upsilon Omicron Alumni Association, Jessie M. Rannells *Awards* College Chapter of Arizona Home Economics Association, Home Economics Outstanding Senior and Sophomore, Phi Upsilon Omicron Freshman

Humanities: The Ernest L. Parker Senior Medallion of Merit, the Ernest L. Parker Graduate Medallion of Merit; the Humanities Graduate Fellowship Award, the Humanities Phi Eta Award for Outstanding Service to the Center for the Humanities

Intramurals Club Sports Recreation: Sportsman of the Year, Manager of the Year, Athlete of the Year, Championship Award

Law: The John S. Armstrong Award The John S. Armstrong Fund provides a prize each year for the outstanding graduate selected by the faculty Roger W. Perry Award The Roger Perry Memorial Fund provides a cash prize of $250 to the student in the College of Law of Arizona State University or the University of Arizona who wins the Annual Roger W. Perry Legal Writing Competition State Bar of Arizona The Bar awards a prize of $100 to the student with the highest grade in legal ethics Jennings, Strouss and Salmon Award Phoenix law firm provides $250 to the student who achieves the highest average in the first year

Mass Communications: KOOL Broadcasting Award, *Mesa Tribune* Journalism Award Sigma Delta Chi Outstanding Graduate Award, *Tempe Daily News* Journalism Award

Music: Faculty Chamber Music Society Award, Victor Chesnais Memorial Award in Music Theatre, Harry B. Harelson Award, Norman Mendelsohn Memorial Award, Ralph H. Morris Instrumental Music Award; Miles Dresskel Memorial Award in Music; Elizabeth C. Wood Award in Music, *USS Arizona* Chapter, Marine Corps Reserve Officer Association Awards in Band; piano scholarships from the Arizona Federation of Music Clubs, Arizona State Music Teachers Central District, Phoenix Piano Teachers Association Arthur Emery Harvey; and instrumental scholarships from the Phoenix Symphony Guild

Nursing: College of Nursing Alumni Outstanding Student Award, Senior Curry Scholarship

Women's Physical Education: Women's Physical Education Award, Senior

Athletic Awards

Glen Hawkins Sportsmanship Award Football
Most Valuable Player Award (Basketball
Rosenzweig Trophy Outstanding Letterman
Scottsdale QB Club Most Improved Player Award Football)
Spark Plug Award Basketball
Sun Angel Achievement Awards (Football Outstanding Offensive Player and Outstanding Defensive Player
Mike Bartholomew Award (Football Outstanding Lineman)
KIFN Most Valuable Player Football
Cecil Abono Oil Can Award Football
Most Improved Player (Basketball

Reserve Officer Training Corps Awards

(Military Science and Aerospace Studies)

Academic Vice President's Award (Decoration to senior year Squadron and Company Commanders); Aerospace Education Foundation/W. Randolph Lovelace Memorial Award (Outstanding Air Force Association Award winner); Air Force Association Award (Outstanding Aerospace Studies Senior Cadet); Air National Guard Award (Trophy to outstanding AFROTC cadet fulfilling six requirements); American Defense Preparedness Association Award (Presented to an Army and Air Force ROTC cadet who has made significant achievements in a field allied to ordnance research); American Fighter Aces Association Award (Outstanding category IP (Pilot) graduating cadet);

American Legion Awards for Military and Scholastic Excellence (Presented to Army and Air Force ROTC cadets who demonstrate outstanding qualities of leadership potential and scholastic achievement); American Logistics Association Award (Presented to any Army cadet who has made significant achievements in a field allied with logistics management); American Veterans Medal (Presented to an Army undergraduate advanced course cadet who has demonstrated outstanding leadership potential); Angel Service Award (Angel Flight member contributing most to service projects); Armed Forces Communications and Electronic Association Award (Medals to the outstanding Army and Air Force ROTC senior cadets in a communications or electronics curriculum);

Arnold Air Society Award (AFROTC senior cadet for outstanding service to Arnold Air Society); Association of the United States Army Military History Award (Army ROTC cadet achieving highest grade in semester military history is studied); Commandant's Marksmanship Award (Top marksman on Army ROTC rifle team); Daughters of Founders and Patriots of American Award (Presented to Army and Air Force ROTC sophomore cadets of high leadership potential and patriotism); Daughters of the American Revolution Award (Outstanding Air Force and Army ROTC senior cadet); Dean of the College of Liberal Arts Award (Decoration to senior year cadet officer and flight commander); Dean of Students ROTC Award (Decoration for leadership, Army and Air Force cadets); Professor of Aerospace Studies Award (Outstanding AFROTC seniors); Distinguished Military Students Award (Presented to outstanding senior Army cadets who have ranked in the upper third of their class academically, and in the upper third of their unit at the Advanced Summer Camp);

General Dynamics Award (Model aircraft to second-year basic AFROTC cadet accepted for advanced study); Governor's Award (Commanders of Army and Air Force Corps of Cadets); Hughes Trophy (Presented to the outstanding commissioned graduate of Army ROTC throughout the nation); Legion of Valor Bronze Cross of Achievement Award (Outstanding cadet to achieve excellence in both military and academic subjects);

Military Order of World War Medals (Outstanding records by Army and Air Force cadets who have demonstrated the greatest improvement); National Defense Transportation Association Award (Outstanding Army and Air Force ROTC senior cadets majoring in Air or Space Transportation); National Sojourners Medal (Presented to a lower classman who contributes most to encourage Americanism); Outstanding Angel Award (Member of Angel Flight AFROTC Auxiliary, contributing most to goals of the organization); Outstanding Kaydette Award (Member of Kaydettes, Army ROTC women's auxiliary, contributing most to furthering ideals and goals of the organization);

Pershing Rifles Award (Outstanding ROTC cadet member); President's Award (Decoration to two outstanding cadets of second-year advanced course in Army and Air Force Cadet Corps); Reserve Officer's Association Medals (Medals and certificates to Army and Air Force cadets showing leadership promotion potential and an "A" average in ROTC subjects); ROTC Awards (For greatest personal contribution to Army and Air Force ROTC programs at ASU);

Society of American Military Engineers ROTC Award (Outstanding AFROTC and Army cadets in last and next to last year of engineering study); Sons of American Revolution Award (Two cadets of second-year basic course in Army and Air Force ROTC having highest academic and military class standing, service to department and ASU); Superior Cadet Ribbons (Department of Army award to one Army ROTC cadet in each academic class); Veterans of Foreign Wars Medals. (Bob Finch Post Number 3632, to two cadets both Air Force and Army ROTC); AFROTC Valor Awards (For AFROTC cadets who perform valorous acts).

Scholarship Awards: Lt. Col. Virgil I. Grissom Memorial Award (For outstanding achievement of a second year AFROTC cadet selected for the advanced course); Armed Forces Communication and Electronics Association Scholarship Award (Awarded to rising junior Air Force cadets for undergraduate study in Communication and Electronics); Air Force Historical Foundation Award (Awarded to outstanding graduating senior Air Force cadets who will be in education delay status).

Career Services

The office of Career Services is organized to assist undergraduates, graduates and alumni

in obtaining employment according to education, ability and experience and is dedicated to the furtherance of equal employment opportunities and intends to comply with Title IX of the Education Amendment Act of 1972. Although Career Services does not guarantee placement, every effort is made to aid students and those in the field who desire assistance. Candidates seeking assistance are encouraged to register in the appropriate division both for contacts with employers and the process of self directed placement.

All correspondence should be addressed to the appropriate division in the office of Career Services.

Career Resource Division. Career Services researches relevant up to date information helpful to the faculty and staff who work with students still making career decisions. Acting as a catalyst between student and faculty, this division attempts new approaches to career selection.

Off-Campus Student Part-Time and Summer Division. Career Services aids students attending the University in securing off campus part time and summer employment to supplement their income and educational goals.

Education Division. Career Services assists graduating students and alumni in obtaining teaching and administrative positions in elementary schools, secondary schools and institutions of higher education. It seeks, at the same time, to serve the best interests of these institutions by referring candidates adapted to their particular needs.

Business, Industrial, and Governmental Division. Career Services serves graduating students and alumni who are seeking professional positions in these areas. Efforts are made to place students in their chosen fields and, at the same time, aid employers to obtain highly qualified personnel.

Alumni Association

The Alumni Association, founded in 1894, is one of the University's most active organizations, involving graduates and ex students throughout Arizona and around the world. In addition to maintaining communications with all alumni, the Association also raises money in support of the University, recruits high school scholars, assists student and faculty groups, and supports various University and community projects.

Membership. Approximately 78,000 graduates retain membership in the Alumni Association. All students become active members upon graduation, and associate membership is available to others who have attended the University at least one semester.

Alumni Center. The campus headquarters for alumni of the University is Alumni Center, in Mariposa Hall, located at 601 East Apache Boulevard, on the south edge of the campus. It houses the offices of the Association's executive director and the *Arizona Statesman* (alumni publication), as well as reception and meeting areas for alumni and various organizations.

Annual Alumni Fund. During the past 15 years, more than $896,000 has been contributed to the University through individual alumni gifts. Donors to the Alumni Fund provide books for the library, scholarships and loan funds for student aid, and funds for individual colleges within the University.

John R. Sandige Endowment Fund. More than $130,000 has been contributed to the Sandige Endowment Fund over the years. Earnings from this endowment are transferred to the ASU Alumni Loan Fund for needy students. This is the largest privately financed loan fund at the University. In 1975 alone, more than 1,200 students borrowed and repaid loans from this fund.

The Arizona Statesman. The Association's official publication is published five times a year in a magazine format and sent to all alumni without charge.

Alumni Awards. Annually the Alumni Association recognizes pre-students, students, faculty, alumni and friends of the University through a comprehensive awards program. Faculty are honored during the March Founders Day celebration, an alumnus and a non-alumnus are saluted at Homecoming for their service to the University and alumni are recognized during the year for achievement in their professions. The Medallion of Merit Award is presented annually to the outstanding junior in each Arizona high school. A full-tuition scholarship for the freshman year is available for each Medallion recipient. In addition to the awards listed under Honors and Awards for students, the Alumni Association co-sponsors with ASASU the awards to the Man and Woman of the Year, the Male and Female Scholars of the Year and the Male and Female Athletes of the Year. Members of each athletic team, men's and women's, who win a conference or national title receive plaques recognizing their championship.

Alumni on Campus. Each student at the University is considered by the Alumni Association as "an alumnus in residence" and as such, the alumni staff cooperates with student organizations and individuals.

The Association includes two student voting members on its Board of Directors and sponsors the Devil's Advocates, consisting of 35 outstanding students. Members aid in recruiting outstanding scholars through speaking engagements at high schools, special events and tours of the campus for prospective University scholars.

College of Liberal Arts

Guido G. Weigend, Ph.D.
Dean

The College of Liberal Arts provides the student with an opportunity to obtain a broad, balanced, liberal education. In order to guide his her life intelligently in a highly complex and rapidly changing world, a person must have an understanding of modern science, of the roots of civilizations, of the nature of our present world, and of the expression of this world in literature, philosophy and the arts. The Liberal Arts Col ege attempts to develop the qualities of mind and impart the types of knowledge that will enable the student to understand the world in all its complexity and variety. As a consequence, the College does not, for the most part, offer training designed merely to prepare the student to take on a particular job; it offers, more significantly, a broad education designed to help the student in the career of living

Within the framework of the curriculum, students, with the assistance of faculty advi sors, determine their own progress to fit their particular aims. Vocational interests are taken into consideration within this context, and stu dents may prepare for professional schools, graduate work, or particular careers Final responsibility for meeting the requirements for graduation in a chosen field rests with the stu dent

Degrees

At the undergraduate level, instruction in the College of Liberal Arts offers programs leading to the degrees of Bachelor of Arts and Bachelor of Science

The curricula for these degrees are designed to give the student a broad, general back ground in the principal fields of human knowledge and at the same time provide for a reasonable amount of specialized training in a selected area. The curriculum for the Bachelor of Arts degree emphasizes breadth of studies, while the curriculum for the Bachelor of Sci ence degree permits a somewhat greater extent of specialization in a selected area of scientific endeavor.

Admission to the College of Liberal Arts

Any student who has met the minimum re quirements for admission to the University (see pages 14-18) and who wishes to major in a subject offered within the College of Liberal Arts, or who wishes to register in Pre Elementary Education, Pre-Secondary Educa tion or Pre Architecture will be admitted to the College of Liberal Arts.

Any student currently registered in another college at Arizona State University who meets the University requirements for good aca demic standing (see page 35) and who wishes to major in a subject offered within the Col lege of Liberal Arts or to register in one of the pre-professional curricula listed above may transfer into the College by making applica tion in the Dean's Office, Social Sciences Building, Room 111.

Transfer Credits

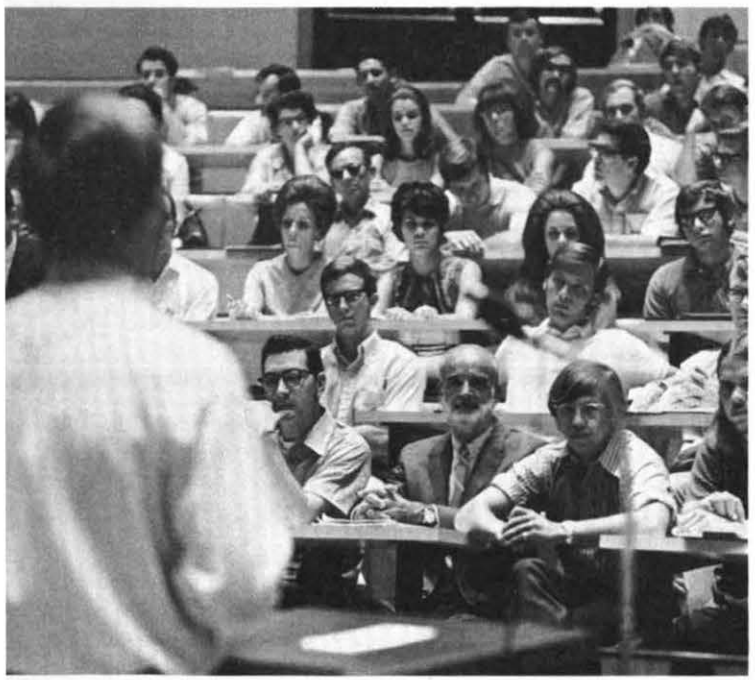
Students from accredited four-year institutions of higher education ordinarily will be given credit, hour for hour, for work successfully completed in such institutions insofar as it applies to the requirements for the curriculum pursued at Arizona State University. Such credit will be accepted at the level indicated on the transcript of the transferring institution.

Courses transferred from two-year (community) colleges will not be accepted as upper division credit. Students are urged to choose their community college courses care fully, in view of the fact that a minimum of 50 semester hours of work taken at the University must be upper-division credit (see page 17).

Programs of Study

Programs leading to the Bachelor of Arts and Bachelor of Science degrees are offered by the College of Liberal Arts, with major fields of specialization in the following subjects. Each field is administered by the academic department indicated.

*The Department of Economics is located administratively in the College of Business Administration. The Bachelor of Science degree with a major in Economics is offered by both the College of Liberal Arts and the College of Business Administration. Requirements differ according to College (see page 72, and page 128).



MAJOR FIELD	DEGREE	DEPARTMENT
Anthropology	(B.A.)	Anthropology
Asian Languages Chinese/Japanese	(B.A.)	Foreign Languages
Biology	(B.S.)	Botany-Microbiology; Zoology
Botany	(B.S.)	Botany-Microbiology
Broadcasting	(B.A.,B.S.)	Mass Communications
Chemistry	(B.A.,B.S.)	Chemistry
Dance	(B.A.)	Health, Physical Education and Recreation
Economics*	(B.A.,B.S.)	Economics
English	(B.A.)	English
Entomology	(B.S.)	Zoology
French	(B.A.)	Foreign Languages
Geography	(B.A.,B.S.)	Geography
Geology	(B.A.,B.S.)	Geology
German	(B.A.)	Foreign Languages
Health Science	(B.S.)	Health, Physical Education and Recreation
History	(B.A.,B.S.)	History
Home Economics	(B.A.,B.S.)	Home Economics
Journalism	(B.A.,B.S.)	Mass Communications
Mathematics	(B.A.,B.S.)	Mathematics
Medical Technology	(B.S.)	Botany-Microbiology
Microbiology	(B.S.)	Botany-Microbiology
Philosophy	(B.A.)	Philosophy
Physical Education	(B.S.)	Health, Physical Education and Recreation
Physics	(B.S.)	Physics
Political Science	(B.A.,B.S.)	Political Science
Psychology	(B.A.,B.S.)	Psychology
Radiology	(B.S.)	Botany-Microbiology
Recreation	(B.S.)	Health, Physical Education and Recreation
Russian	(B.A.)	Foreign Languages
Sociology	(B.A.,B.S.)	Sociology
Spanish	(B.A.)	Foreign Languages
Wildlife Biology	(B.S.)	Zoology
Zoology	(B.S.)	Zoology

Pre-Professional Programs

The College of Liberal Arts offers pre professional programs in cooperation with the College of Education. Any student planning to pursue the degree of Bachelor of Arts n Education shall register in the appropriate Pre-Elementary Education or Pre Secondary Education program in the College of Liberal Arts until he has qualified for admission to his planned professional course of study. See the appropriate section of this catalog for detailed requirements of the program in Education

Students contemplating a degree in Architecture may consult with an advisor in the College of Liberal Arts, Student Academic Affairs Office, in Social Sciences 111.

Teacher Certification for Liberal Arts Majors-Secondary Education. A student majoring in the College of Liberal Arts may obtain a Bachelor of Arts or Bachelor of Science degree in Liberal Arts and meet the State of Arizona requirements for teaching certification in Secondary Education The student must meet all requirements established by the Arizona Department of Education, including professional education courses and directed teaching, and a the College and departmental requirements for the major degree program in the College of Liberal Arts For further information regarding the curriculum or certification the student may consult the Department of Secondary Education, Office of Student Services, in Payne Hall (Ed B-2). The curriculum leading to the Bachelor of Arts in Education is described in this catalog on page 142

Advisement

Regular Advisement. A prospective student who already has selected a major field of specialization will ordinarily be assigned to an advisor selected from the faculty of the department offering that field. Questions relating to the assignment of an advisor should be taken either to the departmental office or to the Coordinator of Advisement, College of Liberal Arts, Social Sciences Building, 111.

"No-Preference" Advisement Option. Students in the College of Liberal Arts who have not yet selected a major field of specialization may choose the "No Preference Option" upon entering the College as a freshman or at any time thereafter until the semester in which 60 semester hours is earned Students selecting this option will be assigned advisors through the Student Academic Affairs Office of the College of Liberal Arts, located in the Social Sciences Building, Room 111. During the semester in which they earn 60 credit hours, or before, students in consultation with their advisors select their majors and transfer into the appropriate department Thereafter, they receive advisement from a faculty advisor in that department. NOTE: Students who wish to enter a program of study which has a rigidly structured curriculum should be aware that delay in choosing a major initially could result in added time and cost in completion of requirements.

Advisement For Other Pre-Professional Programs

A student who plans to enter one of the baccalaureate degree programs in the College of Liberal Arts, and who also plans to pursue post graduate training in a professional field, will ordinarily be assigned in advisor from the faculty of the department of his her major field of study Special advisement is available for students planning to enter the following fields

PROFESSIONAL FIELD	OFFICE WHERE ADVISOR IS LOCATED
Architecture	College of Liberal Arts, SS 111
Bilingual Secretarial	Department of Foreign Languages
Dentistry*	Pre-Health Professions, SS 107
Foreign Service	Department of chosen major
Law	Student Academic Affairs Office, SS 111
Medicine*	Pre-Health Professions, SS 107
Ministry	Department of Philosophy
Occupational Therapy**	Pre Health Professions, SS 107
Optometry	Department of Physics
Osteopathy*	Pre-Health Professions, SS 107
Pharmacy*	Pre Health Professions, SS 107
Physical Therapy**	Pre Health Professions, SS 107
Public Service Training Program	Center of Public Affairs

*Students preparing for Medicine, Dentistry, Osteopathy or Pharmacy should register with the Office of Pre Health Professions, SS 107.

**No school in the State of Arizona offers a degree incorporating certification in Occupational or Physical Therapy. Students interested in pursuing these professions should confer with the advisor concerning the pre-professional options at Arizona State University

Pre-Architecture and Pre-Education Advisement

Pre-Architecture. A student contemplating a degree in Architecture should consult with an advisor in the Student Academic Affairs Office, Social Sciences Building, Room 111

Pre-Elementary Education. A student entering the Pre-Elementary Education program will be assigned an advisor from the College of Education (see page 146). Questions regarding the assignment of an advisor for this program should be referred to the Office of Student Services in Payne Hall (Ed B-2).

Pre-Secondary Education. A student who is entering the Pre-Secondary Education program and has selected a proposed major teaching field (see page 146) from those subjects offered by the College of Liberal Arts, will be assigned an advisor within the department offering the major subject. Questions relating to the assignment of an advisor may be taken to the Coordinator of Advisement, Office of the Dean, College of Liberal Arts, Social Sciences Building, Room 111.

Program of Studies

Students construct their own programs of studies in accordance with the degree requirements set forth below

Advisement and academic counseling are freely available both in academic departments and in the Dean's Office of the College of Liberal Arts; however, it is the student's responsibility to be aware of the requirements for a degree program and to plan course selections accordingly, giving due regard to prerequisite courses.

Chains of Prerequisites. Prerequisite course numbers marked with a dagger †) have further prerequisites. Each student is cautioned to be aware of the existence of such chains of prerequisites and to plan course selections accordingly. Failure to heed this warning may result in extra time and expense to complete degree requirements.

Degree Requirements

Course Load. The normal course load is 15-17 semester hours of credit No freshman is permitted to register for more than 17 hours of credit in any one semester. Other students wishing to register for more than 17 hours of credit in any one semester must have a 3 00 or higher average In any case, 18 semester hours is the maximum load permitted for students in the College of Liberal Arts

Credit Requirement. All candidates for graduation in the Bachelor of Arts and Bachelor of Science degree curricula are required to present at least 126 semester hours of credit, of which at least 50 hours must consist of upper division courses. A cumulative grade point index of 2 00 is required for graduation

English Proficiency Requirement. All students must demonstrate reasonable proficiency in written English If a student receives a grade of "C" or better in both ENG 101 and ENG 102, or in ENG 104 or its equivalent he she will be presumed to have demonstrated the necessary degree of writing proficiency. Otherwise, students must successfully complete a written English Proficiency Examination. The examination will be given at least twice a year, and a student must take it during the semester immediately following the completion of ENG 102 or ENG 104 or the equivalent. A student who does not complete the examination successfully on the first try must enroll in an English course prescribed by the Director of Freshman English. A student who receives a grade of "C" or better in such a course will be considered to have satisfied the proficiency requirement. Otherwise, students must repeat the above procedure until they have demonstrated the necessary degree of writing proficiency. Any questions concerning the English Proficiency Requirement should be addressed to the Director of Freshman English. Foreign students whose native language is not English may substitute ENG 111, ENG 112 for ENG 101, ENG 102

Foreign Language Requirement. For the degree of Bachelor of Arts, the College of Liberal Arts requires knowledge of one foreign language equivalent to the completion of two years' study at the college level. A student who desires to fulfill the requirement in whole or in part through foreign language study in secondary schools may do so in accordance with the equivalency principles explained under Foreign Languages, Placement, page 76. Students who transfer from other colleges with less than two years of credit in a foreign language will be placed in a course at the next level above the work completed.

The College of Liberal Arts does not require knowledge of a foreign language for the degree of Bachelor of Science. Some departmental curricula leading to the Bachelor of Science degree do, however, include knowledge of a foreign language among their degree requirements. Foreign languages taken to fulfill a departmental requirement for the Bachelor of Science degree may be used to satisfy the minimum General Studies requirement in Humanities and Fine Arts

General Studies Requirement

In order to obtain a baccalaureate degree through the College of Liberal Arts, the student must take a minimum of 54 semester hours of credit in the subjects and areas listed below Courses in the subject field of the major may not be used toward this requirement, but courses in related fields may be used even if they are considered to be part of the major requirement.

The General Studies requirement for the

College of Liberal Arts is more extensive than the minimum requirement for graduation from the University (see page 35) The latter requirement will automatically be fulfilled by any student who completes the requirement for Liberal Arts.

To assure breadth and encourage depth within the degree requirements, all Liberal Arts students must meet the following minimum distribution patterns in the following three areas

1) Humanities and Fine Arts 12 semester hours,
2) Social and Behavioral Sciences 12 semester hours,
3) Science and Mathematics 12 semester hours,

and additional courses selected from the lists below for the total of 54 credits Courses offered by any single department ASB ASM, GCU GPH and PGS PSY may be used to fulfill the minimum requirement in *either* Social and Behavioral Sciences *or* Science and Mathematics, but not both

Humanities and Fine Arts. Only courses offered by the following departments may be used toward fulfilling the minimum 12 hour requirement.

Architecture (APH courses *only*)
Art (ARH courses *only*)
Dance (DAH courses *only*)
English (any course except ENG 101, 102, 104, 111, 112
Foreign Languages (any course except those used to satisfy the language requirement for the Bachelor of Arts degree)
Humanities (HUM and REL courses
Music (MHL and MTC courses *only*)
Philosophy
Theatre (all THE courses except 300

Social and Behavioral Sciences. Only courses offered by the following departments may be used toward fulfilling the minimum 12-hour requirement

Anthropology (ASB courses *only*)
Economics
Geography, Cultural (GCU courses *only*)
History
Political Science
Psychology (PGS courses *only*)
Sociology

Science and Mathematics. Only courses offered by the following departments may be used toward fulfilling the minimum 12 hour requirement. At least one course must include a scheduled laboratory of at least 30 class hours per semester in natural science At least two courses must be taken in the same department

Anthropology (ASM courses *only*)
Botany and Microbiology (A BIO, BOT, and MIC courses
Chemistry
Geography, Physical (GPH courses *only*)
Geology
Mathematics (May not be used to satisfy laboratory requirement)
Physics PHY, AST, and PHS courses *only*)
Psychology PSY courses *only*)
Zoology (All BIO, ENT, and ZOL courses)

To complete the 54 hour requirement, additional courses may be taken from the list of approved courses above, and from the following:

Aerospace Studies (maximum of 6 hours of ROTC credit)
Art
Communication and Theatre
Criminal Justice (maximum of 6 hours may CRJ 100 and one 300 level course
Health, Physical Education, Recreation and Dance (HES 100, 481, DAN 130, 230, 330, and PED 105, 205, 305 (a maximum of 4 hours in all activities courses), 450; REC 160 *only*)
Home Economics (CDE 232, DEH 171, 271, 272, 472, 474; FON 141, FAS 330, 331, 354, 357, 435; TXC 122, 424 *only*)
Interdisciplinary (LIA courses in Liberal Arts see page 97)
Mass Communications
Military Science (maximum of 6 hours ROTC credit)
Music
Social Work (SWU 371, 474 *only*)

Major Field of Study. Each candidate for the degree of Bachelor of Arts or Bachelor of Science must complete requirements for a major field of study, as established by the department concerned. The specific course content of the major is selected by the student in consultation with the advisor under the rules and regulations of the department.

For the degree of Bachelor of Arts, the major field of study consists of a total of 45 semester hours of credit a maximum of 30 semester hours will be required in the subject field of the major, plus approximately 15 hours in one or more related fields.

For the degree of Bachelor of Science, the major field of study may require up to a maximum of 45 semester hours of credit in the subject field of the major, plus additional related studies.

No credit will be granted toward fulfilling major requirements in any upper division course in the student's major unless the grade in that course is at least a "C"

Special Credit Options

Credit-No Credit Grade Option.* The Liberal Arts Credit-No Credit Option is intended to broaden the education of undergraduate

**Formerly listed as Pass No Credit*

students in the College of Liberal Arts by encouraging them to take advanced courses outside their fields of specialization. A student enrolled in a course under the Credit No Credit Option will receive the mark of either "CR" or "NC" but neither mark will affect the cumulative grade point index

Under the conditions stated below, undergraduate students enrolled in the College of Liberal Arts may exercise the Credit No Credit Option in any course in the 300 and 400 series offered by the College of Liberal Arts with the exception of Independent Study 499 and all courses taken for Honors credit.

Enrollment in a course for Credit No Credit Option must be explicitly indicated during registration After the close of Late Registration, no student may change registration in any course to or from Credit No Credit

No course which is 1 offered by the student's major department, 2) counted toward the major, or 3) required by the department to support or supplement the major may be taken under the Credit No Credit Option Up to four courses taken under Credit No Credit may be counted toward graduation requirements other than the major.

The Credit No Credit Option may be taken only by a student with a total of at least 60 semester hours of earned credit and a cumulative grade point index of at least 2.00

Only one course may be taken under the Credit No Credit Option during a semester The minimum semester load must total at least 12 hours, including the Credit No Credit course. No overloads can be authorized for the semester in which the Credit No Credit Option is taken

The Credit-No Credit Option may not be taken during the Summer Sessions, or in extension or correspondence courses

The Credit-No Credit Option is ordinarily open only to students who are registered in the College of Liberal Arts. Students registered in another college may register under the Credit-No Credit Option only if specific approval is provided in their college's regulations.

The Credit-No Credit Option may not be exercised by students enrolled in Liberal Arts for courses offered by colleges other than Liberal Arts except for courses in Economics offered by the College of Business Administration.

Undergraduate Credit for Graduate Courses. To enable interested students to benefit as much as possible from their undergraduate studies, the Graduate College and the College of Liberal Arts extend to undergraduate students the privilege of taking 500-level graduate courses for undergraduate credit. The application must be approved by the advisor, the instructor of the 500 level graduate course, and the chair of the department and dean of the college which offers the course.

Students who transfer to professional or other graduate colleges before receiving an undergraduate degree may not transfer credits back to Arizona State University to be applied to a degree *in absentia*.

Academic Standards and Retention

Standards. The College of Liberal Arts standards for grade point index (GPI) and the terms of probation, disqualification, reinstatement, and appeal are identical with those of the University as set forth on page 34 of this catalog.

Academic discipline is one of the functions of the Student Academic Affairs Office, Social Sciences Building, Room 111 All students who are having academic difficulties of any kind should maintain close contact with this office.

Probation and Disqualification. Recommendations for academic probation or disqualification may be reviewed by the Academic Standards Committee of the College of Liberal Arts. Petitions for such review should be submitted to the Student Academic Affairs Office, Social Sciences Building, Room 111.

Special Programs

Honors Program. The College of Liberal Arts provides a full four-year Honors Program which affords the superior undergraduate with opportunities for an enhanced liberal arts education and in-depth experiences in his or her major field. Characteristic of the program is the personal attention given to each student by members of the Honors Faculty, who are selected from among the leading scholars and teachers in the College In instructing specially-designed Honors courses, and in supervising individual study and Honors Theses, the faculty share an enthusiasm for working with talented and motivated students.

Admission to the Honors Program:

Entering Freshmen. Entering freshmen who are in the top 5% of their high school graduating class, or who have scored in the 95th percentile or better on the ACT tests, or who can demonstrate similar indications of academic aptitude, are invited to apply for admission to the program upon entrance

Continuing and Transfer Students. A continuing and transfer student who has completed at least 15 credit hours of study with a 3.25 cumulative grade index or better may, with the recommendation of his or her academic advisor, apply for admission to the program.

Retention in the Honors Program. An Honors student must maintain exceptionally high standards of performance while in the program, demonstrating evidence of progress toward satisfying the requirements for graduation from the program (see be ow). It is expected that an Honors student will register

for at least one Honors course each semester in order to obtain full benefit from the program. An Honors student may leave the program at any time All courses taken while in the program will count toward graduation from the University

Graduation from the Honors Program. To graduate from the Honors Program, a student must

Attain a cumulative grade index of at least 3 40.

Satisfy departmental major requirements, including major honors requirements where they exist, and College General Studies requirements.

Complete a minimum of 18 hours of Honors credit, of which at most 6 can be XXX 493 (Honors Thesis), and of which at least 6 must be upper division credit in non major areas.

Write a senior thesis and pass an oral thesis defense

For additional information, the interested student should contact the Director, Honors Program, College of Libera Arts

Interdisciplinary Studies

Within the framework of a regular major chosen from those listed on page 50, students may, in consultation with their advisors, use courses outside the major subject field to put together a program of interdisciplinary studies Recommended programs in American Studies, Asian Studies, and Latin American Area Studies are described below. Students may contact the Dean's Office for further information

American Studies. The development of insight into the complexities and inner workings of modern American society is a unique interdisciplinary task for which universities are especially suited To foster and coordinate activities with this objective at Arizona State University, an American Studies program has been established The current program emphasizes studies in the history, cultures, and problems of specific groups in America. The program will be expanded as conditions warrant.

Although a minor is not required by the College of Liberal Arts, a minor in American Studies is offered for those who desire it. A minor consists of at least 18 hours of approved courses. Not more than 12 hours in the subject field of the major may be used toward the minor in American Studies A list of approved courses is given below. Refer to the *Schedule of Classes* to determine which courses are being offered currently Courses included in the minor may also be used for General Studies credit if they appear in the categories of accepted General Studies courses (see page 35).

In addition to regular courses, the program includes seminars, public lectures and related extracurricular activities Inquiries about the program should be directed to the Coordinator of the American Studies Program, Social Sciences Building, Room 109.

American Studies. (Courses approved for a minor.) *For course descriptions refer to the course offerings by departments*

APH	304	American Architecture
APH	317	20th Century Architecture II
MCE	446	The Disadvantaged Child
POS	439	Minority Group Politics in America
REL	322	Religion in American Life and Thought
REL	325	Biography in American Religion
REL	422	American Puritanism and Its Roots
REL	423	Revivalism, Reform, and Americanism
REL	424	Secularization and American Religion
SOC	341	Modern Social Problems
SOC	440	Racial and Ethnic Minorities
SWU	474	Ethnic Cultural Variables in Social Work

Black Studies

ASB	322	Peoples of Africa
ENG	358	Afro-American Literature
GCU	327	Geography of Africa
HIS	364	Black American Experience
HIS	498	Pro Seminar (Black Culture
SOC	454	The Afro-American in Modern Society

Mexican American Studies

ARH	406	Mexican Art
GCU	421	Geography of Arizona and Southwestern United States
GCU	424	Geography of Middle America
HIS	380	History of the Mexican American
HIS	424	The Hispanic Southwest
HIS	425	The American Southwest
HIS	430	Twentieth Century Chicano History
HIS	463	Intellectual and Cultural History of Latin America
HIS	466	Mexico
HIS	467	Mexico
HIS	498	Pro Seminar (Recent History of the Mexican Americans
HIS	591	Seminar (The Southwest
MCE	448	The Mexican American Child
POS	454	Government and Politics in Mexico
POS	498	Pro Seminar (Chicano Political Experience)
SPA	203	Intermediate Spanish*
SPA	204	Intermediate Spanish*
SPA	315	Spanish Conversation and Composition
SPA	316	Spanish Conversation and Composition
SPA	421	Spanish in the Southwest
SPA	464	Mexican American Literature
SPA	471	Civilization of the Spanish Southwest

**For Spanish speaking students only*

SPA	472	Spanish-American Civilization
SPA	542	Studies in the Spanish of the Southwest

American Indian Studies

ARH	110	Introduction to American Indian Art
ARH	403	Pre-Columbian Art
ARH	404	North American Indian Art
ARH	405	Southwest Indian Art
ARH	494	Special Topics, where appropriate
ARH	498	Pro Seminar, where appropriate
ARH	591	Seminar, where appropriate
ASB	321	Southwestern Ethnology
ASB	335	Southwestern Anthropology
ASB	337	Archaeology of Mesoamerica
ASB	355	American Indian Views of Man
ASB	356	Aspects of Southwest Religion
ASB	418	Indian Reservations Today
ASB	421	The North American Indian
ASB	422	Archaeology of North America
ASB	424	Indians of Mesoamerica
ASM	553	New World Physical Anthropology
ASM	554	Southwestern Physical Anthropology
GCU	421	Geography of Arizona and Southwestern United States
HIS	362	The American Indian
HIS	428	Arizona
HIS	498	Pro Seminar (American Indian History)
IED	411	Indian Education (Prerequisite for other Indian Education courses)
IED	422	Methods of Teaching Indian Children
IED	424	Curriculum and Practices for Indian Education
IED	433	Guidance for the Indian Student
IED	490	Problems of Teachers of Indian Children
IED	511	School-Community Relations in Indian Education
IED	522	Education of Indian Adults
IED	544	Community Development in Indian Education
IED	594	Workshop in Indian Education
REL	330	Native American Religious Traditions
REL	435	Problems in Native American Religions

Jewish Studies

HIS	494	Special Topics European Jews, 1348 1879
REL	316	Types of Judaism
REL	373	Introduction to the Talmud
REL	415	The Jewish Mystical Tradition

Women's Studies

ARE	498	Pro Seminar, Women's View of Art
COM	294	Women's Communication
ENG	461	Women and Literature
ENG	494	Special Topics (Modern British and American Women Writers of Fiction)
FLA	420	French Women in Art
HIS	370	Women in United States History
HIS	422	Social History of United States Women
HUM	470	Women and the Humanities
LIA	294	(or SPF 294) Introduction to Women's Studies
LIA	497	18th and 19th Century Feminine Images
LIS	591	Advanced Children's Adolescent Literature
MCE	498	Minority Women
NCE	494	Women and Mental Health: Feminist Therapy
SOC	498	Stratification Women and Health
SPF	498 515	Education of Women
SPF	498 591	(or COM 494, 598 or IAS 498), Womankind (KAET telecourse)

Asian Studies. The Center for Asian Studies is designed to encourage and coordinate student, faculty and community study of the area through the support of public lectures, symposia, research and curricular development. Interdisciplinary programs have been developed, both undergraduate and graduate, to prepare students for governmental or private employment or for admission to graduate programs at other institutions

At the undergraduate level, programs can be devised leading to a combined degree; for example: History-Asian Studies, Anthropology Asian Studies. Any department in the university may, at its discretion, accept Asian Studies components in a combined degree The goal is to offer programs which, while insuring a rigorous training for students in their chosen field of study, will enable them to relate their discipline to Asian conditions and problems.

The requirements for Asian Studies in such a combined degree are 30 semester hours of wholly Asian content courses, and knowledge of an Asian language. The 30 semester hours of Asian courses shall be selected from the list of Asian courses drawn up by the Center. These courses may be used where appropriate to fulfill General Studies requirements. Knowledge of an Asian language shall comprise the equivalent of 16 semester hours of credit in Chinese, Japanese, or any other Asian language approved by the Center in respect to a particular individual program. Fulfillment of these requirements will be recognized on the transcript by a bachelor's degree with a major in "(Discipline)-Asian Studies."

At the graduate level, the Center for Asian Studies cooperates with a number of departments in master's and doctoral programs. At the M.A. and Ph.D levels the cooperating departments are Political Science, History, Anthropology, Geography and Sociology At the M.A. level only, the departments include Philosophy and Humanities In cooperation with the College of Education, the Center offers two graduate programs to prepare

teachers of Asian Studies for the high schools and community colleges. One program is the Master of Arts in Education Secondary Education with a major field in Asian Studies consisting of 30 credit hours: 15 each in Asian Studies and Education. The other is Teaching Specialist in Asian Studies (within the Education Specialist degree program), which requires 36 hours beyond the M.A. degree: 18 each in Asian Studies and Education. Consult the Chair of the Secondary Education Department or the Director of the Center.

The center cooperates and coordinates with other university centers in the summer or in one-year study programs in several Asian countries.

The Center also publishes occasional papers or reports and symposium proceedings, all of which are distributed throughout the world.

For further information consult the Director of the Center for Asian Studies.

Asian Studies Courses. *For course descriptions refer to the course offerings by departments.*

ARH	103	Introduction to Asian Art
ARH	294	Special Topics, where appropriate
ARH	470	Art of India
ARH	471 472	Oriental Art
ARH	474	Chinese Painting
ARH	494	Special Topics, where appropriate
ARH	498	Pro-Seminar, where appropriate
ARH	591	Seminar, where appropriate
ASB	323	Peoples of Asia
ASB	325	Peoples of Southeast Asia
CHI	101 102	Elementary Chinese
CHI	201 202	Intermediate Chinese
CHI	205	Chinese Calligraphy
CHI	309 310 311 312	Chinese Conversation
CHI	313 314	Advanced Chinese
CHI	321 322	Chinese Literature
CHI	413 414	Introduction to Classical Chinese
FLA	420	Foreign Language in Translation: Chinese Literature
GCU	326	Geography of Asia
GCU	428	Geography of the Middle East
GCU	429	Geography of Southeast Asia
GCU	430	Geography of South Asia
GCU	431	Geography of the Far East
HIS	305 306	Asian Civilization
HIS	470	Chinese Cultural History
HIS	471 472	Diplomatic History of East Asia
HIS	473 474	China
HIS	475	Modern India
HIS	476	Modern Southeast Asia
HIS	477 478	Japan
HIS	479	The Chinese Communist Movement
HIS	498	Pro-Seminars on Modern China and Japan
HUM	150	Introduction to Asian Humanities (same as LIA 150)
HUM	303 304	Humanities in the Eastern World
HUM	428 429	Religions of the Far East
HUM	544 545	Esthetic Principles in Eastern Humanities
LIA	150	Introduction to Asia (same as HUM 150)
JPN	101 102	Elementary Japanese
JPN	201 202	Intermediate Japanese
JPN	311 312	Japanese Conversation
JPN	313 314	Advanced Japanese
JPN	321 322	Japanese Literature
FLA	420	Japanese Literature in Translation
MHL	545	World Music II
PHI	319	Indian Philosophy
PHI	321	Buddhist Philosophy
POS	445	Asian Political Thought
POS	448	Comparative Politics of China and Japan
POS	452	Government and Politics of China
POS	458	Government and Politics of South and Southeast Asia
POS	468	Comparative Asian Foreign Policies
REL	351	The Religious Traditions of the East
REL	451	The Religious Traditions of India
REL	455	The Religious Traditions of China and Japan

REL	550	Selected Religious Thinkers of the East
SOC	498	Pro-Seminar Asian-Americans
THE	425	History of the Oriental Theatre

Latin American Area Studies. Arizona maintains an ever growing interest in Latin America that draws upon an extensive experience of historical and geographical ties The Center for Latin American Studies is the focal point for these interests at Arizona State University, and through its program endeavors to serve the University community and maintain strong ties with various Latin American organizations in the state and the nation. Principal activities are coordinating Latin American Studies at the undergraduate and graduate levels; sponsoring student exchange programs, a Guatemalan Summer School, numerous seminars and conferences, publishing a wide range of professional materials, and facilitating research about the region.

The area studies program gives students an understanding of public affairs, culture, and national trends in the Latin American nations Undergraduate students desiring a degree program with an emphasis on Latin American area studies should major in economics, geography, history, political science or Spanish. They must complete the departmental requirements of these disciplines. At least 30 upper division semester hours of the total program must be in Latin American content courses, 15 hours in the major and 15 in other disciplines (A list of courses follows) Successful completion of *LIA 402 Movements and Meaning* in Latin America, and a reading knowledge of Spanish or Portuguese are required. Completion of the Latin American Area Studies is recorded on the transcript at graduation.

Master's degree students in the departments of Geography, History, Political Science, or Spanish may elect to major in the field of Latin America. Two departments, History and Foreign Languages, offer Latin American major areas of focus at the Ph.D level. A cognate minor in Latin American studies is also available in various disciplines

The Center administers student exchange programs with three Mexican universities the Autonomous University of Guadalajara, the Autonomous University of Nuevo Leon, and the University of Sonora. Each semester several ASU students are selected to receive credit for course work taken on the Mexican campuses while Mexican students study here. In the summer, the Center sponsors a summer school at the University of Francisco Marroquín in Guatemala City.

Each year the Center typically sponsors several major conferences as well as a number of seminars, often featuring presentations by scholars from Latin America

The extensive publications program includes the issuing of the quarterly *Latin American Digest*, as well as the publication of research through the Reference Series, Report Series, a Special Studies Series, and the ALAC Papers Series. Several scholarly books are published each year.

The Center is a member of the Arizona Mexico Commission, the Latin American Studies Association, the Rocky Mountain Council on Latin American Studies, the Pacific Coast Council on Latin American Studies, and the Southwest Alliance for Latin America. It also serves as the unofficial home of the ASU Association of Latin American Students

The Center directly encourages research, not only through its publications program, but also through the maintenance of a Latin American newspaper reading room.

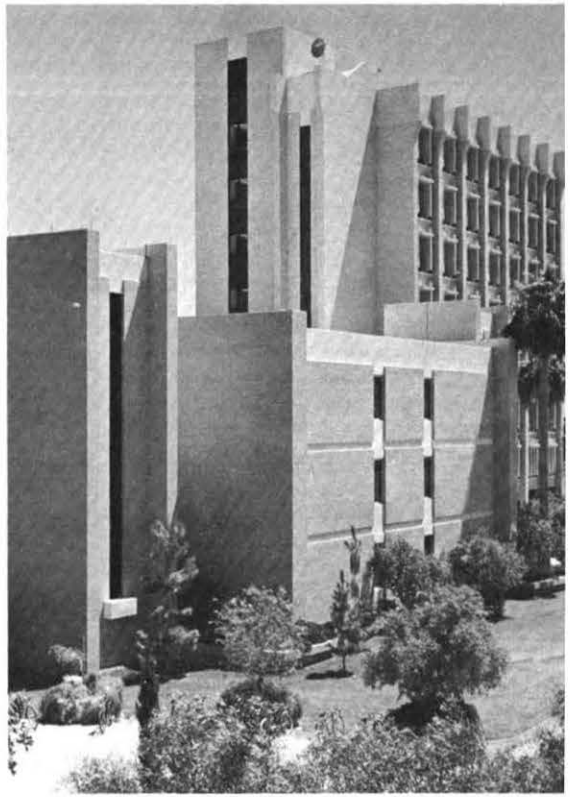
For further information consult the office of the Center for Latin American Studies, Room 213, Social Sciences Building

Latin American Content Courses. *For course descriptions refer to the course offerings by departments*

ASB	321	Southwestern Ethnology
ASB	335	Southwestern Anthropology
ASB	337	Archaeology of Mesoamerica
ASB	424	Indians of Mesoamerica
ASB	498	Pro Semina South American Ethnography
ASM	554	Southwestern Physical Anthropology
ARH	403	Pre Columbian Art
ARH	406	Mexican Art
ECN	311	Economic Development
ECN	331	Comparative Economic Systems
ECN	336	International Economics
ECN	371	Latin American Economics
ECN	570	Economics of Developing Nations
GCU	323	Geography of Latin America
GCU	423	Geography of South America
GCU	424	Geography of Middle America
HIS	200	Latin American Civilization (not open to history majors)
HIS	380	History of the Mexican American
HIS	383 384	Latin America
HIS	424	The Hispanic Southwest
HIS	458 459	Colonial Latin America
HIS	460 461	Spanish South America
HIS	463	Intellectual and Cultural History of Latin America
HIS	464	The United States and Latin America
HIS	466 467	Mexico
HIS	514	Latin American Historiography
HIS	591	Seminar Latin American History
FAS	498	Pro-Seminar The Family in Latin America
LAW	615	Public International Law
LAW	764	Comparative Law

LAW	767	Selected Problems in Developing Nations
LAW	768	International Business Transactions
LAW	770	Law Journal
LIA	402	Movements and Meaning in Latin America
LIS	465	Library Materials for Minority Students
MCE	498	Minority Women
MGT	459	International Management
MKT	331	International Business
MKT	435	International Marketing
MKT	591	Seminar (International Business)
MKT	598	Seminar (Marketing in Multinational Operations)
MCO	430	International Communications
POS	435	Modernization and Political Change
POS	453	Government and Politics of South America
POS	454	Government and Politics of Mexico
POS	455	Government and Politics of Central America and the Caribbean
POS	463	Inter-American Relations
POS	494	Special Topics in Political Science
POS	498	Pro-Seminars (Comparative Politics)
POS	550	Comparative Governments
POS	591	Seminars (Comparative Politics)
POR	321 322	Luso-Brazilian Literature
POR	472	Luso-Brazilian Civilization
POR	590	Reading and Conference
SPA	325	Introduction to Hispanic Literature
SPA	421	Spanish in the Southwest
SPA	424	Masterpieces of Hispanic Literature
SPA	427 428	Spanish-American Literature
SPA	454	19th Century Spanish American Narrative
SPA	455	Spanish American Modernism
SPA	456	20th Century Spanish American Fiction
SPA	457	Contemporary Spanish American Poetry
SPA	464	Mexican-American Literature
SPA	471	Civilization of the Spanish Southwest
SPA	472	Spanish-American Civilization
SPA	541	Spanish Language in America
SPA	542	Studies in the Spanish of the Southwest
SPA	570	Indigenous Literature of Spanish America
SPA	571	Colonial Spanish American Literature
SPA	572	Spanish American Drama
SPA	573	Spanish American Essay
SPA	574	Spanish American Vanguard Poetry
SPA	575	Contemporary Spanish American Novel
SPA	576	Contemporary Spanish American Short Story
SPA	577	Regional Spanish American Literature
SPA	579	18th Century Hispanic Literature
SPA	591	Seminar
SPA	691	Figures and Works Seminar
SPF	498	Interdisciplinary Perspectives of Mexican Americans
SPF	543	Education and Change in Developing Nations
SPF	591	Cultural Pluralism in Education
TRA	463	International Transportation

Center for Public Affairs. As a separate academic unit within the College of Liberal Arts, the Center for Public Affairs offers a program of study leading to the Master of Public Administration (M.P.A.). The purpose of the M.P.A. degree is to prepare students for managerial and leadership positions within the public sector. The program of study consists of a core curriculum designed to give the student a broad, balanced, liberal education in the field of public affairs. In addition, an interdisciplinary curriculum has been developed that will allow the student a certain flexibility to construct a program of study best suited for his/her individual needs. An important function of the Center is to serve as an intermediary between the University and governmental agencies. The Center, in cooperation with various public agencies and organizations, helps to sponsor various workshops and conferences designed to deal with problems of state and local government. In addition, the Center maintains a research publication program that helps identify, analyze, and propose solutions to major public problems (see page 117).



Solid State Science. As a separate academic unit withing the College of Liberal Arts, the Center for Solid State Science is engaged in research in many aspects of the physics, chemistry and applications of solids. The Center operates modern research facilities, sponsors a colloquium series, maintains a library of research publications and works cooperatively with local industry. While the Center itself does not grant degrees, it does provide opportunities for both graduate and undergraduate students to do research in this cross disciplinary area. Students would include this research activity as part of a program of study within one of the departments, normally Chemistry and or Physics, under the supervision of one of the faculty members of the department or of the Center.

Aerospace Studies

(Air Force ROTC)

PROFESSOR:
ROBERTS (MA N 302)
ASSISTANT PROFESSORS:
BANKS, CHESLEY, HOFF, NELL , WAITE

Purpose. The Department of Aerospace Studies curriculum consists of the General Military Course for freshmen and sophomores (GMC AES 101, 102, 201, 202) and the Professional Officer Course for juniors and seniors (POC AES 301†, 302†, 401†, 402†) The goal of this professional education is to provide the foundation of military knowledge and skills needed by Air Force junior officers Upon graduation, each student who satisfactorily completes the Professional Officer Course and degree requirements will receive a commission as a Second Lieutenant in the Air Force Reserve.

General Qualifications. Men or women entering AFROTC must, (1) be a citizen of the United States (noncitizens may enroll, but must obtain citizenship prior to commissioning); (2) be of sound physical condition , (3) be at least 17 years of age. If designated for flying training, the student must be able to complete all commissioning requirements prior to age 26 ; other categories must be able to complete all commissioning requirements prior to age 30

Four-Yaar Program (GMC and POC). In the four-year program, qualified college students normally enroll in Air Force ROTC during the freshman year at the same time they enroll in other college courses They pursue the General Military Course (GMC) during the first two years GMC students receive 2 0 semester hours of credit for each AES 100 and 200 class completed, a total of 8 0 semester hours Each candidate for commissioning must pass an Air Force aptitude test and a physical examination and be selected by an interview board of Air Force officers If selected, the student then enrolls in the Professional Officer Course (POC) the last two years of the Air Force ROTC curriculum. They normally attend a four-week field training course between the sophomore and junior year at an Air Force base. Upon successful completion of the POC and the college requirements for a degree, the student is commissioned in the U.S Air Force as a Second Lieutenant The new officer then enters active or inactive duty or may be granted an educational delay to pursue graduate work

Two-Year Program (POC). The basic requirement for entry into the two year program is that the student have two academic years of college work remaining, either at the undergraduate or graduate level Applicants seeking enrollment in the two year program must pass an Air Force aptitude and medical examination, and be selected by an interview board of Air Force officers. After successfully completing a six week field training course at an Air Force base, the applicant may enroll in the Professional Officer Course in the Air Force ROTC program Upon completion of the POC and the college requirements for a degree, the student is commissioned

Qualifications for Admittance to the Professional Officer Course (POC). (1) For the four-year student, successful complete the General Military Course 2) For the two year applicant, complete a six week field training course (3) Pass the Air Force Officer Qualification Test (AFOQT) (4) Pass the Air Force physical examination 5 Maintain a minimum grade point average of 2 0 "C" (6) Achieve a minimum score on the SAT or ACT.

Pay and Allowances. POC members in their junior and senior years receive $100 per month for a maximum of 20 months of Professional Officer Course attendance Students are also paid to attend field training In addition, uniforms, housing and meals are provided during field training at no cost to the student Students are reimbursed for travel to and from field training

Scholarships. Air Force ROTC offers scholarships annually to outstanding young men and women on a nationwide competitive basis. Scholarships cover full college tuition for resident and nonresident students as well as books, fees, supplies and equipment, plus a monthly tax free allowance of $100 Scholarships are available on a four, three , and two year basis. To qualify for the four year scholarship, students must be citizens and submit an application prior to December 15 of their senior year in high school Interested students should consult their high school counselors or

call AFROTC at ASU for application forms to be submitted to HQ AFROTC, Maxwell AFB, AL., 36112. Male and female students enrolled in AFROTC at Arizona State University are eligible for three- and two-year scholarships. Those interested must apply through the Department of Aerospace Studies. Consideration is given to academic grades, score achieved on the Air Force Officer Qualifying Test and physical fitness. A board of officers considers in applicant's personality, character and leadership potential.

Flight Instruction Program. Senior cadets designated to enter U.S. Air Force Undergraduate Pilot Training after graduation participate in the Flight Instruction Program (FIP) during their last year in college unless they already have a private pilot's license. Each cadet receives 25 hours of instruction at an FAA approved flying school at no expense to the student. This training also includes ground school instruction in weather, navigation and Federal Aviation Regulations.

AEROSPACE STUDIES

AES 101 Aerospace Studies. Introduction to U.S. Air Force organization, mission, doctrine, offensive and defensive forces. One lecture, 1 hour Leadership Practica, Application (101L). Credit, 2 hours.

102 Aerospace Studies. Background on strategic missile defense forces, general purpose and aerospace support forces in national defense. One lecture, 1 hour Leadership Practica, Application (102L). Credit, 2 hours.

201 Aerospace Studies. History, survey of events, trends and policies leading to the emergence of air power through WW I. One lecture, 1 hour Leadership Practica, Application (201L). Credit, 2 hours.

202 Aerospace Studies. Development of aerospace power from WW I to the present, emphasizing the impact of limited war and technology on roles and missions. One lecture, 1 hour Leadership Practica, Application (202L). Credit, 2 hours.

301 Aerospace Studies. Armed Forces as a technical element of society, with emphasis on the broad range of American civil military relations, principles and techniques of communicative skills, the political, economic and social constraints on the national defense structure. Three lectures, 1 hour Leadership Practica, Application (301L). Credit, 3 hours.

302 Aerospace Studies. Formulation and implementation of U.S. defense policies, impact of technological and international developments on strategic preparedness in the overall defense policy making processes. Three lectures, 1 hour Leadership Practica, Application (302L). Credit, 3 hours.

401 Aerospace Studies. An integrated management course emphasizing the individual as a manager in an Air Force milieu. The individual motivational and behavioral processes, leadership, communication and group dynamics are covered. Three lectures, 1 hour Leadership Practical, Application (401L). Credit, 3 hours.

402 Aerospace Studies. Organizational and personal values, management of forces in change, organizational power, politics, managerial strategy and tactics, military justice and administrative processes. Three lectures, 1 hour Leadership Practica, Application (402L). Credit, 3 hours.

403 Flight Instruction. Flight instruction (25 total hours of dual and solo instruction), 8 hours ground school. Prerequisites: AES 301, 302 and enrollment in POC. No credit.

Anthropology

PROFESSORS:
MERBS (ANTH A 124), DITTERT, MORRIS, RUPPÉ, STEWART, TURNER

ASSOCIATE PROFESSORS:
BAHR, BRANDT, CADIEN, CLARK, FIRESTONE, MARTIN, PLOG, SCHOENWETTER

ASSISTANT PROFESSORS:
AGUILAR, EDER, GAINES, NASH, STARK, STEADMAN

LECTURER:
CAIN

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Anthropology. Consists of 45 semester hours of credit of which 30 must be in anthropology and 15 in related fields to be approved by the advisor in consultation with the student. Courses ASM 101, ASB 102, 311, 331†, and one area course incorporating ethnography are required. Students may elect ASM 341†, 342†, or 343† to fulfill the required course in physical anthropology. An additional 12 hours in anthropology will be approved by the advisor in consultation with the student. At least 18 semester hours must be in upper division courses. (See Degree Requirements, pages 52-53.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Social Studies: Anthropology. Consists of 63 semester hours of credit, of which 30 hours must be in the anthropology courses required for the Bachelor of Arts degree in Liberal Arts. Of the remaining hours, two groups of 15 hours are to be taken in related social sciences. Psychology or a single natural science may be used as one of the 15 hour fields. SED 480 is taken to provide the remaining 3 hours.

	Semester Hours
Anthropology	30
Social sciences	15
Social sciences or natural sciences or psychology	5
SED 480 (Special Methods of Teaching Social Studies	3
	63

Departmental Minor Teaching Field Requirements

(Secondary Education)

Anthropology. Consists of 24 semester hours of credit in anthropology. Courses ASM 101, ASB 102, and two upper division courses in each subdisciplinary field (archaeology, physi-

cal anthropology, social cultural anthropology) are required

Departmental Graduate Program

The Department of Anthropology offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

ANTHROPOLOGY (ASM)

Courses which may be applied toward the General Studies requirement in sciences and mathematics

ASM 101 Human Origins and the Development of Culture. Physical anthropology and archaeology Evidence and processes of human evolution and of culture change Primates Fossil hominids and their tools Race, variation and heredity Environment and human biology Prehistoric culture and society. Credit 3 hours

241 Biology of Race. Human variation and its interpretation in an evolutionary context Credit, 3 hours

338 Anthropological Field Session. Anthropological field techniques, analysis of data and preparation of field reports Prerequisite, approval of instructo May be repeated for credit Credit, 2-8 hours

341 Human Osteology. Osteology, human paleontology osteometry Description and analysis of archaeological and contemporary human populations Prerequisite ASM 101 or approval of instructor. Three lectures 3 hours laboratory. Credit 4 hours.

342 Human Biological Variation. Evolutionary interpretations of biological variation in living human populations with emphasis on anthropological genetics and adaptation. Nutrition and disease, and their relation to genetics and behavior. Prerequisites. ASM 101, MAT 106 or equivalent or approval of instructor. Three lectures, 3 hours laboratory Credit, 4 hours

343 Primatology. Evolution and adaptations of nonhuman primates emphasizing social behavior ncludes material from fossil evidence and field and laboratory studies in behavior and biology. Prerequisite. ASM 101 or approval of instructor Credit, 3 hours

344 Fossil Hominids. Ancient African Asian and European human and primate skeletal dental and cultural remains Human biology, behavioral and cultural evolution Prerequisite. ASM 101 or approval of instructor Credit, 3 hours.

345 Disease and Human Evolution. Interaction of people and pathogens from prehistoric times to the present with emphasis on disease as an agent of genetic selection. Prerequisite: ASM 101 or approval of instructor Credit, 3 hours.

346 Human Origins. Human typology place in nature, fossil history and recent concepts of human races influence of culture on human evolution Credit 3 hours

347 Nutrition, Ecology and Human Adaptation. The effects of nutrition on human and primate populations and cultures Growth, health, variation and adaptation are reviewed around the world and through time within the framework of evolutionary anthropology Prerequisites ASM 101 and ASB 102 Credit 3 hours

365 Laboratory Methods in Archaeology. Techniques of artifact analysis. Basic archaeological research techniques methods of report writing Prerequisite ASM 101 or approval of instructor May be repeated for credit for total of 8 hours Credit 4 hours

366 Chronological and Ecological Techniques in Archaeology. Procedures for dating archaeological remains and reconstructing ecological conditions of cultural pertinence at archaeological sites Radiocarbon dating, dendrochronology stratigraphy, pollen analysis geomorphology zooarchaeology Prerequisite. ASB 330 or approval of instructor Credit, 3 hours

435 Archaeological Pollen Analysis. Theory methodology, and practice of pollen analytic techniques Compares uses in botany geology and archaeology Field trips and laboratory Prerequisite approval of instructor. Two lectures and 2 hours laboratory Credit 3 hours

452 Dental Anthropology. Human and primate dental morphology, growth, evolution, and genetics Within and between-group variation Dental pathology and behavioral-cultural-dietary factors Prerequisite approval of instructor Three lectures 3 hours laboratory Credit, 4 hours.

455 Primate Behavior Laboratory. Instruction and practice in methods of observation and analysis of primate behavior. Discussion of the relationship between classwork on captive animals and field techniques for studying free-ranging groups Prerequisites ASM 343† and approval of instructor Directed readings and 6 hours laboratory Credit, 3 hours

456 Laboratory Techniques in Anthropological Genetics. A practical introduction to the various serological immunological and electrophoretic techniques used by anthropologists to detect human genetic variation Emphasis on learning the techniques in the laboratory and on theoretical questions of data analysis methods Prerequisite. approval of instructor One lecture, 6 hours laboratory Credit 3 hours

465 Quantitative Methods. Statistical techniques available as descriptive and analytical tools useful in processing and interpreting anthropological data Presentation of the concepts underlying parametric statistics· nonparametric methods Prerequisites: introductory statistics course and ASB 330, or approval of instructor Credit 3 hours.

466 Computer Archaeology. Methods of codifying and ordering nonmetric archaeological data Structuring of file systems for storage/retrieval and manipulation using computer techniques. Student projects and a thorough review of the literature of computer application for the analysis of archaeological data Prerequisite approval of instructor Credit 3 hours.

472 Archaeological Ceramics. Analysis and identification of pottery wares types and varieties. Systems for ceramic classification and cultural interpretation. Prerequisite. approval of instructor Two lectures, 2 hours laboratory Credit, 3 hours

553 New World Physical Anthropology. Human biology and variation of skeletal and living populations of Aleut-Eskimos and Indians American and anthropological origins and microevolution Adaptation and human population biology problems. Prerequisite· approval of instructor Credit 3 hours.

554 Southwestern Physical Anthropology. Human biology of skeletal and living populations of and ans of the Greater Southwest. Intensive review of within and between-group variation Field trip Prerequisites ASM 341†, 342†, and approval of instructor Credit 3 hours

555 Advanced Human Osteology. Laboratory and field techniques in dealing with the human skeleton Emphasis upon preparation, identification radiography sectioning, microscopy and data processing Prerequisite ASM 341† or approval of instructor One lecture 6 hours laboratory. Credit, 3 hours.

591 Seminar. Credit 3 hours Selected topics in archaeology and physical anthropology.

(a) Physical Anthropology
(b) Primates and Behavior
(c) Advanced Computer Applications in Archaeology
(d) Evolution and Culture (Same as ASB 591
(e) Interdepartmental Seminar (Same as ASB 591)

ANTHROPOLOGY (ASB)

Courses which may be applied toward the General Studies requirement in Social and Behavioral Sciences

ASB 102 Introduction to Cultural and Social Anthropology. Principles of cultural and social anthropology with illustrative materials from a variety of cultures The nature of culture. Social, political and economic systems, religion, esthetics and language Credit, 3 hours

231 Archaeological Field Methods. Excavation of archaeolog cal s tes and recording and interpretat on of data. Inc udes ocal f e d experience. Prerequ s te ASM 101 or approva of instructor Two ectures 8 hours laboratory. Credit 4 hours

311 Principles of Social Anthropology. Comparat ve analysis of domest c groups and econom c and po itica organizations n pr mitive and peasant soc et es Cred t 3 hours

312 Political Anthropology. Comparative exam nat on of the forms and processes of po it ca organizat on and activ ty in prim t ve peasant, and complex soc et es. Credit, 3 hours.

314 Comparative Religion. Orig ns, e ements forms and symbol sm of rel gion a comparative survey of re i-gious be iefs and ceremon es the p ace of re ig on in the total cu ture Prerequis te ASB 102 or approva of instructor. Credit 3 hours.

315 Primitive Arts and Technology. Comparat ve survey of the mater a culture of peoples of the wor d emphasiz ng production and use of art facts. Prerequ - site· ASB 102 or approval of nstructor. Cred t, 3 hours.

321 Southwestern Ethnology. Cu tures of the contemporary Indians of the Southwestern United States and their historic antecedents. Prerequ s te ASB 102 or approval of instructor Cred t 3 hours

322 Peoples of Africa. Races and cu tures of the peop es of Africa, past and present with specia emphas s on the Negro d peop es Prerequ s te ASB 102 or ap proval of instructor Credit 3 hours

323 Peoples of Asia. Races and cu tures of As a, nclud ng the more comp ex cultures of Ind a Ch na Japan and re ated areas Prerequ s te ASB 102 or approval of nstructor Cred t, 3 hours

324 Peoples of Oceania. Peop es and cu tures of Oceania focusing part cular y on soc eties of Me anesia M crones a and Po ynes a Prerequisite: ASB 102 or approval of nstructor Cred t 3 hours

325 Peoples of Southeast Asia. A cu tura eco og cal perspective on the peop es of main and and insular Southeast As a Subsistence modes soc a organiza tion, and the mpact of modern zat on Prerequis te. ASB 102 or approva of instructor Cred t 3 hours

330 Principles of Archaeology. Preh stor c soc et es Survey of dat ng methods, f eld techn ques and artifac tual nventories. Geograph c c mat c and geolog ca relationsh ps Credit, 3 hours

331 Old World Prehistory I. Deve opment of people as bio soc a animals n the P e stocene emphas z ng tech nologica ach evements and focus ng upon the re at onship between techno ogy and environment Areas nclude western Europe sub Saharan Afr ca and western Asia Prerequisite ASM 101 or approval of instructor Cred t 3 hours

332 Old World Prehistory II. Post P e stocene focus on the trans tion from hunt ng/col ect ng soc eties to de pendence upon domest cates Factors eading to the establ shment of sett ed v l age l fe and the development of the ear iest urban centers Prerequisite. ASM 101. Credit, 3 hours.

333 New World Prehistory. The var ety of archaeo og ca patterns encountered in the Western Hemisphere Covers the period from the appearance of humans n the New World to European contact covers the area from Alaska to T erra de Fuego Credit 3 hours

334 Arctic Anthropology. Past and present A eut Eskimo preh story orig ns, phys cal features adapta t ons, var at on and cu ture with comparisons of Asian Arctic popula t ons. Prerequ s te ASB 101 or approva of instructor. Cred t, 3 hours

335 Southwestern Anthropology. Past cultures in the Southwest and the r re at on to present peop es us ng archaeological, ethno og ca and ingu stic ev dences. Env ronmental and resource ut l zat on from earl est t mes to the present Credit 3 hours

337 Archaeology of Mesoamerica. Pre conquest cu tures and civi izat ons of Mexico The Aztecs Mayas and the r predecessors Prerequisite· ASM 101 or ap proval of nstructor. Credit 3 hours.

351 Culture and Personality. Approaches to the nter re ations between the persona ity system and the socio cu tural environment Prerequis te ASB 102 or approva of nstructor Credit 3 hours

355 American Indian Views of Man. The ma n histor ca and geograph cal groupings of re igious mater a from North Amer ca (inc ud ng Mex co) Myths r tual, and prose teach ngs, oral and written. Cred t 3 hours

356 Aspects of Southwest Indian Religion. Selected top cs of genera interest n wh ch new nterpretative work is tak ng place Emphas s on compar son between tr bes n respect to one or more top cs such as mytholo gy ca endr ca ritua s curing, drama etc Cred t 3 hours

364 Museum Techniques. Laboratory techn ques n restoration of artifacts Museum d splay pract ces to present anthropo og ca mater a Prerequis te ASM 101 or approval of nstructor Cred t 3 hours

381 Introduction to Linguistics. Descript ve and h stor cal linguist cs. Survey of theor es of human anguage emphasiz ng synchronic ingu stics Cred t, 3 hours

383 Linguistic Theory: Phonology. Contemporary theo ries of the sound system of anguage. Prerequ site· ASB 381 or FLA 400 or approval of nstructor Cred t, 3 hours.

411 Kinship and Social Organization. Meanings and uses of concepts referring to k nsh p, consanguin ty, af-f nity, descent alliance and residence in the context of a survey of the var eties of social groups, marr age, rules and k nsh p term no og ca systems. Prerequ s te 6 hours of anthropo ogy or approva of instructor. Cred-it, 3 hours.

412 History of Anthropology. H stor ca treatment of the development of the cu ture concept and ts expression n the chief theoretical trends n anthropology between 1860 and 1950. Prerequis te· ASB 102 or approval of instructor. Cred t, 3 hours

415 Primitive Art. Art forms of pr m t ve people n relationship to their cultural sett ng Prerequ s te ASB 102 or approva of instructor Cred t 3 hours

416 Economic Anthropology. Econom c behav or and the economy n pre ndustr a societ es descr ption and classif cation of exchange systems re at ons between product on exchange systems and other societal sub systems. Prerequ s te. ASB 102 or approva of nstruc tor. Credit, 3 hours.

418 Indian Reservations Today. Prob ems of reserva tion ife re at onsh ps between on- and off-reservat on Indians. Credit 3 hours

419 Social Inequality. A cross-cu tura perspective on systems of socia ranking and the incent ve structures wh ch ma nta n them Emphas s on the mpl cations of soc al and econom c nequa ty for peasant dec s'on making and econom c development n peasant com mun ties and nations Prerequisite ASB 102 or approva of nstructor. Cred t, 3 hours

421 The North American Indian. Archaeology ethnol ogy and l ngu st c re ationsh p of the Indians of North Amer ca. Does not nc ude M dd e Amer ca. Prerequ - s te ASB 102 or approva of nstructor Cred t 3 hours

422 Archaeology of North America. Or g n spread and development of the preh stor c nd ans of North Amer ica up to the h stor c tribes Does not nc ude the Southwest Prerequisite ASM 101 or approva of n structor. Cred t 3 hours

423 Archaeology of South America. Major cu tural developments leading to civi zation n the Andean re-gion with compar son of contrast ng developments n other South Amer can areas Focus on specia problem top cs. Prerequ s te: ASM 101 or approva of instructor Cred t 3 hours

424 Indians of Mesoamerica. H stor c tr bes and fo k cultures Prerequis te ASB 102 or approval of instruc tor Credit, 3 hours.

426 Historical Archaeology. Princip es techniques and mportant s tes. Use of ethnoh story laboratory techn ques, and artifact analys s D scuss on of value to historica understanding Prerequisite: one course n archaeology or approval of nstructor Cred t, 3 hours

430 Underwater Archaeology. Survey of methods and techniques Effects of changing sea evels on ocat on and movement of human groups Prerequisite. one course in archaeology or approva of nstructor Cred t 3 hours

431 Ritual: The Creative Process. R tua as an essent a and creat ve rel gious act Fundamental structures and typo ogies of r tual; techn ques for nterpretation and understanding ritual Prerequ s te. ASB 314† Cred t, 3 hours

432 Mythology. How ' myth" emerged as a concept in western c vi zation Myth c wor d v ew as a supposed feature of prim t ve cu tures. Methods for study ng mythic and other texts co lected from spoken trad t ons Prerequisite: ASB 314† Credit 3 hours

479 The Anthropology of Peasant Peoples. Descrip tion, comparison and theories perta ning to the socia and commun ty structure and world v ews of peasant peop es Prerequis te· ASB 102 Cred t 3 hours

481 Language and Culture. App cat on of ingu stic theor es and f ndings to nonl nguist c aspects of cu ture language change· psychol nguist cs Prerequ s te ASB 102 or approval of instructor Cred t 3 hours

482 Linguistic Practice. Study of a non Indo European language with an informant Prerequisite. ASB 381 or FLA 400 or approval of nstructor Credit 3 hours

483 Sociolinguistics and the Ethnography of Communication. Relationships between ngu st c and soc a categories; functiona analysis of language use ma nte nance and d versity; nteract on between verba and nonverbal commun cat on Prerequ s te ASB 381 or approval of nstructor. Cred t, 3 hours.

510 Archaeology of Lowland Civilization in Mesoamerica. Characteristics and adaptat ons of tropical lowland c v izat ons n Mesoamer ca Trop ca low and ecology and contrasts of socio-po t cal and econom c organ zation w th high and Mesoamer can c v izat ons Ut izes both archaeo ogical and ethnoh stor cal data. Prerequisite ASB 337† or approval of instructor Credit, 3 hours

513 Social Systems. Basic concept systems n soc a research social structure and funct ons; status ro e and organizat on, socia systems, economy and po ty problems n taxonomy and descr pt on Prerequ s te approval of nstructor Cred t, 3 hours

532 Graduate Field Anthropology. Independent re search on a specif c anthropo ogica prob em to be se ected by the student n consultation w th the staff. Prerequisites: ASM 338† or equiva ent and approva of nstructor May be repeated for cred t. Credit 2 8 hours.

533 Cultural Inventory Methods. Problems and procedures in ocat ng and record ng archaeolog ca s tes. Analys s of s te types, situations and re at on to natura resources nterpretation from surface remains F e d work. Prerequisite. approva of nstructor Credit, 3 hours

534 Public Archaeology: Legislation. Laws affecting archaeo ogica research, pol c es and procedures used to administer aws; phi osoph ca and pract ca problems of legal constraints on research, analys s of pub ic documents generated through comp ance w th such aws Prerequ s tes regu ar graduate student status 12 comp eted graduate hours n archaeo ogy consent of nstructor Credit 3 hours.

535 Public Archaeology: Implementation. Theoret cal and pract cal app ications of cu tura resources egislat on and po icy Conservat on development, and management of cu tura resources. Prerequisite ASB 534† or equiva ent, or approva of instructor Sem nar and f e d work Cred t, 3 hours

544 Settlement Patterns. Spatial arrangement of resi dences, distribut on and density over the andscape and uti ization of a g ven environment for hab tat on. Prerequisite. approva of nstructor Credit 3 hours

545 Method and Theory of Archaeology. Deve opment of archaeo ogy and the theoretical basis of the disci pline. Rationa e and methods of reconstruct on of past human behavior from archaeo og ca data Prerequisite· approva of instructor Credit 3 hours

546 Pleistocene Prehistory. Deve opment of soc ety and culture n the O d World dur ng the Pleistocene epoch emphas zing techno og ca change through t me and the relat onsh p of peop e to the r environment Prerequisite. ASB 331† or equ va ent Cred t 3 hours

547 Rise of Urban Life. Focus on the archaeo og ca ev dence in the O d Wor d for the trans tion from subsistence economies dependent upon hunt ng and gath er ng to those dependent upon domest cated p ants and/or anima s. Impact of this shift n subs stence on ocal groups and on sedent sm n both nuc ear and nonnuclear areas Prerequ s te ASB 332† or equiva ent Credit, 3 hours.

582 Linguistic Theory: Syntax. Contemporary theor es of the grammat ca structure of languages Prerequisite ASB 381 or FLA 400 or approva of nstructor Credit, 3 hours.

583 Linguistic Theory: Phonological Systems. Or g ns and development of contemporary phono ogical systems w th particular attent on to non Western languages Prerequisite FLA 400 or ASB 381 or approval of instructor. Credit, 3 hours

585 Linguistic Theory: Semantics. Contemporary theo r es on the semant c structure of anguages w th particu ar attent on to non-Western anguages Prereq uisite: ASB 381 or FLA 400 or approva of nstructor.

591 Seminar. Cred t, 3 hours Selected top cs in ar chaeology, ingu stics and soc a cu tura anthropology

(a) Cu tura Anthropo ogy
(b) Social Anthropology
(c) Problems in Southwestern Ethno ogy
(d) Cu ture and Personal ty
(e) Lingu stics
(f) Museo ogy
(g Prob ems n Southwestern Archaeo ogy
(h) Archaeo ogy
(i) Evo ut on and Culture Same as ASM 591)
(j) nterdepartmenta Sem nar Same as ASM 591

Special Courses: ASM and ASB 493 498 499 590 592, 598 599, 684 790, 792 and 799 See page 31)

Biological Sciences

The following curricula are offered ointly by the Department of Botan v and M crobiol gy and the Department of Zoology Students who elect one of these programs are advised by a member of the Botany and M crobiology De partment or by a member of the Zoology Department

Bachelor of Science Degree Curriculum

Biology A combined offer ng by the f aculties of the Departments of Botany M crob ology and Zoology This Liberal Arts ma or in biol ogy is designed to serve students desiring a broader program in the biol gica sc ences than that provided by the ore speci ized majors in the degree progran s of the individ ual departments. The m jor c nsists of a

minimum of 45 semester hours of credit, of which 18 must be in upper division courses. Required courses are BIO 101, 102†, 340†; MIC 201† or 210†, 202†. The additional 30 hours in the major must reflect a balanced distribution of courses in the two departments in the areas of physiology, ecology, morphology, and systematics. Supporting courses required are CHM 113†, 115†, 121†, 231† or 331†, 332†, 335†, 336†; PHY 101 or 111†, 112†, 113†, 114†; MAT 141†; one year of an approved foreign language (See Degree Requirements, pages 52-53)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Biological Sciences—A combined offering by the faculties of the departments in the life sciences The major consists of a minimum of 42 semester hours of credit, of which 18 must be in upper division courses Required courses are BIO 101, 102†, 320†, 340†; BOT 300† or 370†; MIC 201† or 210†, 202†; BOT 360†, ZOL 360† or BAS 460†; ZOL 350† and one additional course selected from one of the following areas: Ecological area, BIO 330, 426†, 427†; BOT 420†; ZOL 425†, 427†; ERA 333†. Systematic area, BOT 410†, 434†, 440†, 448†, 450†, 470† or 475†; ENT 300†, 400†; MIC 470†, ZOL 270†, 453†, 472†, 473†, 474†, 475† Morphological area, BIO 432†; BOT 350†, 445†; ZOL 330†, 432†, 433†, 450† Physiological area, BOT 460†, 461†, 462†; MIC 420†, 460†, 485†; ZOL 460†, 461†, 462†, 463†, 465†. Genetic area, BIO 441†, 442†, 443†, MIC 441†, 442†; ZOL 241†. Developmental area BIO 430†, 431†; ZOL 330†. Behavioral area, ZOL 280†, 481†. The total program must reflect a balanced distribution of courses from both Departments Supporting courses are: CHM 113†, 231†, elementary biochemistry is strongly recommended. BIO 480† is required in the professional education program

Departmental Minor Teaching Field Requirements

(Secondary Education)

Biological Sciences Consists of 24 semester hours as follows. BIO 101, 102†, 340†; MIC 201† or 210†, 202† and 9 additional hours in courses listed under biology, botany, entomology, microbiology, and zoology with the exception of the following BIO 100, 218†, 318†; BOT 100, ZOL 110, 300. Supporting course: BIO 480† is required in addition to the 24 semester hours of credit in the biological sciences.

Botany and Microbiology

PROFESSORS:
PATTEN (LSC 206) ARONSON, CANRIGHT, JOHNSON, NORTHEY REEVES

ASSOCIATE PROFESSORS:
DYCUS, LEATHERS, NASH, P NKAVA, SCHM DT, SOMMERFELD, TRELEASE

ASSISTANT PROFESSORS:
ARCHER, B RGE BURKE, CLARK EUBANKS, SZAREK TOWILL

LECTURER:
SWAFFORD

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Botany Consists of a minimum of 45 semester hours of credit in botany and approved related fields, of which 18 must be in upper division courses Required courses are BIO 101, 102†, 320†, 340†, MIC 201† or 210†, 202†, BOT 350†, 360†, 370† and at least one of the following: BOT 410†, 434†, 440†, or 450†. Supplementary courses CHM 113†, 115†, 121†, 231†, or the sequence 331†, 332†, 335† and 336†; MAT 115† or 141†, and one year of an approved foreign language are also required. (See Degree Requirements, pages 52-53.)

Microbiology A student majoring in micro biology is required to take the following courses: BIO 101, 102†, 340†; CHM 331†, 332†, 335†, 336†; MIC 202†, 210†, 302†; plus 16 hours of upper division electives in microbiology or approved related fields. Total: 41 semester hours. In addition, the student is required to have proficiency equivalent to one year of college French, German or Russian. The required supplemental courses are: CHM 113†, 115†, 121†; MAT 115† or 141†; PHY 111†, 112†, 113†, 114†. (See Degree Requirements, pages 52-53.)

Medical Technology—Consists of 55 hours of approved courses in the pre internship program selected by the advisor in consultation with the student, and one year of internship in an approved hospital program. Completion of the degree is dependent upon acceptance of the student by the hospital into an accredited internship program. The University does not guarantee that all students will be accepted into a hospital internship program.

Radiology Consists of 55 hours of approved courses in the pre-internship program selected by the advisor in consultation with the student, and 24 months internship in an approved hospital program. Completion of the degree is dependent upon acceptance of the student by the hospital into an accredited internship program. The University does not guarantee that all students will be accepted into a hospital internship program.

Departmental Graduate Programs

The Department of Botany and Microbiology offers programs leading to the degrees of Mas-

ter of Science and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements

BIOLOGY

BIO 100 The Living World. Pr nc ples of b o ogy Not offered for credit to students who have had advanced biology n h gh school. Cannot be used for major cred t n the b olog cal sc ences Three ectures 2 hours labo ratory Credit 4 hours

101, 102 Biological Principles and Processes. A com prehens ve treatment of b o ogical concepts emphas zing fundamental princ p es of b ology and the interplay of structure and funct on at the mo ecular, ce lu ar, organ sma and populat on levels of organ zation For majors in bio og ca sc ences and preprofess ona students n health related sciences. (B O 101 is a prerequ s te for BIO 102). Three ectures 3 hours laboratory Credit 4 hours each semester

217 Introduction to Fisheries and Wildlife Management. Princ p es relating to management of co d and warm water fisheries and terrestr a w ld fe emphasiz ng management of ecosystems Prerequ s tes. 8 semester hours of b ological sc ences and approva of instructor. Credit 3 hours

218 History of Medicine. Deve opment of medica con cepts Credit 1 hour

300 Natural History of Arizona. Plant and an ma communities of Ar zona. Cannot be used for major cred t n the bio ogical sciences. Prerequisite· jun or stand ng Cred t, 3 hours.

310 Special Problems and Techniques. Qua f ed undergraduates may formu ate and nvest gate a spec fic b o ogical problem under the d rect on of a faculty member. The nvest gation may nvolve ibrary, f eld laboratory or a comb nat on of the techn ques Prereq u s tes: formal conference with the facu ty member and approval of the prob em and techniques by the faculty member and of the departmenta chair May be re peated for a total of 6 credits. Cred t 1 3 hours

318 History of Biology. Development of b o og ca con cepts. Prerequis te 12 semester hours of biolog cal sciences. Credit 2 hours

320 Fundamentals of Ecology. Basic concepts n eco ogy. Organizat on funct oning and development of eco ogical sytems energy f ow b ogeochem ca cyc ng, env ronmenta re ations, populat on dynamics Prerequ s tes B O 102 or equiva ent or approva of nstructor Cred t 3 hours

330 Ecology and Conservation. Eco og ca and b olog cal concepts of conservation, use of bas c and app ed eco ogy to understand man made eco og ca prob ems and the purpose for conservation. Cred t, 3 hours

340 General Genetics. Science of hered ty and var a tion. Prerequ s te: B O 101, 102† Three hours ecture, 1 hour recitation. Credit, 4 hours

415 Biometry. Stat stical methods app ied to b o og ca prob ems, inc uding des gn of exper ments, estimat on, tests of s gnif cance, analys s of var ance regress on correlation, ch square and b oassay Th s course wi l not satisfy laboratory requirements for the L beral Arts Genera Stud es program Prerequ s te MAT 142† or equ va ent Two ectures, 6 hours laboratory Cred t, 4 hours

424 Analysis of Ecosystems. Emphas zes product on respiration and decompos t on Prerequ s tes senior or graduate standing, BOT 420†, ZOL 425† or equ va ent courses Credit 2 hours

425 Laboratory Ecosystem Analysis. Methods of ana lyzing energy f ow and nutrient cyc ng. Prerequ s tes· BOT 424†, ZOL 425† or equ va ent. 3 hours aboratory Credit, 1 hour

426 Limnology. Dynamics of nland waters stressing the nterre ations of cl mat c geo ogica topograph ca physica and chem ca factors with spec a reference to aquatic fe. Prerequ s tes CHM 113† ZOL 350† Credit 3 hours.

427 Limnology Laboratory. Prerequisites B O 426† or approva of instructor Three hours aboratory Credit 1 hour.

428 Biogeography. Deve opmenta h story of the world s phys ca and env ronmenta characterist cs and the r relat onships and nf uences on the patterns and s gn f cance of world plant and an ma d stribut ons of the past and present. Prerequ s te 4 hours of b ology or approva of instructor Credit 3 hours

429 Advanced Limnology. Recent terature, develop ments methods and l mno og ca theory f e d and laboratory appl cation to some part cu ar topic n m nology Prerequisite· BIO 426† Credit 3 hours

430 Concepts in Developmental Biology. Current con cepts and experimental methods nvo v ng d fferent a tion and b osynthetic act v t es of cel s and organ sms w th examp es from micro-organ sms, plants and an mals Prerequ s te· BIO 102† or equ valent Cred t, 3 hours

432 Biochemical Cytology. Ce uar funct ons and chem stry based on the macromo ecu ar organ zation of ce lu ar components emphas zing the use of ana yt ca procedures such as cel fractionation, u trastructura rad oautography, and cytochemistry Prerequ s tes. BOT 360† or ZOL 360† or equiva ent CHM 231† or 331† or equiva ent. Cred t, 3 hours

441 Cytogenetics. Chromosoma bas s of nher tance Prerequ s te BIO 340†. Credit 3 hours.

442 Cytogenetics Laboratory. M croscopic ana ys s of meiosis mitos s and aberrant ce d v s on Prerequ s tes or concurrent y: BIO 441† and graduate status Four hours laboratory Cred t, 2 hours

443 Molecular Genetics. Nature and funct on of the gene Prerequ s tes: BIO 340† and a course in organic chem stry. Cred t, 3 hours

445 Organic Evolution. Processes and adapt ve change and speciation n populations Prerequ site B O 340† or ZOL 241†. Cred t, 3 hours

464 Photobiology. Pr ncip es under y ng the effects of l ght on growth, development and behav or of p ants, an mals and m cro organ sms Prerequ s tes 12 hours of courses in fe sciences; CHM 231† or 331† Cred t, 3 hours

480 Methods of Teaching Biology. Methods of nstruct on, exper mentat on organ zat on and presentation of appropriate content n b o ogy. Prerequis tes· E ther SED 311† or concurrent enro lment in SED 311 and 20 hours n the biolog cal sciences Two lectures 2 hours laboratory. Cred t, 3 hours.

512 Biological Electron Microscopy. Theory and use of transm ssion and scann ng microscopy for biolog cal mater a s. Prerequis tes. approva of nstructor **Materials Fee.** Two lectures, 6 hours aboratory Cred t 4 hours.

515 Scanning Electron Microscopy. Theory and tech niques of scanning electron microscopy ntens ve three week min course. Prerequ s te approva of in structor. **Materials Fee.** Two ectures 6 hours laboratory. Credit 1 hour

520 Biology of the Desert. Factors affect ng plant and animal fe n the desert regions and adaptations of the organ sms to these factors. Prerequ site. 10 hours of b ological sciences and/or approva of nstructor Cred t, 2 hours.

526 Quantitative Ecology. Samp ng strateg es spatia pattern analys s, species divers ty c ass f cation and appl cations of mult variate techniques to eco ogy. Pre requ s tes: One course n ecology B O 415† or equiva ent. Two lectures, 3 hours laboratory. Cred t, 3 hours

Special Courses: B O 494 498 590, 591 598 599 (See page 31.)

BOTANY

BOT 100 Botany. Major pr nc ples and processes in p ant b ology, ncluding a br ef survey of the p ant k ng dom Emphasis on morpho ogy evolut on d versity,

physiology and economic signif cance of plants For nonmajors in the b o og cal sciences. Three lectures 3 hours aboratory. Cred t, 4 hours.

300 Survey of the Plant Kingdom. Systemat c and evolutionary survey of the plant k ngdom emphasiz ng divers ty of gross and cellular structure reproduction life cycles and habitat. Prerequis te: one of the fo ow ing: B O 100, 102, BOT 100, ZOL 110 or equivalent Cred t, 4 hours.

301 Economic Botany. Plants and p ant products used by man throughout the world ncluding their cu tivat on processing and uses n modern ife F bers med c nals beverages, perfumes, foods. Prerequ s te BIO 100 or equ va ent Cred t, 3 hours

350 Plant Anatomy. Deve opment and mature structure of tissues of vascular p ants, patterns and mod fcat ons of leaf, stem, root and flower Prerequis te· B O 102† or equivalent. Three ectures 3 hours aboratory. Cred t 4 hours

360 Plant Physiology. Plant growth and development nutrit on, water relat ons, reproduct on metabo ism and photosynthes s. Prerequ s tes· BIO 102† or equivalent· CHM 231† or approva of nstructor Two lectures 6 hours laboratory Credit, 4 hours

370 The Flora of Arizona. Princ p es of taxonomy, dentification of Ar zona plants. Prerequ s tes: B O 101 and 102, or equ valent, or approva of the nstructor. Two lectures, 6 hours laboratory Cred t 4 hours

410 Lichenology. Chemistry ecology, physiology and taxonomy of ichens Prerequ s te B O 102† or equ va ent Two lectures, 3 hours laboratory Credit, 3 hours

420 Plant Ecology. P ants in re ation to env ronments Prerequisite. BIO 320† or equ valent. Three lectures, 3 hours laboratory or fie d trip One weekend field trip Cred t 4 hours

423 Biophysical Plant Ecology. Theory of phys cal m croenv ronments, and effects on plant growth. Con siderat on of plant energy exchange, and so p ant atmosphere water relat ons. Optiona corequisite· BOT 424† Prerequ site BOT 360† or approva of instructor Two ectures Credit 2 hours

424 Biophysical Plant Ecology Laboratory. Methods of analysis of plant energy exchange, and water re at ons of the so l-p ant atmosphere continuum. Operation and applicat on techniques of methods uti zed n ana ysis of the physica env ronment. Opt onal corequ site: BOT 423† Prerequis te: approval of instructor One 3 hour laboratory. Credit 1 hour.

425 Plant Geography. P ant commun ties of the wor d and their nterpretation emphas zing North American plant assoc ations Prerequisite· BIO 102† or equivalent or approval of instructor. Cred t, 3 hours

427 Physiological Plant Ecology. nvestigat ons of phys o ogical adaptat ons of p ants to environmenta stresses· eco ogical significance for growth and survival Env ronmental and bio og cal contro of photosynthes s and transp ration Opt onal corequisite. BOT 428†. Prerequisite. BOT 360† or approva of instructor Cred t, 2 hours.

428 Physiological Plant Ecology Laboratory. Methods of ana ys s of photosynthes s and transp rat on nfrared CO_2 analysis, CO_2 rad oisotope analysis and water vapor diffusion. Opt ona corequ site: BOT 427† Pre requ s te· approva of nstructor One 3-hour laboratory Cred t, 1 hour.

434 General Mycology. Various groups of fungi, their morphology, identif cation procedures and econom c significance Prerequisites. BIO 102† or equ va ent, and/or M C 202†. Two lectures 6 hours aboratory Credit, 4 hours.

445 Morphology of the Vascular Plants. Comparat ve structure and evo ut onary trends n the Tracheophyta Prerequis tes. BIO 102 or equiva ent BOT 350† or approval of instructor. Three lectures 3 hours aboratory Credit 4 hours.

448 Palynology. mportance of spores and po len (both fossi and modern) to systemat cs, evo ut on, eco ogy and stratigraphy. Prerequis te approva of nstructor Credit, 2 hours

450 Phycology. The a gae both fresh water and mar ne forms, emphas zing fie d co lect on and dent fication of local representatives. Morpholog ca , eco og ca and econom c aspects of the a gae Prerequ s te BIO 102† or approval of nstructor. Three ectures, 3 hours aboratory. Cred t, 4 hours

455 Experimental Phycology. Techn ques emp oyed in the isolat on, identif cation purif cat on and cultur ng of fresh water and marine algae, emphasiz ng the r use as exper menta systems Prerequ s te approval of nstruc tor. Two lectures 6 hours aboratory. Credit, 4 hours

460 Growth and Reproduction. Interact on of env ron ment metabo ic and hormonal factors n vegetative and reproductive phases of plant behav or. Prerequ site: CHM 231† Two lectures, 6 hours aboratory Cred t 4 hours

461 Physiology of Lower Plants. Cel ular phys o ogy and b ochemistry of algae and fungi, responses of these organisms to chem cal and phys ca st mu i and the r process or morphogenesis Prerequ s tes: B O 102† or equiva ent; CHM 231†. Credit 3 hours.

470 Taxonomy of Southwestern Vascular Plants. Identfication of the vascu ar p ants of the Southwest and the princ p es underlying their c assif cat on. Not open to students who have had BOT 370 Three ectures, 6 hours laboratory. Two f e d trips Summer on y Credit, 4 hours

475 Angiosperm Taxonomy. Pr nc p es underlying an giosperm phylogeny. Prerequ s te BOT 370† or approval of nstructor. Two ectures, 2 hours aboratory Credit, 3 hours.

476 Experimental Plant Systematics. Interpretation of taxa, utiliz ng cyto ogical, genetic, eco og cal, morpho- ogica and anatom ca techn ques and data Prere quisite: BOT 370 or 470†, or approval of nstructor Two ectures 3 hours aboratory. Cred t 3 hours.

490 Paleobotany. Plant l fe of the past, including types of plant foss ls, k nds of fossil zation their geo og c history and past geographic distribution Preparing plant fossi s for study identif cation and nterpretat on of fos s l zed plant organs. Prerequisites· B O 102† or equ va ent GLG 102 or approval of nstructor Three ectures 3 hours laboratory or fie d trip Cred t, 4 hours

510 Experimental Design. ANOVAS one-way classif cation of factorial and part a y hierarch c des gns, introductory mult var ate statistics Prerequisite· B O 415† or equiva ent. One 3-hour ecture at night. Cred t, 3 hours

564 Plant Metabolism. Genera plant metabo ism and typ cal plant products, emphas zing b osynthes s and funct ons of storage products cel wall const tuents, plant ac ds p gments, hormones and numerous secondary products. Prerequisites CHM 231† BOT 360† or approval of instructor Credit 3 hours.

570 Plant Secondary Chemistry. B osynthesis and d str bution of p ant natural products within various p ant taxa. Prerequisites: CHM 331† and CHM 332† or equ v alent Three lectures Cred t, 3 hours

571 Methods in Biochemical Systematics. Techn ques n isolation and characterizat on of major classes of natura products used in biochem cal systemat cs Pre requisite: approval of instructor. Two ectures 3 hours laboratory Credit 3 hours.

591 Seminar: Credit, 1 3 hours Top cs may be selected from the fol owing:

(a) Ecology	(e) Mycology
(b) Biosystemat cs	(f) Mo ecu ar Biology
(c) Morpho ogy	(g) Cact and Succulents
(d) P ant Physiology	(h) Phyco ogy

Special Courses: BOT 492 493, 494 498, 499, 590, 592, 598, 599 790, 792, 799 (See page 31)

MICROBIOLOGY

MIC 105 Medical Technology Orientation. Lecture and laboratory experience in various phases of c inica laboratory technology under hosp ta condit ons. Open to med ca technology majors on y Cred t 1 hour

201 Microbiology. Basic course for nonmajors empha- s zing genera pr ncip es of the ro e of m croorganisms in health, eco ogy, and re ated app ied fields. Prerequi s tes CHM 101 and any one of the fo lowing· BOT 100 BIO 100, ZOL 100, or approva of nstructor Cred t, 3 hours

202 Microbiology Laboratory. Pr nc p es and laboratory techniques used n dentifying and hand ng m cro organisms Prerequisite. credit or concurrent enro lment n MIC 201† or 210† Three hours aboratory Credit 1 hour

210 General Bacteriology. Deta ed study of the bac ter a cell, ts structure genetics, phys o ogy, and taxonomy. Intended for microbio ogy majors and others with simi ar preparat on *Not open to students with credit in MIC 201* Prerequisites BIO 102† and CHM 115†. *Normally offered in the Fall semester only.* Credit 3 hours.

302 General Bacteriology Laboratory. Instruct on by staff members on advanced laboratory techniques in bacter a growth, phys o ogy, genet cs, m croscopy, and bas c v ro ogy. Required of m crobiology majors. Pre requisites: either group A or B (A) M C 202† and 210† (B) M C 201† and 202† and approva of nstructor Four hours laboratory Cred t, 2 hours

315 Medical Microbiology. Laboratory techn ques used n med ca bacter o ogy, myco ogy and parasito ogy Limited to common y encountered human pathogens Cannot be used for major cred t n Zoology Botany, or Microb ology Prerequisite· M C 202† and 201† or 210†. Three hours lecture 6 hours aboratory Cred t, 5 hours

334 Medical Mycology. Fung as causa agents of d s- eases of man, inc ud ng patho ogy and ep dem o ogy emphas zing techniques of d agnos s Prerequ s te: M C 202† or equ valent Two ectures 3 hours aboratory. Cred t, 3 hours

370 Instrumentation. Basic electron cs, bas c instru mentat on and appl cat on Two lectures 3 hours laboratory Credit, 3 hours

375 Concepts in Medical Technology. Bas c concepts and aboratory techn ques n hematology, ur nalysis and sero ogy Prerequisite· acceptance to an aff l ated hos p tal nternship program. Three hours ecture 3 hours laboratory Credit, 5 hours

401 Medical Technology Laboratory Techniques and Theory. Experience, nclud ng ecture and laboratory n the areas of hematology, c in cal chem stry microbiol- ogy and immunohematology. Credit, 16 hours.

402 Medical Technology—Advanced Medical Laboratory Specialization. Advanced ecture series and clin ca laboratory exper ence inc uding pat ent serv ces Spec alization in one or more areas of clin cal abora tory technology Credit 16 hours

403 Specialized Medical Technology Laboratory. Ad vanced techniques n a l areas of the aboratory based upon individua ized program deve opment for students with MLT reg stration or e ig bi ty Cred t, 12 hours

420 Immunology. Pr ncip es of mmun ty and the r app - cat on to diagnos s, systematics and a ergies. Prerequ s tes. MIC 202† CHM 231† or equ va ent Two lectures, 6 hours aboratory Cred t, 4 hours.

425 Advanced Immunobiology. Ce s and tissues of mmune system, their structure function and nterac tion. Prerequisites· MIC 420† Two ectures, 3 hours aboratory. Cred t, 3 hours

441 Bacterial Genetics. Mutation, mo ecular transfer mechanisms of hereditary materia and genetic recom binat on in bacter a and their v ruses Prerequ s tes· M C 201† or 210† and B O 340† or approva of instruc tor Credit, 3 hours

442 Bacterial Genetics Laboratory. Techn ques of mu tagenesis mapp ng, and strain construct on Prerequisites M C 202† and credit or concurrent enro l ment in MIC 441† Four hours aboratory Credit 1 hour.

460 Bacterial Physiology. B ochem cal aspects of mi crobial growth and metabo ism. Enzymes of term na ox dat on espec a ly those invo ved in synthesis and metabo sm of ce lu ar ntermed ates Prerequ s tes 5 hours of microbio ogy; CHM 331† or equivalent. Two ectures, 3 hours aboratory Cred t 3 hours.

470 Systematic Bacteriology. Class fica on and ident - fica on of bacteria. Prerequ sites MIC 202† 5 hours of m crobio ogy. One ecture 6 hours aboratory. Cred t, 3 hours

481 Diagnostic Bacteriology. B ochem cal and mmu nolog cal methods for characteriz ng pathogen c bacter a. Prerequ s tes· M C 202†, CHM 231† or CHM 331†. Two ectures, 3 hours aboratory. Cred t 3 hours

485 Virology. Fundamental nature of viruses and other obl gate intracel ular paras tes, their repl cat on, patho genesis, eco ogy and cu tivation Prerequ s tes 8 hours of microbio ogy, CHM 331† Two ectures 3 hours abo ratory Credit 3 hours

520 Selected Topics in Immunology. Current terature concerning immuno ogy part cu ar y concerning recent advances in immunogenet cs and regu at on of immune response. Prerequ sites· M C 420† Credit, 3 hours.

581 Selected Topics in Host-Bacterial Relationships. Pathogenic mechanisms and host responses n bac- ter al diseases Prerequisites M C 481† or consent of the instructor; MIC 420† Cred t 3 hours

591 Seminar. Credit, 1 3 hours Top cs may be selected from the fol owing:

(a) Mo ecu ar Biology
(b) V ro ogy
(c) Enzymo ogy
(d) Genet cs
(e) Immuno ogy
f Bacter al Ecology

Special Courses: M C 298, 492 493 494 497 499, 500, 590, 592, 598, 599 700, 790, 791 792 799 (See page 31.)

Chemistry

PROFESSORS:
MUNK (PSD 102), BIEBER D BROWN P. BROWN, T BROWN, BURGOYNE, BURKE, BUSECK, EYRING, FUCHS, HARRIS, JUVET LIN, LIU, LUCHSINGER MOELLER, C. MOORE, O'KEEFFE, PETTIT, SANDERSON, THOMSON WHITEHURST, YUEN, ZASLOW

ASSOCIATE PROFESSORS:
B RK, CRONIN, GLAUNSINGER HOLLOWAY, NAVROTSKY, PARSONS, VON DREELE

ASSISTANT PROFESSORS:
GUST, T. MOORE, ROSE

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Chemistry Consists of 45 semester hours of credit, of which 30 must be in chemistry and 15 in closely related fields Required courses are: CHM 117†, 118†, 119†, 120† (or 113†, 115†, 121†), 225†, 226†, 3 7†, 318†, 319† 320† (or 331†, 332†, 335† 336† 341†, 443† and 453†. (Students who are interested in in strumental analysis are advised to take CHM 425†, 426†, 427†, 428† in p ace of 225†, 226†, 421†, and 422†.) Related courses must include PHY 111†, 112†, 113†,114†, and

MAT 115†, 142†, or equivalent or more advanced courses The remaining courses to complete the major will be determined by the student in consultation with his advisor. (See Degree Requirements, pages 52 53.)

Bachelor of Science Degree Curriculum

Chemistry—Consists of 42 semester hours of credit in chemistry Required courses are: CHM 117†, 118†, 119†, 120†, 317†, 318†, 319†, 320†, 417†, 418†, 420†, 425†, 426†, 427†, 428†, and 453†. In addition, PHY 115†, 116†, 117†, 118†; MAT 120†, 121†, 212†, and one year of German (or Russian) is required An appropriate course in computer science is recommended The remaining chemistry courses to complete the minor will be determined by the student in consultation with his her advisor With the consent of the department chair, selected advanced courses from other related scientific disciplines may be accepted in lieu of elective chemistry courses to complete the major

Transfer students will be interviewed and advised of possible preparatory work They must contact the department to arrange for the interview in advance of registration (See Degree Requirements, pages 52 53)

American Chemical Society Certification. A student who satisfactorily completes the Bachelor of Science degree program will be certified by the Department of Chemistry to the American Chemical Society as having met the specific requirements for undergraduate professional training in chemistry

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Chemistry—Option 1. Consists of 42 semester hours of credit in chemistry and related fields. Required courses are: CHM 113†, 115†, 121†, 225†, 226†; 331†, 332†, 335†, 336† (or 231†, 361†); 341† (or 441†, 442†); 480† (or PSE 480† or PHY 480†); PHY 111†, 112†, 113†, 114†, and MAT 115†, 142†. The remaining courses to complete the major will be determined by the student in consultation with his advisor.

Chemistry Option 2. Consists of 30 semester hours of chemistry, which includes all of the required chemistry courses listed in Option 1, and selection of the corresponding option in either mathematics or physics; that is, completion of an additional 30 semester hours in the chosen area as specified by the department selected.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Chemistry Consists of 24 semester hours of credit in chemistry. Required courses are: CHM 113†, 115†, 121† 225†, 226†, 231†, 361† (or 331†, 332†, 335†, 336†); and 341†. The remaining courses to complete the minor will be determined by the student in consultation with his advisor

Departmental Graduate Programs

The Department of Chemistry offers programs leading to the degrees of Master of Science and Doctor of Philosophy Consult the *Graduate Catalog* for requirements

CHEMISTRY

CHM 101* Introductory Chemistry. Elements of general chemistry Adapted to the needs of students in nursing home economics, agriculture and physical education. Recommended for General Studies credit Normally followed by CHM 231. Three lectures 1 quiz 2 hours laboratory. Credit, 4 hours

113* General Chemistry. Principles of chemistry Adapted to the needs of students in the physical, biological and earth sciences. Prerequisite: Three semesters of high school algebra or MAT 106 One year of high school chemistry recommended Three lectures 1 quiz, 2 hours laboratory Credit 4 hours.

114* General Chemistry for Engineers. One semester college chemistry with emphasis towards engineering. Prerequisites: Three semesters of high school algebra or MAT 106; one year of high school chemistry. Students without high school chemistry must enroll in the CHM 113† 115†, 116† sequence instead of CHM 114 Three lectures 1 quiz, 2 hours laboratory Credit 4 hours

115* General Chemistry. Continuation of CHM 113 Equilibrium theory chemistry of metals nonmetals and metalloids introduction to organic chemistry Prerequisite: CHM 113† or two years of high school chemistry. Corequisite: CHM 116† or 121† Credit 3 hours

116* General Chemistry Laboratory. Selected experiments to accompany CHM 115 for students selecting not to take qualitative analysis. Corequisite: CHM 115†. One quiz, 2 hours laboratory. Credit 1 hour

117*, 118* Chemistry I, II. Unified approach on chemical bonding molecular structure, descriptive chemistry of the elements, properties of matter in various physical states, basic thermodynamics, chemical stoichiometry and chemical analysis Prerequisites: Minimum of one year each of high school chemistry and physics three years of high school mathematics. Corequisites CHM 119† for CHM 117†, CHM 120† and MAT 120† for CHM 118†. Credit, 3 hours each semester

119* Chemistry Laboratory I. Preparation, purification and characterization of chemical compounds; solution chemistry and qualitative analysis involving organic and inorganic mixtures, introduction to instruments Prior or corequisite: CHM 117†. One conference 2 hours laboratory. Credit, 1 hour

120* Chemistry Laboratory II. Continuation of CHM 119 Prior or corequisite: CHM 118†. One conference, 5 hours laboratory Credit, 2 hours.

121* Qualitative Analysis. Qualitative separation and identification of common cations and anions Corequisite. CHM 115†. Two quizzes, 4 hours laboratory Credit 2 hours.

225* Analytical Chemistry. Principles and methods of chemical analysis. Primarily for students in agriculture pre-medicine, pre dentistry and medical technology. Prerequisite CHM 115† Credit 3 hours

226* Analytical Chemistry Laboratory. Experiments in chemical analysis. Corequisite CHM 225† One conference, 5 hours laboratory. Credit, 2 hours

231* Elementary Organic Chemistry. Representative groups of organic compounds, emphasizing biological applications. Adapted to the needs of students in nurs

ng, home economics, agr culture and phys ca educat on. Prerequisite: CHM 101 or 113†; or approval of nstructor, or one year of high school chemistry with grades of A or B. Three lectures 1 quiz, 2 hours laboratory. Cred t, 4 hours

261* Elementary Biochemistry. Top c coverage sim ar to CHM 361 but at a level suitab e for students w th m nimal backgrounds in organ c chemistry and mathemat cs. Examp es and lustrations drawn from agr culture, nutr t on and medic ne wherever poss ble Prerequisite· CHM 231 and math equ va ent to high schoo algebra Students who have completed or are tak ng CHM 331 may not enro Cred t, 3 hours.

301 Chemistry for Non-Science Majors. A qua tat ve survey of chemistry and its mpact on modern techno ogy and the env ronment Cred t 3 hours.

317*, 318* Chemistry III, IV. Structures reaction mech anisms and kinet cs and systematic syntheses of organ c compounds Pre and corequ sites· CHM 118† and 120† CHM 319† for CHM 317†, CHM 320† for CHM 318†. Cred t, 3 hours each semester

319* Chemistry Laboratory III. Emphasis on mecha n sms, kinetics, and products or organic react ons Pre- or corequ s te CHM 317† One conference, 3 hours laboratory. Credit 1 hour

320* Chemistry Laboratory IV. Cont nuat on of CHM 319 Pre- or corequis te CHM 318† One conference, 7 hours aboratory. Cred t 2 hours

331*, 332* General Organic Chemistry. Chem stry of organ c compounds. Prerequ s te CHM 115† or 118†. Credit, 3 hours each semester

335*, 336* General Organic Chemistry Laboratory. Organ c chem cal experiments n separat on techn ques synthesis, analysis and dent f cat on and relat ve reac tivity Corequ s tes: CHM 331† for CHM 335†, CHM 332† for CHM 336†. Four hours aboratory Credit, 1 hour each semester

341* Elementary Physical Chemistry. Propert es of sol ds l qu ds gases, so ut ons, equi brium co lo da state For pre-med ca biology agr culture, etc students Prerequ s tes: CHM 118† or 225†, and CHM 231† or 331†, and MAT 142† Cred t, 3 hours

361 Principles of Biochemistry. Structures propert es and functions of prote ns, enzymes nuc e c ac ds, car bohydrates, and l p ds the ut l zation and synthes s of these mater a s by iv ng systems and the relat onsh p of these processes to energy product on and ut lizat on Prerequis te CHM 231†, 318† or 332† Cred t 3 hours

367 Elementary Biochemistry Laboratory. Exper ments inc ude qua itat ve ana ys s of major b o og ca constitu ents such as carbohydrates, p ds nucleic acids and proteins, and measurement of enzyme act vity. Pre or corequ site: CHM 261†, 361† or approva of nstructor Three hours laboratory. Cred t, 1 hour.

392 Introduction to Research Techniques. nstrumen tal methods and phi osophy of research by actual part c pation n chem ca research projects. Prerequ s te approval of adv sor and research supervisor Cred t 1 to 3 hours each semester May be repeated for a total of 6 credits

401 Chemical Literature. The spec a nformat on tools ava lable n l braries wh ch perm t the researcher to per form an effic ent terature search Topics wi nc ude *Chemical Abstracts, Science Citation Index, National Standard Reference Data Series* patents, computer search serv ces and others Prerequ s te CHM 318† or 332† or approva of nstructor Cred t, 1 hour

417*, 418* Chemistry V, VI. Advanced concepts and princ p es n physica chem stry. Pre- or corequ s te MAT 212†. Cred t, 3 hours each semester

420* Chemistry Laboratory VI. Emphas s on phys ca chemical measurements Pre- or corequ s te CHM 418†. One conference, 5 hours laboratory Cred t, 2 hours.

421* Instrumental Analysis. Pr nc p es of nstrumenta methods in chemica analys s E ectroanalyt cal and optica techniques. Prerequisites CHM 225† and 226†. Corequ s te: CHM 418† or 442† Cred t, 3 hours.

422* Instrumental Analysis Laboratory. Exper'ments n chem cal ana ysis by electroanalytical and opt cal tech niques Corequisite· CHM 421† Three hours aboratory Cred t, 1 hour

424 Separation Methods and Quantitative Organic Analysis. Theory and pract ce of gas iquid, on exchange, and gel permeat on chromatography, countercurrent d stribut on, electrophores s, and d st ation, qua itat ve and quantitative nterpretation of IR mass and NMR spectroscopy, quantitat ve methods of or gan c analysis v a funct onal groups Prerequis tes CHM 318† or 332†, and CHM 418† or 442† or approval of instructor. Two lectures 4 hours laboratory Credit 3 hours

425 Chemical Analysis. Pr ncip es of chemica equ l bria separations and analyses chem ca instrumentat on. Pre- and corequ sites CHM 341† 417† or 441†. Cred t 2 hours

426* Chemical and Instrumental Analysis. nstrumen ta techniques for chem ca ana ys s, methods for the interpretat on of analyt ca data Prerequisite. CHM 425†. Cred t, 3 hours.

427, 428* Chemical and Instrumental Analysis Laboratory. Classica and nstrumental techn ques n chemica analyses w th emphasis on accurancy and precision Pre- or corequisites· CHM 425† for CHM 427†, CHM 426† for CHM 428†. One conference 5 hours laboratory. Cred t, 2 hours each semester

431 Qualitative Organic Analysis. Systematic dentif cation of organic compounds Prerequ s tes CHM 120† or 226†, and CHM 320† or 336†, or approva of instructor One ecture, 6 hours aboratory Cred t 3 hours

438* Polymers. Chem stry and propert es of natura and synthet c po ymers. Prerequ s te CHM 318 or 332 Credit, 2 hours

441*, 442* General Physical Chemistry. Gases, qu ds, sol ds solutions, equi br um phase ru e, electrochem istry, thermodynamics, atomic structure, radioact v ty and co lo ds. Prerequisites. PHY 112† or 116† or ECE 202†, MAT 212†. Cred t, 3 hours each smester

443* Physical Chemistry Laboratory. Phys ca chem ca experiments Corequ s te. CHM 341† or 441†. Three hours aboratory Credit 1 hour

444* General Physical Chemistry Laboratory. Phys ca chemical exper ments. Prerequ site CHM 441† One conference, 5 hours aboratory. Credit, 2 hours.

446* Radioisotope Techniques. Rad oact v ty and de tect on of nuc ear radiat ons Quantitat ve measure ments, tracer techn ques and methods used n agriculture med c ne ndustria radiochem stry and related f e ds For persons major ng n f e ds other than chem stry. Prerequis te CHM 118† or 225† Two ec tures, 3 hours aboratory Cred t 3 hours.

447* Radiochemistry. Radioact v ty, natura and art f cial radio sotopes nuc ear react ons, so ation of isotopes nuclear energetics measurement of rad oac t vity, tracer techn ques and other app cat ons Pre or corequisite CHM 441† Cred t, 2 hours

448* Radiochemistry Laboratory. Radiat on measure ments, tracer methods, quantitative dent'f cat on of isotopes, and other procedure app cable to chem ca , physical, eng neer ng and b olog ca prob ems Co requisite: CHM 447† One conference, 4 hours abora tory Credit 2 hours

452 Inorganic Chemistry Laboratory. Preparat on and pur fication of typical norgan c substances emphas z ng methods and techn ques Prerequ site approva of n structor. One conference, 5 hours laboratory Cred t, 2 hours

453* Inorganic Chemistry. Pr nc p es and app cat ons of norgan c chem stry. Prerequ s tes. CHM 341† 417† or 441† Cred t, 3 hours

461, 462 General Biochemistry. Fundamenta chemistry and metabol sm of major b olog ca mater a s and their ro e in the biochemica processes of v ng organ sms

Prerequisites· CHM 318† or 332† and CHM 341† or 417† or 441† or approval of nstructor Credit 3 hours each semester

467, 468 General Biochemistry Laboratory. The appli cat on of modern chem ca and physica methods to biochem cal problems pur ficat'on and character zation of b o og cal macromolecu es· quant tative measurement of enzyme activ ty and propert es eva uat on of metabo ic processes Corequ s tes CHM 461† w th 467†, 462† with 468† One conference, 5 hours labora tory Cred t, 2 hours each semester

471 Solid State Chemistry. Crystal chem stry thermo dynamics and e ectrochem stry of so ds, nonsto ch o metric compounds, d ffusion and so id state react ons crysta growth and se ected topics Prerequ s te CHM 417† or 441† or approval of nstructor. Cred t, 3 hours.

480 Methods of Teaching Chemistry. Organ zation and presentation of appropr ate content of chem stry prep aration of reagents, exper ments, demonstrations organ zat on of stock rooms laborator es· exper ence n problem so ving. Prerequ site approval of instructor Cred t 3 hours

481 Geochemistry. Or g n and d str but on of the chem cal elements Geochem cal cyc es operat ng n the earth's atmosphere hydrosphere and thosphere Pre requisite. CHM 341† or 417† or 441† or GLG 321. Credit, 3 hours (Same as GLG 481.)

482 Physical Geochemistry. App ications of thermody namic and kinet c pr ncip es to geochemica processes Prerequis te CHM 341† or 417† or 441† or GLG 321† Cred t 3 hours. (Same as GLG 482

485 Meteorites and Cosmochemistry. Chem stry and minera ogy of meteorites and the r re at onsh p to the origin of the earth so ar system and un verse. Prerequ site· CHM 481† or 482† Credit 3 hours (Same as GLG 485)

501 Current Topics in Chemistry. Prerequ s te. ap proval of nstructor May be repeated for cred t. Cred t 1 hour.

521 Computer Interfacing to Chemical Instrumentation. Assembly and mach ne language programm ng of laboratory-s ze computers for data acqu s t on and on ne, real time contro of chem ca nstrumentation D g ta og c and timing cons derat ons in hardware nterfacing of computers. No pr or knowledge of com puters or electronics assumed Sound knowledge of chem ca instrumentat on des rab e Two lectures 4 hours laboratory Cred t, 3 hours

523 Advanced Analytical Chemistry. Theoretica princ p es of ana yt cal chem stry Prerequisites CHM 225† and 418† or 442†, or the r equ va ents Cred t 3 hours

525 Spectrochemical Methods of Analysis. Theoret ca and pract cal considerations involv ng the use of optical nstruments for chem ca analys s emphasiz ng em ssion and absorption spectroscopy. Prerequ s te CHM 418† or 442†. Three lectures, 3 hours laboratory Cred t, 4 hours

526 X-Ray Methods of Analysis. Theoretica and practi cal considerations invo v ng the use of X ray diffraction and spectroscopy for chemical and structural ana yses Prerequisite. CHM 418† or 442†. Three ectures 3 hours laboratory Cred t 4 hours

527 Electrical Methods of Chemical Analysis. Theoret ical and practica cons derat ons of po arography potentiometr c amperometr c and conductometr c t trations. Prerequisite· CHM 418† or 442† Two lectures, 6 hours laboratory. Cred t 4 hours

528 Topics in Analytical Chemistry. Prerequ s tes CHM 523† and approval of nstructor. May nc ude lab oratory May be repeated for cred t Credit 2 to 4 hours

531 Theoretical Organic Chemistry. Reaction mecha n sms, structure e ucidation, stereoisomer sm conformat'ona analys s Prerequis tes CHM 318† or 332†, and CHM 418† or 442† Cred t 3 hours

532 Theoretical Organic Chemistry. Prerequ s te CHM 531†. Cred t, 2 hours

534 Heterocyclic Compounds. Chem stry of organ c heterocyclic compounds conta n ng nitrogen sulfur and other hetero atoms Prerequ s tes· CHM 532† 537† Credit, 2 hours

535 Carbohydrates. Prerequisites CHM 532† 537† or approva of instructor Cred t 2 hours

536 Natural Products. Organ c chem stry of such natura products as alka o ds stero ds, terpenes organ c med cinals, and ant biot cs Prerequis tes: CHM 532†, 537†, and approva of nstructor May be repeated for cred t Credit 2 hours

537 Organic Reactions. mportant synthet c react ons of organ c chem stry emphas zing recent y discovered react ons of preparative va ue Prerequ s te· CHM 531† Cred t, 3 hours

541 Advanced Principles of Chemistry I. Thermody namics and k net cs as appl ed to var ous areas of chemistry. Prerequisite. CHM 418† or 442†. Cred t 3 hours.

545 Advanced Principles of Chemistry II. Basic quan tum theory chemical bond ng and mo ecu ar structure Prerequisite. CHM 418† or 442† Credit 3 hours

546, 547 Quantum Chemistry. Pr nc p es of quantum mechanics app ied quant tative y to problems of chemi ca nterest. Prerequisite· approva of nstructor. Cred t 3 hours each semester

548 Chemical Kinetics. K net c theory and rate pro cesses. Prerequ s te approval of instructor. Cred t, 2 hours

549 Topics in Physical Chemistry. Prerequ s te. ap proval of instructor. May be repeated for cred t Cred t 3 hours.

553 Inorganic Chemistry. Princ p es of modern inor gan c chem stry and the r appl cations over the ent re period c system. Prerequ s tes CHM 418† or 442† and CHM 453†, or the r equivalents Credit, 3 hours

554 Advanced Inorganic Chemistry. E aboration and extension of the more mportant topics of CHM 553 Prerequis te: CHM 553† Cred t, 3 hours

556 Topics in Inorganic Chemistry. Prerequisites CHM 553† and approva of instructor May be repeated for cred t. Cred t 3 hours

563 Biophysical Chemistry. Physical chemistry of ma cromo ecu es especial y prote ns, nuc eic ac ds and polysaccharides Thermodynam cs, hydrodynamics and spectroscopy of biopo ymers and the r re at on to struc ture Prerequ site CHM 462† or 418† or 442†. Cred t 3 hours

579 Topics in Solid State Chemistry. Prerequ s te approval of nstructor May be repeated for credit Credit 2 to 4 hours

581 Isotope Geochemistry. Geochem stry and cosmo chemistry of stab e and rad oact ve isotopes· geochro no ogy, sotope equi bria Prerequisite: approva of nstructor Credit, 3 hours Same as GLG 581)

582 Topics in Geochemistry and Cosmochemistry. Top cs of current nterest for students n chem stry and other f e ds Sampling of data and thought concern ng phase equi ibr a e ement d str but on meteor'tes the earth and other p anets Prerequis te approva of n structor May be repeated for credit Cred t, 3 hours (Same as GLG 582)

583 Phase Equilibria and Geochemical Systems. Study of natura reactions at high temperatures and pressures· s licate su fide and oxide equi bria. Prereq u s te. CHM 482† Cred t, 3 hours (Same as GLG 583)

Special Courses: CHM 298, 492 493 498, 499, 590 591, 592 593, 598 599, 790 792 799 (See page 31.

**In each of the following groups credit is allowed for one course only:* CHM 101, 113 or 117; CHM 114 115 or 118 CHM 116 or 119, CHM 118 or 225; CHM 120 or 121 CHM 120 or 226 CHM 231 317 or 331 CHM 261 or 361 CHM 318 or 332, CHM 319 or 335· CHM 320 or 336 CHM 341 417 or 441, CHM 418 or 442 CHM 420 or 444, CHM 421 or 426, CHM 422 or 428 CHM 443 or 444; CHM 446 447 or 448

Economics

A major in economics is offered in the College of Liberal Arts or the College of Business Administration.

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Economics—Consists of 45 semester hours of credit, of which 30 must be in economics and 15 in closely related fields to be approved by the advisor in consultation with the student. ECN 201, 202, 401†, 402†; MAT 141 and 226 or QBA 221 are required. (See Degree Requirements, pages 52-53.)

Bachelor of Science Degree Curriculum

Economics—Consists of 45-55 semester hours of credit, of which 30 must be in economics and the remainder in closely related fields to be approved by the advisor in consultation with the student. ECN 201, 202, 401†, 402†; MAT 141 and 226 or QBA 221 are required. (See Degree Requirements, pages 52-53.)

Departmental Major Teaching Field Requirements

(Secondary Education)

Bachelor of Arts in Education Degree Curriculum

Economics—Consists of 45 semester hours of credit including a minimum of 30 in economics and one course in methods of teaching economics. Remainder will be in closely related fields as approved by the advisor in consultation with the student. ECN 100, 201, 202, 401†, 402†; MAT 141 and 226 or QBA 221 are required.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Economics—Consists of 18 semester hours of credit. ECN 100, 201, and 202 are required. Remainder to be approved by the advisor in consultation with the student.

Departmental Graduate Programs

The Department of Economics offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

Faculty and course descriptions are listed on page 135.

English

PROFESSORS:
FISHER (LL B-504), BRACK, DOEBLER, DONELSON, ERNO, EVANS, FERRELL, GERBER, KEHL, LAMBERTS, LEVY, LIGHTFOOT, NEY, O'MALLEY, SALERNO, SHAFER, TURNER

ASSOCIATE PROFESSORS:
BUCKINGHAM, D'ANGELO, ELLIS, J. GREEN, M. GREEN, GREENE, HABERMAN, HAKAC, HERMAN, JANSSEN, JOHNSON, MORAN, MURRAY, NEBEKER, NILSEN, OJALA, POWERS

ASSISTANT PROFESSORS:
BARODY, BENDER, BOYER, D. BRINK, J. BRINK, BROSE, COLBY, GAGE, HELMS, MURPHY, NELSON, PETERSON, RANDALL, SWANSON

INSTRUCTOR:
HARRIS

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

English—Consists of 45 semester hours of credit, of which 30 must be in English, and 15 in no more than two related fields (drama, speech, history, psychology, etc.) to be selected by the student in consultation with the advisor. Required courses are ENG 221 and 222, 421 or 422, 423 or 424, 312 or 314 or 413, two period courses (e.g., 341, 415, 419), one types course (e.g., 420, 446, 452). At least 18 hours must be in upper division courses. (See Degree Requirements, pages 52-53.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

English—Consists of 42 semester hours of

credit in English. Required courses are ENG 211† or 212†, 221, 222, 312 or 314 or 413, 341 or 342, 421 or 422, 471, 480†, one literary types course, one period course, and 12 hours electives, six of which must be upper division Upper division courses in related fields may be elected with the approval of the advisor

Departmental Minor Teaching Field Requirements

(Secondary Education)

(Recommended for Elementary Education

English—Consists of 24 semester hours of credit Required courses are ENG 211† or 212†, 221 or 222, 341 or 342 312 or 314, 471 or 480†, and additional electives in English, with at least one elective in literature, as approved by the advisor

Departmental Graduate Programs

The Department of English offers programs leading to the degrees of Master of Arts (with emphases in literature and language, teaching of English as a second language, linguistics, and creative writing) and Doctor of Philosophy Consult the *Graduate Catalog* for requirements

English Skills Program. Open to international students who seek to improve their language proficiency Instruction concentrates on developing the skills of listening, reading, speaking and writing in English Noncredit courses only.

English Literature in Transition. An independent scholarly journal with an international circulation, *English Literature in Transition 1880 1920* was founded in 1957 and has had its editorial office in the ASU English Department since 1971 The journal is associated with an annual seminar held during the meetings of the Modern Language Association of America and with the Annotated Secondary Bibliography Series of book length reference works being published under the direction of Professor H E. Gerber, the editor of *ELT* The journal also maintains an international bibliographical file on nearly 100 English authors writing between 1880 and 1920 The English Department regularly offers several courses in the period with which the journal and related research projects deal Ordinarily, two graduate students and an undergraduate work study student are chosen to assist the editor in the preparation of the journal from manuscript to final printing and with several major related research projects

ENGLISH

ENG 101 First Year English. Composition emphasis on paragraph structure, correctness in English fundamentals exactness and concreteness of statement, dictionary and library practice intensive and extensive reading. Compare ENG 111 Credit 3 hours

102 First Year English. Expository writing emphasis on organizing and unifying long papers improvement in style, expansion of vocabulary. Introduction to word study· practice in research, including the writing of a model term paper Intensive and extensive reading Compare ENG 112. Prerequisite· ENG 101 Credit, 3 hours.

103 Introduction to Literature. Introduction to literature through literary types selections taken mainly from modern writers. Credit, 3 hours.

104 Advanced First Year English. Composition, emphasizing refining writing skills; intensive reading research papers; logic Prerequisite passing grade on the ENG 101 exemption examination Credit 3 hours

105 The Nature of Literature. A critical approach to literary types poetry, drama essay short story novel For English majors or minors primarily for freshmen but open to sophomores. Credit 3 hours

111 English for Foreign Students. For students from non English speaking countries who have studied English in their native countries but who require practice in the idioms of English Intensive reading, writing and discussion. Satisfies the graduation requirement of ENG 101 Credit, 3 hours.

112 English for Foreign Students. Reading on a broader scope and more emphasis on composition Satisfies the graduation requirement of ENG 102. Prerequisite ENG 111. Credit 3 hours

201 World Literature. The classical and medieval periods. Selections from the great literature of the world in translation and lectures on the cultural background of the writings Credit, 3 hours

202 World Literature. The Renaissance and modern periods Selections from the great literature of the world in translation and lectures on the cultural background of the writings. Credit 3 hours

204 Literature of Today. Poetry short story novel and drama. Not for English majors. Not open to freshmen. Credit 3 hours.

211 Advanced Composition. Further training in organization and expression of ideas. Primarily for non English majors Prerequisite ENG 102†. Two lectures conferences arranged Credit, 3 hours

212 English Prose Style. Analysis and practice of writing in various classical and modern prose styles Prerequisites: Grade of B in ENG 102†, English major or approval of advisor and instructor Two lectures, conferences arranged. Credit 3 hours

213 Introduction to the Study of Language. Language as code, phonology, morphology, lexicon and the processes of language acquisition and behavior. Credit 3 hours

221 Survey of English Literature. Content and form of earlier English literature, including individual and national characteristics of certain authors Credit, 3 hours

222 Survey of English Literature. Based upon the later English literature. Credit 3 hours.

300 Literary Interpretation and Evaluation. Practice in writing papers on literary subjects. Alternate approaches to literature and the basis in critical theory Credit 3 hours.

311 Creative Writing. Writing laboratory. Lectures and conferences dealing with the various forms of imaginative writing Prerequisites ENG 211† or 212† and approval of instructor Two lectures conferences arranged. Credit 3 hours

312 Current English Usage. Trends in the study of the English language in its social setting Credit, 3 hours.

314 Modern Grammar. Conventional, structural and generative grammars Credit 3 hours

321 Introduction to Shakespeare. Shakespeare's major comedies histories and tragedies. Not open to English majors. Credit 3 hours

341 American Literature. From colonial times to the Civil War including the growth of nationalism and the rise of the New England school Credit, 3 hours

342 American Literature. From Whitman to the present influence of westward expansion, growth of regionalism

iterature of soc al protest and post World War II writ-ing. Credit 3 hours

345 Selected Authors and Issues. Sections devoted to different top cs may be offered each term May be re-peated for credit when top cs vary Cred t, 3 hours for each top c

352 Short Story. Deve opment of the short story as a terary form ana ysis of ts techn que from the work of representat ve authors. Cred t, 3 hours

355 History of the Drama. Deve opment of European drama from the Greek to the Romant c Per od Credit 3 hours.

356 Biblical Backgrounds of Literature. Read ng of the Old and New Testaments, emphas z ng types and deas of pr mary or major sources n l terature Cred t 3 hours

358 Afro-American Literature. Themat c and cultural study of the iterature dea ng w th the Afro Amer can n the U.S Credit 3 hours

360 History and Art of the Film. Deve opment of the film as an art form Techniques which the f lm shares w th the other arts and those wh ch are un que to t For General Studies cred t on y Three lectures 4 hours aboratory Credit 4 hours

400 History of Literary Criticism. Major cr t cs and cr t cal trad t ons in the western wor d Eng ish majors on y or approva of nstructor Credit 3 hours

411 Advanced Creative Writing. Prerequ s te ENG 311† or approval of nstructor Two ectures confer ences arranged Cred t 3 hours

412 Professional Writing. Lectures and conferences concerning techn ques of wr t ng for pub cation Pre requ s te· ENG 311† or approva of nstructor Two ectures conferences arranged Credit 3 hours

413 History of the English Language. Development of the anguage from the ear est t mes to the modern pe-r od Cred t, 3 hours

415 Medieval Literature. Med eva Engl sh l terature in translat on, from Beowu f to Ma ory (exclus ve of Chau-cer) emphasiz ng cultura and nte lectual backgrounds, and inc ud ng some cont nenta works Cred t 3 hours

418 Tudor Literature. Eng ish prose and poetry 1485 1603, exclusive of the drama Credit 3 hours

419 The Age of Donne. Eng sh prose and poetry, 1603 1660, exclusive of Mi ton and the drama. Cred t 3 hours

420 Renaissance Drama. P ays of E zabethan Jac - bean and Caro ne dramatists exc ud ng Shakespeare Cred t 3 hours

421 Shakespeare: The Early Plays. Cr t ca read ng of the comedies, ear y tragedies and selected h story p ays (1593-1602). Credit, 3 hours

422 Shakespeare: The Later Plays. Cr t ca reading of the mature traged es, later comed es and romances Cred t, 3 hours

423 Milton. L fe of M lton h s relation to the l terary and soc a background of h s period, and textua study of h s chief works. Cred t 3 hours

424 Chaucer. Chaucer's anguage, poetry and nte lec tua background Cred t, 3 hours.

425 Romantic Poetry. Poetry of Wordsworth, Co er dge She ley Keats, Byron Cred t 3 hours

426 Victorian Poetry. Poetry of the second ha f of the 19th Century Spec a study of Tennyson Brown ng Arnold Credit 3 hours.

427 Age of Johnson. Chief writers, movements, and books dur ng Johnson s career as a dom nat ng terary figure together w th their most mportant re ationsh ps to predecessors and fo lowers Credit 3 hours.

428 Age of Dryden and Pope. Ch ef writers and move ments n the nondramat c l terature of the Restoration and early 18th century. Cred t 3 hours

429 Romantic Prose (Non-Fiction). From Burke to Car lyle Credit, 3 hours.

430 Victorian Prose (Non-Fiction). From Car y e to Yeats. Credit 3 hours

435 19th Century American Poetry. Themes and devel opments in Amer can poetry to 1900. Cred t 3 hours

439 Drama from Dryden to Sheridan. Eng sh drama of the Restorat on and 18th century espec a ly cr t ca theories and soc al forces affecting the stage Cred t, 3 hours

440 American Literature to 1815. Thought and expres-s on from the time of the f rst Eng sh speaking co on es to 1815. Credit 3 hours

441 20th Century American Drama. Amer can drama since Wor d War especial y exper menta techn ques. Cred t, 3 hours

442 20th Century British Poetry. Major Br t sh poets of the per od. techn ques, aims and sign f cance Cred t 3 hours.

443 20th Century American Poetry. Major Amer can poets of the period to 1945 techniques a ms and s g n ficance. Cred t, 3 hours

444 American Romanticism, 1830-60. Art and ideas of major Amer can transcendental sts and romant cs Cred t 3 hours

445 American Realism, 1860-1900. Wr ters and nf u ences that shaped the deve opment of terary real sm Credit, 3 hours.

446 The American Novel from Dreiser to 1945. Major American novelists of the per od· deve opments in theory and pract ce Cred t, 3 hours.

448 20th Century British Novel. Twent eth century Br t sh nove s nce 1914 Cred t 3 hours

451 The Novel to Jane Austen. From the orig ns of prose fiction through the 18th century. Credit 3 hours

452 The 19th Century Novel. From Scott to Conrad Credit, 3 hours.

453 The American Novel to Dreiser. Sent menta ro-mantic, realist c and natura istic novels n Amer ca Credit, 3 hours

455 The Form of Verse: Theory and Practice. Types, history, cr t cism and schoo s of theory of metr cal form. Analys s of yric, narrat ve and dramat c poetry Or gina verse wr t ng opt ona Prerequ s te. three hours of l ter ature. Two ectures, conferences arranged. Credit 3 hours.

456 Classical Backgrounds of English Literature. Myths and legends of Greece and Rome and some of the works n which they appear. Cred t 3 hours

457 American Poetry Since 1945. Major American poets of the period. deve opments n theory and prac tice Cred t 3 hours

458 American Novel Since 1945. Major novel sts of the per od. deve opments n theory and pract ce Credit 3 hours

460 Western American Literature. Cr t ca exam nat on of deas and tradit ons of the l terature of the western United States, nc ud ng the nove Cred t 3 hours

461 Women and Literature. Se ected topics n Br t sh, Amer can and wor d iterature by or about women May be repeated for cred t when top cs vary. Cred t, 3 hours for each top c

463 European Drama from Ibsen to 1914. Ch ef cont - nental and British dramatists of the per od· the beg nn ngs and development of rea sm Cred t, 3 hours

464 European Drama from 1914 to the Present. Chief cont nenta and Br t sh dramat sts of the per od empha-siz ng experimental techn ques Cred t 3 hours

471 Literature for Junior and Senior High School Stu-dents. Prose and poetry wh ch meet the nterests des res, and capabil ties of h gh ch o students Re cent terature stressed Credit 3 hours

480 Methods of Teaching English. Methods of instruc t on organ zat on and presentat n of appropr ate content n English Prerequ site ENG 312 or 314 or 413 Credit, 3 hours.

485 Teaching of English as a Second Language. Nature of language learning, testing, analysis of differences between two languages as a basis of instruction. Problems of cultural orientation. Prerequisite: Teaching experience or approval of the instructor. Credit, 3 hours.

500 Research Methods. Methodology and resource materials for research. Analysis of criticism and scholarship, including evaluation of sources. Special sections for literature and for linguistics. Credit, 3 hours.

501 Introduction to Comparative Literature. Problems, methods, and principles, illustrated by selected critical essays and literary texts. Credit, 3 hours.

505 American English. Development of the English language in America including a survey of geographical and social dialects. Credit, 3 hours.

507 Old English. Elements of Old English grammar, with selected readings. Credit, 3 hours.

508 Beowulf. Intensive literary and linguistic study of Beowulf. Prerequisite: ENG 507. Credit, 3 hours.

509 Middle English. A study of the language, including the principal dialects with selected readings. Credit, 3 hours.

510 The Structure of English. Grammatical patterns of English, particularly current linguistic approaches. Credit, 3 hours.

511 English Phonetics and Phonology. Current trends in phonological theory and its basis in acoustic and articulatory phonetics. Credit, 3 hours.

512 The Teaching of Composition. Rhetoric and linguistic materials appropriate for the teaching of composition, and their application to the development of new school programs. Prerequisite: Teaching experience or approval of instructor. Credit, 3 hours.

513 Semantic Theory. Various semantic models and semantic pathologies with particular attention to English. Credit, 3 hours.

514 Advanced Grammar. Traditional, structural, and generative English grammars. Credit, 3 hours.

515 Middle English Literature. English literature from the 12th through the 15th century, exclusive of Chaucer. Credit, 3 hours.

520 Renaissance Literature. Poetry and prose of the English Renaissance, excluding drama. Credit, 3 hours.

545, 547, 548, 549: Selected authors or issues. May be repeated for credit. Credit, 3 hours each topic.

545 Studies in English Literature.

547 Studies in American Literature.

548 Studies in English Language.

549 Studies in Comparative Literature.

550 Contemporary Comparative Literature. Current trends in American and other literature emphasizing their significance in contemporary thought. Credit, 3 hours.

571 The Teaching of Literature in the Secondary School. Advanced methods and materials appropriate for teaching literature. Application of recent literary scholarship and criticism to the development of new school programs. Prerequisite: ENG 471 or equivalent or approval of instructor. Credit, 3 hours.

572 The Teaching of Language. Methods and materials in linguistics appropriate to the development of school language programs. Prerequisite: Teaching experience or approval of instructor. Credit, 3 hours.

591 Seminar. Credit, 3 hours. Selected topics regularly offered in the various areas of English studies.

Special Courses: ENG 294, 298, 492, 493, 497, 498, 499, 580, 584, 590, 592, 593, 594, 598, 599, 790, 791, 792, 799. (See page 31.)

Foreign Languages

PROFESSORS:
FLYS (LL C-411), BININGER, BOWMAN, CARLSON, COUCH, EKMANIS, FOSTER, GROBE, HORWATH, LANDEIRA, MARTINEZ, SHEPPARD

ASSOCIATE PROFESSORS:
AHERN, CARVER, CURRAN, KNOWLTON, LUENOW, RADKE, SENNER, VIRGILLO, WOLLAM

ASSISTANT PROFESSORS:
ACEVEDO, ALARCÓN, ALEXANDER, BARKIN, BURTON, CROFT, DeBONFILS TEMPLER, DWORKIN, GRUZINSKA, HENDRICKSON, HOJO, LAETZ, LOSSE, RODD, VASQUEZ, SIMMONS, TIPTON, VALDIVIESO, VOLEK, WONG

INSTRUCTORS:
ABDOW, HABERMAN, SCHUBACK, TU, WILSON

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Asian Languages (Chinese/Japanese), French, German, Russian, Spanish—Consists of 45 semester hours of credit, of which 30 must be in one language and 15 in a second language or in closely related fields to be approved by the advisor in consultation with the student. Of the 30 hours required for the major, a minimum of 24 hours must be taken above the 200 level and must include at least 9 hours at the 400 level or above. Specific required courses for each major area are listed in a brochure available in the department. (See Degree Requirements, pages 52-53.)

Asian Studies Emphasis—Consists of the Bachelor of Arts degree requirements in Asian languages. In addition to the required 45 se-

mester hours, 15 hours of Asian content courses selected with the approval of the student's advisor must be completed. Fulfillment of these requirements will be recognized on the transcript as a major in Asian Languages (Chinese Japanese) Asian Studies. (For an Asian Studies emphasis in other disciplines, see Asian Studies, page 56.)

Latin American Studies Emphasis Consists of 45 semester hours of credit, of which 30 hours must be in Spanish and 15 hours in Latin American content courses as related fields Study of Portuguese is strongly recommended Fulfillment of requirements is recognized on the transcript as a major in Spanish Latin American Studies

Mexican American Studies Emphasis Consists of 45 semester hours of credit, of which 30 hours must be in Spanish and 15 hours in Mexican American content courses as related fields Fulfillment of requirements is recognized on the transcript as a major in Spanish Mexican American Studies

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Asian Languages (Chinese Japanese), French, German, Russian, Spanish Consists of 45 semester hours of credit, of which 30 must be in one language and 15 in a second language or in closely related fields to be approved by the advisor in consultation with the student Of the 30 hours required for the major, a minimum of 24 hours must be taken above the 200 level and must include at least 9 hours at the 400 level or above Specific required courses for each major area are listed in a brochure available in the department

Departmental Minor Teaching Field Requirements

(Secondary Education)

Consists of a minimum of 24 semester hours of credit in one foreign language of which at least 18 hours must be taken above the 200 level (see departmental brochure for listing of required courses in each minor area).

Departmental Graduate Programs

The Department of Foreign Languages offers programs leading to the degrees of Master of Arts in French, German, and Spanish and the Doctor of Philosophy degree in Spanish Consult the *Graduate Catalog* for requirements

Placement

Ordinarily, no placement or proficiency examination is administered to students who wish to continue studying a foreign language for which high school credits have already been received. Students should be guided by the following principles of equivalency

(1) One unit (one academic year) of high school level study will be considered to equal one semester of study of the same language at the university level Thus, students with one year of high school study would enroll in the second semester course (102), with two years of high school study, in the third semester course (201), etc. (For important exceptions in French, see statement at head of French course descriptions)

(2) If, however, more than one summer has intervened since the last high school course, the student will be allowed to repeat for university credit the equivalent of the last unit of high school study, *i.e.*, the student may go back one semester For students in this category who had two units of high school study, a special review course (111) is strongly recommended

Students will not receive university credit for foreign language studies undertaken in violation of these equivalency principles

Students with prior knowledge of a language may have all or part of their requirement waived in any one of the following ways (1) by satisfactory results in a departmental proficiency examination, (2) by achieving a grade of at least C in the last course of the required sequence (*e.g.*, GER 102 or 111 for the B.S. in Chemistry, 202 for the B.A.); or (3) by achieving a grade of at least C in a course at the next higher level (*e.g.*, any 300 level course for the B.A.)

If college transfers are uncertain about course equivalencies, they should contact the Department of Foreign Languages.

Language Laboratory Requirement

All students enrolled in 101, 102, 201 and 202 language courses must spend a minimum of one hour per week in the language laboratory in addition to the four regular class periods

FOREIGN LANGUAGES

FLA 323 Survey of Soviet Literature in Translation. Knowledge of Russian is *not* required Survey of the main literary movements, prominent authors, and the most significant works of prose, poetry and drama of the Soviet period (1917 to present) Credit 3 hours

400 Linguistics. Surveys major theories of current linguistic study and explores their application to specific issues of English the Romance Languages, and language teaching Open to sophomores and juniors with approval of instructor Credit, 3 hours

420 Foreign Literature in Translation. For non language majors (except in Asian languages and Russian), open to language majors as a related-area course. Graduate students by permission. No prerequisite. Credit 3 hours

a) Japanese
b) Russian
c) Soviet
d) Chinese
e) French
f) German
g) Italian
h) Latin
i) Portuguese
j) Spanish
k) Spanish-American
l) Brazilian
m) Greek

480 Methods of Teaching Foreign Languages. Teach- ng fore gn languages and l teratures at secondary and college leve s. This course w l not meet the L bera Arts General Studies requ rement for Human t es and F ne Arts Requ red for admiss on to SED 433 Prerequ s te 12 hours of upper division courses n one foreign an guage Cred t, 3 hours

530 Romance Linguistics. D scussion and se ected read ngs n comparative and h stor ca ingu stic prob- lems n the deve opment from Lat n to the ear iest stages of the major Romance Languages Prerequisite. one semester of co ege Lat n desirab e Cred t 3 hours.

Special Courses: FLA 294, 494 498, 499 (See page 31)

CHINESE

CHI 101, 102 Elementary Chinese (Mandarin). Pronun ciation grammar e ementary conversation, develop ment of bas c read ng and writ ng sk s. Four ectures 1 hour aboratory Cred t 4 hours each semester

201, 202 Intermediate Chinese (Mandarin). Systematic review of grammar. Deve opment of vocabu ary through read ng wr t ng. Dr l n aura /ora ski ls Prerequ s te CH 102† or equivalent. Four ectures 1 hour abora tory Cred t, 4 hours each semester

205 Chinese Calligraphy. An introduct on to styles and techn ques of Ch nese writ ng A know edge of e ther Chinese or Japanese is recommended Cred t, 1 hour.

309, 310, 311, 312 Chinese Conversation. ntensive aura /oral dr ls towards conversational f uency n Man- darin Chinese To be offered n rotat on with each course cover ng d fferent situat ons and vocabu ary. Prerequisite: CH 202† Credit 3 hours each semester

313, 314 Advanced Chinese. The modern anguage in general, or spec fic areas depend ng on the student s needs or interests Prerequ s te· CHI 202† or equ valent Three ectures p us arranged aboratory. Cred t 3 hours each semester.

321, 322 Chinese Literature. Se ected representative works of the various genres and per ods Prerequ s te: CHI 202† or equ valent Cred t, 3 hours each semester.

413, 414 Introduction to Classical Chinese. Reading n various genres of pre 20th century wen-yen, w th ana y- s s of ts structura character st cs Prerequ s te· CHI 202† or the equ valent. Cred t, 3 hours each semester.

Special Courses: CH 492, 494, 499 590. See page 31.)

FRENCH

Any two of the 200-level courses may be taken in any order or simultaneously to satisfy the Liberal Arts lan- guage requirements

FRE 101, 102 Elementary French. ntens ve aura ora dr l in class and aboratory, bas c grammar supp e- mented by s mple prose read ngs Not open to students with credit in FRE 111 Four lectures, 1 hour laboratory Credit, 4 hours each semester

111 Fundamentals of French. For students with as much as two years of h gh schoo French who need re v ew to enter second year study. Not open to students w th cred t n FRE 101 or 102. Four lectures, 1 hour lab- oratory Cred t, 4 hours

201 Intermediate Grammar Review. A thorough rev ew of French grammar nc ud ng fu attent on to iterary usage. Prerequisite· FRE 102†, 111 or equivalent Four lectures 1 hour aboratory Cred t, 4 hours.

202 Intermediate Reading. Extens ve read ng n 19th and 20th century iterary and cultural texts Designed to ncrease the student's vocabu ary and to teach prompt récogn t on of sty ist c usages and grammatica struc- tures. Prerequ site FRE 102†, 111 or equ va ent Four lectures, 1 hour laboratory. Credit 4 hours

203 French Conversation. Current usage n expression of ideas. Especia ly recommended for students who p an to trave in French-speaking countr es or who de sire supplementary pract ce n speak ng and understand ng before advanc ng to 300-level courses Prerequisite· FRE 102†, 111 or equiva ent One hour aboratory requ red. Credit 4 hours

311 French Conversation. Further pract ce n speak ng French, emphas zing current usage and promot ng faci ity in the expression of deas. One hour laboratory work requ red. Prerequisites: FRE 203†, and 201† or 202† or equ va ents. Cred t, 3 hours

312 French Composition. Further pract ce in wr ting French, emphasizing current usage and promoting fac l ity n the express on of deas Prerequisite: e ght hours of 200-leve French ncluding 202† or equ valents Credit, 3 hours

321, 322 French Literature. Representat ve master- p eces and s gnif cant movements of French iterature. Prerequis.te· FRE 202†, plus either FRE 203† or FRE 311†, or equ va ents Credit 3 hours each semester

410 French Phonetics and Diction. Theory and pract cal app cation. Prerequ s tes. FRE 311†, 312†, or equivalents. Cred t 2 hours.

411 Advanced Spoken French. mprovement of spoken French Prerequ s tes n ne hours of 300 eve French ncluding FRE 311† or equivalents Credit 3 hours

412 Advanced Written French. mprovement of compo sition sk l s. Prerequisites nine hours of 300- eve French, nclud ng FRE 312† or equ va ents. Cred t 3 hours

414 French Drama Workshop. Preparation of se ected p ays and dramat c read ngs for pub c presentat on, emphasizing diction and nterpretation. Prerequ s tes FRE 311†, 312†, or equ valent. Credit 2 hours

415 French Civilization. Pol tical, ntel ectual soc a econom c and artistic development of the French nat on from its origins to the present. Prerequ s te six hours of upper division French Cred t, 3 hours.

431 French Women in Society and the Arts. Outstand- ng French women who have contr buted to the shap ng of soc ety and the arts from the Midd e Ages to present Prerequisite: FRE 321† and 322† Cred t, 3 hours.

441 French Literature of the 17th Century. From 1600 to 1660. Prerequis te· FRE 321† and 322† Cred t, 3 hours.

442 French Literature of the 17th Century. From 1660 to 1700. Prerequisite: FRE 321† and 322†. Cred t 3 hours.

445 French Literature of the 18th Century. Contr bu tions of the phi osophers development of the nove and drama Prerequ s te. FRE 321† and 322†. Cred t 3 hours

451 French Poetry of the 19th Century. From Romant - c sm to Parnassian poetry to Symbol sm Prerequ s te· FRE 321† and 322†. Credit 3 hours

452 French Novel of the 19th Century. From Constant Hugo, Balzac Stendha and Sand to Flaubert and Zola with emphasis on major iterary movements Prerequi- s te FRE 321† and 322†. Cred t 3 hours

453 Theater of the 19th Century. From Romantic drama to the Symbo ist Theater Representat ve p ays of Hugo, Musset V gny, Dumas, Becque Rostand, Fey deau and Mirbeau Prerequis te: FRE 321† and 322† Credit, 3 hours

461 Pre-Atomic Literature. Representative authors from Proust, Malraux to Sartre from 1900 to 1945 Pre requ s te: FRE 321† and 322† Credit 3 hours

462 Post-Atomic Literature. Representative authors nc uding Camus, Duras and Robbe Gr let, from 1945 to present Prerequ s te· FRE 321† and 322† Cred t 3 hours

471 The Literature of Francophone Africa and the Ca- ribbean. Selected prose poetry and drama of b ack authors from Afr ca and the Car bbean. Prerequ s te FRE 321† and 322† Credit, 3 hours.

500 Bibliography and Research Methods. Requ red of a graduate students Cred t, 3 hours.

510 Explication de Textes. Deta ed ana ys s of terary texts. Credit 3 hours

511 French Stylistics. Art of wr ting terary French comparative sty ist cs. Cred t, 3 hours

515, 516 Intellectual Currents in France, from the Middle Ages Through the 20th Century. Sign ficant soc a esthetic phi osophic, and sc ent fic deas as pre sented by major writers of f ction and nonfict on Cred t, 3 hours each semester.

521 History of the French Language. Princ pa phono og ca morpho og cal and semant c developments of French from ts Lat n or g ns to the present Prerequ s te some fam iarity w th Lat n recommended Cred t 3 hours.

524 Modern French Drama. Representative dramat sts of the 19th and 20th centur es Cred t, 3 hours

531 Medieval French Literature. Read ngs in the epics ear y drama, roman courtois and other representat ve l terary genres of the Midd e Ages. Cred t 3 hours

535 French Literature of the 16th Century. Readings in French Renaissance terature w th special attent on to the humanist movement and to Rabela s Monta gne and the Pleiade Credit 3 hours.

591 Seminar. Cred t 3 hours for each top c Top cs may be selected from the fol ow ng

(a) French Literary Cr tic sm
(b) Corneille Molière and Racine
(c) Diderot, Voltaire and Rousseau
(d) Balzac
(e) Romant cism
f) Proust
g) Rea sm and Natural sm
(h) French Existential st L terature
( ) Advanced Prob ems n French L terature
(j) F aubert
(k) Stendhal and Zo a

Special Courses: FRE 492 493 494 498 499 590, 592, 598 599. (See pages 31)

GERMAN

GER 101, 102 Elementary German. Reading, wr ting speaking and understanding of bas c German with emphasis on pronunciat on and grammar Not open to students with cred t in GER 111 Four lectures 1 hour laboratory Credit 4 hours each semester

111 Fundamentals of German. For students with as much as two years of h gh schoo German who need rev ew to enter second year study. Not open to students w th credit in GER 101 or 102 Four ectures 1 hour laboratory. Cred t, 4 hours.

201, 202 Intermediate German. ntens ve review of grammar Sections emphas ze either conversation or reading comprehension. Prerequisite. GER 102† or 111 or equ valent. Four lectures 1 hour aboratory Cred t, 4 hours each semester.

311, 312 German Conversation. Expans on of d om through oral pract ce deal ng with contemporary arti- c es, essays, and stories (Three hour credit l m t for majors). Prerequis te GER 202† or equ va ent Credit 3 hours each semester

313 German Composition. ntens ve practice in wr t ng emphasiz ng style and grammar Prerequisite: GER 202† or equ va ent Cred t, 3 hours

314 Introduction to German Literature. Beg nn ng study of German poetry, drama the novel and the *Nov elle* Prerequisite GER 202† or equ valent Cred t 3 hours

321, 322 German Literature. From the beginn ng to the Enl ghtenment and from *Sturm und Drang* to the present Prerequ s te: GER 314† or approva of instruc tor Cred t 3 hours each semester

411 Advanced Grammar and Conversation. mprove ment of d ct on and idiom through intens ve oral review Prerequisite. GER 311† or 312† or equ valent Cred t 3 hours

412 Advanced Grammar and Composition. mprove ment of writing ab ity Prerequ s te. GER 313†. Cred t 3 hours

415 German Civilization. Aspects of po t cal, soc a and cultural ife of the German speaking world Prerequ s te any 300-level course n German or approval of instruc tor Cred t 3 hours

445 German Literature: Enlightenment to Classicism. Major works of the iterary epochs n the 18th century Prerequisite GER 322† Cred t, 3 hours

451 German Literature: Biedermeier to Naturalism. Representative works of prose and poetry from 1820 to 1890 Prerequ s te GER 322† Credit 3 hours.

461 Contemporary German Literature. German wr ters since 1945. Prerequisite: GER 322† Cred t, 3 hours

500 Bibliography and Research Methods. Required of al graduate students Credit 3 hours

511 German Stylistics. Art of wr t ng l terary German comparative styl stics. Cred t 3 hours

521 History of German Language. L nguist c develop- ment of German from the earliest records to the present Cred t, 3 hours.

523 German Drama. Drama of the 19th and 20th centu ries Credit, 3 hours.

525 German Novel. Spec al stud es n the German novel. Credit 3 hours

527 The Novelle. Spec al stud es n the German short story Credit 3 hours.

529 German Poetry. Major trends n German poetry emphasizing the wr ters of the 18th 19th and 20th cen- turies. Credit 3 hours.

531 Middle High German Language and Literature. Read ng and discuss on of spec mens of the M dd e High German ep cs, romances and other terary genres Credit 3 hours

541 Baroque. Studies in poetry prose and drama of the 17th and early 18th centuries Cred t, 3 hours.

551 Romanticism. Treatment of ear y and ate Romanti- cism. Credit 3 hours.

555 Modern German Literature. Major works from the period of Express on sm to 1945 Cred t 3 hours

591 Seminar. Spec a top cs are con erned w th a f g- ure, theme or work n German terature or German c studies Cred t, 3 hours for each top c Top cs may be se ected from the fol ow ng

(a) Goethe
(b) Faust
(c) Sch ller
(d) Kleist
e Kafka
f Hesse
g Grass and Bo l
h) Germanic Stud es

Special Courses: GER 492 493, 494 498 499 590 592 598, 599 (See page 31.)

GREEK

GRK 101, 102 Elementary Greek. For beginn ng stu dents only Cred t, 4 hours each semester

301, 302 Greek Literature. Read ngs n the master p eces of c ass ca Greek terature, advanced grammar Authors read are changed each year n accordance w th needs of the class. May be repeated for cred t Prereq uisite: approval of nstructor Cred t, 3 hours each semester

Special Courses: GRK 492, 493 494 499. (See page 31)

ITALIAN

ITA 101, 102 Elementary Italian. Aural oral dr l n class and aboratory, and bas c grammar supp emented by s mple prose readings. Four ectures 1 hour aboratory. Credit 4 hours each semester

201, 202 Intermediate Italian. Intens ve rev ew of the fundamenta s of ta an grammatica structure to in crease the student s abi ty in compos t on trans at on

and id omatic expression Prerequisite. ITA 102† or equivalent. Four lectures 1 hour aboratory Cred t 4 hours each semester

311, 312 Italian Composition and Conversation. Deve opment of writing abi ity and oral expression Prerequisite: ITA 202† or equ va ent Cred t, 3 hours each semester

325 Introduction to Italian Literature. ta ian l terature through the nterpretation of representat ve works n drama, poetry and novel Prerequ site ITA 312† or ap prova of nstructor Credit 3 hours

441 Dante Alighieri: Divina Commedia. Cr t cal read ng of the three *Cantiche (Inferno, Purgatorio, Paradiso).* Prerequ site TA 325†. Credit 3 hours

445 19th Century Italian Literature. ta an Romant cism, with emphasis on the works of Fosco o, Alf eri, Manzoni and Leopard Prerequ s te TA 325† Cred t 3 hours

449 20th Century Italian Literature. Major works, fig ures and movements of contemporary ta an l terature Prerequ s te TA 325† Cred t 3 hours

Special Courses: TA 492, 493, 494 499 (See page 31)

JAPANESE

JPN 101, 102 Elementary Japanese. Pronunc at on conversation and structura grammar w th ntens've aural/oral dr l in class and aboratory Graduated ntro duct on of bas c reading and writ ng sk ls Cred t 4 hours each semester

201, 202 Intermediate Japanese. Grammar rev ew and cont nued oral practice. ncreased emphas s on read ng and wr t ng Prerequ s te· JPN 102† or equ va ent Four lectures 1 hour aboratory Cred t, 4 hours each semes ter

309, 310, 311, 312 Japanese Conversation. ntens ve aural oral dr l s towards conversationa f uency in Japa nese To be offered in rotation w th each course cover ng d fferent s tuations and vocabulary Prerequ s te: JPN 202†. Credit 3 hours each semester

313, 314 Advanced Japanese. Designed to develop sk l and accuracy n written Japanese Prerequis te· JPN 202† or equ va ent Credit 3 hours each semester

321, 322 Japanese Literature. Read ngs n representa t ve masterpieces of modern and c ass ca Japanese terature ntroduction to terary Japanese. Prerequ s te. JPN 313† or approva of nstructor Cred t, 3 hours each semester

414 Introduction to Classical Japanese. Read ngs from var ous genres of pre-20th century iterature w th ana ys s of the structure of the c assica anguage Pre requisite: JPN 313† or approva of nstructor Cred t, 3 hours.

Special Courses: JPN 492 494, 499, 590 (See page 31)

LATIN

LAT 101, 102 Elementary Latin. For beg nn ng students only Credit 4 hours each semester

201, 202 Intermediate Latin. Se ected Latin iterature, both classical and post class cal; V rgi s *Aeneid* advanced grammar. Prerequ site LAT 102† or approva of nstructor Cred t 4 hours each semester

421, 422 Roman Literature. Read ngs n the Lat n mas terp eces Authors read change each year n accordance w th needs of the c ass. May be repeated for cred t. Prerequ s te approval of instructor. Cred t, 3 hours each semester.

Special Courses: LAT 492, 493 494 499 (See page 31)

PORTUGUESE

POR 101, 102 Elementary Portuguese. Bas c grammar w th intensive dri l n c ass and aboratory d rected to ward conversat ona fluency. F ve ectures 1 hour laboratory Cred t 5 hours each semester

313, 314 Portuguese Composition and Conversation. Des gned to deve op sk l in wr tten Portuguese and cor rected ora express on Must be taken in sequence Prerequ s te POR 102† or approval of nstructor Credit 3 hours each semester.

321, 322 Luso-Brazilian Literature. Representat ve masterp eces of Portuguese and Braz ian terature from the beg nning to the present Prerequ s te POR 313† or approval of nstructor. Cred t 3 hours each semester.

472 Luso-Brazilian Civilization. Lectures, read ngs and d scuss on of important aspects of Luso Braz an civ zation Top cs from mus c art, fo k ore terature, history and pol t cs Prerequ site· POR 313† or approval of nstructor Credit, 3 hours

Special Courses: POR 492 493, 494 499 590. (See page 31.)

RUSSIAN

RUS 101, 102 Elementary Russian. Structura grammar and basic vocabu ary. Introduct on and re nforcement of aura /ora read ng and wr t ng sk s. Four lectures, 1 hour aboratory. Cred t 4 hours each semester

201, 202 Intermediate Russian. Systemat c rev ew of grammar Deve opment of vocabu ary through read ng writing Dr l n aura /oral sk l s Prerequ site: RUS 102† or equ valent. Four lectures 1 hour aboratory Cred t, 4 hours each semester

211, 212 Basic Russian Conversation. ntens ve aural/oral dril to supplement read ng and grammat ca sk lls acquired n RUS 101 102† 201†, and 202† Re- qu red of Russian majors Prerequ site. RUS 102† Credit, 3 hours each semester

303, 304 Scientific Russian. Acquis t on of sc ent f c vocabulary through reading from current Sov et sc en tif c pub ications Prerequisite. RUS 102†. Cred t, 3 hours each semester

311, 312 Russian Composition and Conversation. De ve opment of writing abi ty and ora express on Prerequ site: RUS 202†. Cred t 3 hours each semester.

321, 322 Survey of Russian Literature. The ma n terary movements, prom nent authors and the most s gnif cant works of prose, poetry and drama to the 1917 revolu- t on Prerequisite· RUS 202† or equ va ent Cred t 3 hours each semester

323 Survey of Soviet Literature. The ma n iterary movements prominent authors and the most s gnificant works of prose poetry and drama of the Sov et period (1917 to present) Prerequ s te. RUS 202† or equiva ent Credit, 3 hours

411, 412 Advanced Composition and Conversation. Designed to mprove aural d scr m nat on, se f express on in oral and written sk s emphas zing vo cabu ary bui d ng Subject mater a s drawn from current Soviet pub ications. Prerequ site RUS 312† Cred't 3 hours each semester.

417, 418 Applied Russian Phonetics. General mprove ment n the student's anguage sk ls through aural oral tra ning n Russ an phono ogy and an ana ysis of Rus s an orthography. Prerequ s te RUS 312† Cred t 2 hours each semester

420 Russian Poetry. Deve opment of Russ an poetry from its beg nnings to the present, ncluding both nat ve and em gré poets Top cs n critic sm and the study of poetics Prerequ s te· RUS 312† or approval of instruc tor. Cred t 3 hours.

421 Pushkin. Pushkin's poetry p ays and prose f ct on ncluding *Eugene Onegin, The Little Tragedies Tales of Belkin, Queen of Spades* and *The Captain's Daughter* Prerequisite: RUS 312† or approva of nstructor Cred t, 3 hours.

423 Dostoyevsky. Dostoyevsky s major works of f ct on ncluding *Crime and Punishment* and *Brothers Karamazov* Prerequ s te RUS 312† or approva f nstructor Cred t 3 hours

424 Tolstoy. Tolstoy s major works nc ud ng *War and*

Peace and *Anna Karenina* Prerequ s te. RUS 312† or approval of nstructor. Cred t, 3 hours.

425 Chekhov. Chekhov's major works representat ve short stories and major p ays, inc ud ng *The Cherry Orchard* and *Three Sisters.* Prerequ s te RUS 312† or approval of instructor Credit, 3 hours.

426 Soviet Literature. Thematic development of Soviet literature (1917 to present) through representat ve au thors and works, includ ng Gorky, B ok Mayakovsky, Zamyatin, O esha, Babe f and Petrov, Sho okhov Pasternak, Yevtushenko, and So zhen tsyn Prerequi s te: RUS 312† or approval of nstructor Cred t, 3 hours

440 History of the Russian Language. Princ p es of h s tor ca l nguist cs presented through the evo ut on of the Russ an language from Proto ndo European to the present. Readings of h stor ca documents n O d Russian and O d Church S av c. Prerequ s te RUS 312† or approva of instructor. Cred t, 3 hours

441 Survey of Russian Culture. Interp ay of art st c, socia and pol tical forces n the deve opment of Russ an cu ture from the K evan per od to the present Exclusive use of Russ an language source mater a s Prerequisite: RUS 312† or approva of nstructor. Cred t, 3 hours.

591 Seminar. Cred t 3 hours Topics may be se ected from the fol owing:

(a) Pre-19th Century Russian Literature

(b) 19th Century Russ an L terature

(c) Russian Poetry to 1890

(d) Russian Poetry, 1890 to Present

(e) Russian Literary Crit cism

(f) Soviet Soc al st Rea ism

(g) Contemporary Sov et Authors

Special Courses: RUS 492 493, 494, 499 590 (See page 31)

SPANISH

SPA 101, 102 Elementary Spanish. Fundamenta s of the anguage. Not open to students w th credit n SPA 111 Four lectures, 1 hour laboratory. Cred t 4 hours each semester

111 Fundamentals of Spanish. For students with as much as two years of h gh school Span sh who need rev ew to enter second year study Not open to students with cred t n SPA 101 or 102 Four ectures, 1 hour laboratory. Cred t, 4 hours

201, 202 Intermediate Spanish. Cont nuation of fundamentals Emphas s on the deve opment of the sk ls of read ng, istening comprehension speak ng and writing. Prerequis te SPA 102† or 111 Four lectures 1 hour aboratory. Cred t, 4 hours each semester

203, 204 Intermediate Spanish. May be substituted for SPA 201, 202 by Span sh speaking students only Emphasis on the needs of the b ingual student through composition, terature, conversat on and rev ew of grammar fundamenta s Prerequ s te SPA 102† or 111 or placement. Four lectures, 1 hour aboratory Cred t, 4 hours each semester.

311, 312 Spanish Conversation. Des gned pr mar y for non majors to promote fac l ty in coherent and expres s ve d ct on in Span sh Prerequ s te. SPA 202† or equiva ent Credit 3 hours each semester.

313, 314 Spanish Conversation and Composition. Designed to develop sk l and accuracy in spoken and wr tten Spanish Required of majors, to be taken n sequence. Prerequisite. SPA 202† or equivalent Cred t, 3 hours each semester

315, 316 Spanish Conversation and Composition. May be substituted for SPA 313, 314, by Span sh speak ng students on y. Prerequ site: 202† or 204† or approval of nstructor. Cred t, 3 hours each semester

319 Spanish Business Correspondence. The commun cation process in bus ness. Emphasis on organizat on and presentation of c ear, effective reports and letters, app icable to bus ness usage. Prerequ site: SPA 314† or 316† or approval of instructor Credit, 3 hours

325 Introduction to Hispanic Literature. A cr t cal ap proach to and analys s of iterary types· poetry drama short story and novel. Required of a l majors Prerequisite SPA 202† or 204†. Cred t 3 hours

412 Advanced Conversation and Composition. Oral and written Spanish compos tion, with part cular atten tion given to deve op ng fluency and facil ty Requ red of majors Prerequ s te SPA 314† or 316† or approval of nstructor. Cred t, 3 hours

413 Advanced Spanish Grammar. ntensive ana ys s of the Spanish anguage Requ red of teaching majors Prerequ s te SPA 314† or 316† or approva of instructor Cred t, 3 hours

417 Spanish Phonetics. Pronunciation and articu at on of the Spanish anguage. Emphas s on prob ems of art cu at on n the Span sh-speak ng Southwest Prerequisite. SPA 314† or 316† Cred t 3 hours

420 Applied Spanish Linguistics. L ngu stic structures emphasizing contrastive English-Spanish structures for the teacher of the Span sh language. Prerequ s te FLA 400 or any other ntroductory nguist cs course Cred t 3 hours.

421 Spanish in the Southwest. Ana ysis of Southwest spoken and written Spanish as compared to standard Spanish. Des gned for students prepar ng for b lingua - bicultural work. Prerequis te· SPA 314† or 316† or approva of nstructor. Cred t, 3 hours.

424 Masterpieces of Hispanic Literature. Se ections from the literature of the H span c world and discuss on of its cultural background Required of teach ng majors Prerequ s te SPA 325† Cred t 3 hours

425, 426 Spanish Literature. Survey of Span sh litera ture from ts beginning to the present Prerequ s te SPA 325†. Cred t, 3 hours each semester

427, 428 Spanish-American Literature. Survey of major works figures and movements from Colon al per od to 1880 and from 1880 to present Prerequisite: SPA 325† Cred t, 3 hours each semester.

434 Drama of the Golden Age. Dramat c works of Lope de Vega, Calderón de la Barca and the r contempo rar es Prerequ s te. SPA 325† Cred t 3 hours

435 Cervantes - El Quixote. Prerequis te· SPA 325† Cred t, 3 hours.

436 Generation of 1898. Works of Unamuno, Baroja, Azorín and their contemporar es studied against the deological background of the turn of century n Spa n. Prerequis te SPA 325† Cred t 3 hours

437 20th Century Spanish Poetry. Major trends in Spanish poetry from Modernism to present Prerequ - site. SPA 325†. Credit, 3 hours

454 19th Century Spanish American Narrative. Pr nc pal works n the nove , short story narrat ve fiction and narrative (Gauchesque) poetry Prerequ s te SPA 325† Credit 3 hours

455 Spanish American Modernism. Princ pal works and figures of l terary Modernism 1880 1920 emphas s on international iterary context of the movement Pre requisite. SPA 325† Cred t, 3 hours

456 20th Century Spanish American Fiction. Major works and movements. Prerequ s te SPA 325† Cred t, 3 hours

457 Contemporary Spanish American Poetry. Major works and prob ems in contemporary poetry and poet cs with emphas s on Paz, Parra Cardena and new poetry s nce 1960 Prerequis te SPA 325† Cred t 3 hours

464 Mexican American Literature. Representative ter ature in Spanish and Eng ish by Mex can Americans emphas zing socio-cu tural as wel as iterary values Prerequisite: SPA 325†. Credit 3 hours

471 Civilization of the Spanish Southwest. The po itical, intellectual socia , econom c and artist c de velopment of the Span sh speak ng peop e of the

Southwest. Prerequ s te SPA 314† or 316† or approva of instructor Cred t, 3 hours.

472 Spanish-American Civilization. Growth of the nst tutions and cultures of Span sh Amer can peop e Prerequ'site· SPA 314† or 316† or approval of 'nstruc tor Credit, 3 hours.

473 Spanish Civilization. Political inte ectua soc a , economic and artistic development of the Span sh na tion from its orig n to the present Prerequisite· SPA 314† or 316† or approva of instructor Credit, 3 hours

500 Bibliography and Research Methods. Requ red of all graduate students Cred t, 3 hours

540 History of the Spanish Language. L nguist c deve - opment of the Spanish anguage from the epoch of Vulgar Latin to the present day Credit, 3 hours.

541 Spanish Language in America. The major d a ects of Span sh in the Amer cas and the r histor ca social and cultural development Prerequ s te SPA 540 or approva of nstructor. Cred t, 3 hours.

542 Studies in the Spanish of the Southwest. Major top cs and ssues n the Span sh of the Southwest se- lected readings in current research publ cat ons Prerequ s te FLA 400 or equ va ent Credit, 3 hours

543 Structure of Spanish. Ana ysis and d scussion within the framework of contemporary ingu stic theories, of selected prob ems in Spanish morpho phono ogy, syntax and semant cs Prerequisite FLA 400 or equivalent. Cred t 3 hours

545 Concepts of Literary Criticism. A ms and methods of modern l terary scholarship. D scuss on of major theor es of l terary ana ysis Credit 3 hours.

560 Medieval Spanish Literature. Major figures and works of the M ddle Ages in Spa n Cred t, 3 hours

561 Golden Age Spanish Prose Fiction. Major figures and works of the 16th and 17th centur es w th empha sis on the picaresque nove Cred t 3 hours

562 Golden Age Spanish Poetry. Prosody and poet c schools and genres of the Go den Age Cred t 3 hours

563 Spanish Romanticism. Princ pal f gures and works of the Spanish Romantic sm with emphas s on nterna tional literary context of the movement Cred t 3 hours

564 19th Century Spanish Prose Fiction. Princ pal f g ures and works of Realism in the 19th century novel, w th emphasis on Ga dós Cred t 3 hours

565 20th Century Spanish Drama. Pr nc pal f gures and works of Spanish dramatic literature from the Genera t on of 1898 to the present Cred t 3 hours

566 Generation of 1927. Major poets of the Generat on of 1927, w th emphas s on works of Lorca, Gu l én, Sal nas and Aleixandre Credit 3 hours

567 Contemporary Spanish Novel. Major works of post-Civi War Spanish f ct on. Cred t 3 hours

570 Indigenous Literatures of Spanish America. The nd genous literary trad tions with emphas s on Nahuat Mayan and Quechua literatures through read ngs in Spanish trans ations Cred t, 3 hours

571 Colonial Spanish American Literature. The major figures and works from Conquest to ndependence Cred t 3 hours

572 Spanish American Drama. Major contribut ons of Span sh Amer can drama w th emphasis on contem porary dramatists. Cred t 3 hours

573 Spanish American Essay. Major works of the essay within the framework of ntel ectual history and l terary movements. Cred t 3 hours.

574 Spanish American Vanguard Poetry. Exam nation of poetic developments, 1920 1940, w th emphas s on Huidobro, Val ejo Neruda and the nternat ona context of the r works Credit 3 hours

575 Contemporary Spanish American Novel. Pr nc pa nove s of the *Nueva Narrativa Hispanoamericana* with n the context of contemporary theor es of the narrat ve Credit, 3 hours

576 Contemporary Spanish American Short Story. Pr ncipal short stories of the *Nueva Narrativa Hispa- noamericana*, with n the context of contemporary theor es of the narrative. Credit 3 hours

577 Regional Spanish American Literature. The figures and works of major nat onal and regiona teratures Top cs offered on a rotating basis May be repeated for d fferent topics. Credit 3 hours for each topic.

579 18th Century Hispanic Literature. The terature of the En ightenment in Spain and Co onia Spanish Amer ca. Credit, 3 hours

591 Seminar. Credit 3 hours for each top c. Top cs may be selected from Spanish and Spanish American l tera tures

691 Figures and Works Seminar. Cred t, 3 hours for each topic. Topics may be se ected from Spanish and Spanish American l teratures

Special Courses: SPA 294, 298, 492 493, 494 497 498 499, 580 590 592, 594, 598, 599 692, 799 (See page 31.) Prerequis te for SPA 590 approva of nstruc tor advisor and department chair Secure forms n the Foreign Languages off ce.

Geography

PROFESSORS:
MARCUS (LL 605), BAKER, DURRENBERGER HAR NG, LOUNSBURY, PARKER WE GEND

ASSOCIATE PROFESSORS:
ACKER, COMEAUX McTAGGART, MINGS, SARGENT

ASSISTANT PROFESSORS:
ALDRICH BRAZEL, GOBER-MEYERS, FROST, HENKEL, ZONN

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Geography—Consists of 45 semester hours of credit, of which 30 must be in geography, and the remainder of the 45 hours n approved re lated fields selected in consultation with the advisor. The following courses must be in cluded in the major

	Semester Hours
GPH 491†, or GCU 375† and GPH 371† or 372†	6
GCU 141 or 441†, and GCU 253 or 352	6
GPH 111 or 411, and GPH 211† or 212† or 312†	6 8
Total	18 20

GPH 111 serves as the prerequisite of many of the GPH courses, and GCU 121 serves as the prerequisite for many of the GCU courses. The remaining 12 hours in geography and 15 hours in related disciplines is to be selected in consultation with the advisor in view of the individual student's field of interest. At least 18 semester hours must be in upper division courses. (See Degree Requirements, pages 52 53.)

Bachelor of Science Degree Curriculum

Geography—Consists of 45 semester hours of credit, of which 30 must be in geography, and

the remainder in approved related fields. The following courses must be included in the major:

	Semester Hour
GPH 491†, or GCU 375† and GPH 371† or 372†	6
GCU 141 or 441†, and GCU 253 or 352	6
GPH 111 or 411 and GPH 211† or 212† or 312†	6-8
Total	18-20

GPH 111 serves as the prerequisite for many of the GPH courses, and GCU 121 serves as the prerequisite for many of the GCU courses. An additional 12 hours of GPH geography courses and 15 hours in related fields is to be selected in consultation with the advisor in view of the individual student's field of interest. At least 18 hours must be in upper division courses. (See Degree Requirements, pages 52-53.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Geography. Consists of 45 semester hours of credit, of which a minimum of 24 must be in geography and 18 in a related teaching field or fields. The following courses are required: GPH 111 or 411, GCU 121 and 480†. Departmental minor teaching field requirements (Elementary and Secondary Education) consists of a minimum of 24 semester hours of credit. Courses GPH 111 or 411 and GCU 121 and 480† are required. The remaining hours are to be selected in consultation with an advisor.

Departmental Graduate Programs

The Department of Geography offers programs leading to the Master of Arts and Doctor of Philosophy degrees. Consult the *Graduate Catalog* for requirements.

CULTURAL GEOGRAPHY

Courses which may be applied toward the General Studies requirement in social and behavioral sciences

GCU 121 World Geography. Description and analysis of area variations in social, economic and political phenomena in major world regions. Credit 4 hours.

141 Introduction to Economic Geography. Production distribution and consumption of various types of commodities of the world and relationships to the activities of man. Credit, 3 hours.

253 Introduction to Cultural and Historical Geography. Cultural patterns, including such phenomena as anguage regions and various aspects of material culture. Origins and diffusion and divisions of the world into cultural areas. Credit 3 hours.

322 Geography of Anglo-America. Spatial distribution of relevant physical, economic and cultural phenomena in the United States and Canada. Credit 3 hours.

323 Geography of Latin America. Spatial distribution of relevant physical, economic and cultural phenomena in South Middle and Caribbean America. Credit 3 hours.

325 Geography of Europe. Spatial distribution of relevant physical, economic and cultural phenomena in Europe. Recommended for social studies teachers and students of European history. Credit 3 hours.

326 Geography of Asia. Spatial distribution of relevant physical, economic and cultural phenomena in Asia excluding the U.S.S.R. Credit 3 hours.

327 Geography of Africa. Spatial distribution of relevant physical, economic and cultural phenomena in Africa. Credit, 3 hours.

332 Geography of Australia and Oceania. Spatial distribution of relevant physical, economic and cultural phenomena in Australia, New Zealand and Pacific Islands. Credit 3 hours.

351 Population Geography. Demographic patterns, spatial, temporal and structural. Investigation of the relationships of demographic variables to cultural, economic and environmental factors. Credit 3 hours.

352 Political Geography. Relationship between the socio-physical environment and the state. Credit 3 hours.

360 Cities of the World. Historical development and evolution of the world's urban patterns, varied pace of national urbanization and analysis of contemporary and national urban networks, internal structure of selected world cities. Credit 3 hours.

361 Urban Geography. External spatial relations of cities, internal city structure and spatial aspects of urban problems in various parts of the world, particularly in the United States. Credit 3 hours.

362 Geography of Food and Famine. Spatial distribution of relevant physical, economic and cultural factors influencing production of foodstuffs. Analysis of world wide production and consumption patterns. Credit, 3 hours.

364 Geography of Energy. Production, transportation and consumption of energy, emphasizing the electric power industry and its environmental problems. Credit 3 hours.

375 Introduction to Geographic Research Methods. Scientific techniques used in geographic research. Prerequisite: approval of instructor. Credit 3 hours.

401 Topics in Cultural, Economic and Political Geography. Open to students qualified to pursue independent studies. Prerequisite approval of instructor. Credit, 1-3 hours.

421, 423, 424, 425, 426, 428, 429, 430, 431, 432: Following courses concern spatial distribution of relevant physical, economic and cultural phenomena in the area designated. Credit 3 hours each course.

421 Geography of Arizona and Southwestern United States.

423 Geography of South America. Prerequisite GCU 323 or approval of instructor.

424 Geography of Middle America. Central America. Prerequisite: GCU 323 or approval of instructor.

425 Geography of Canada. Canadian mainland and islands. Prerequisite GCU 322 or approval of instructor.

426 Geography of the Soviet Union. Prerequisite GCU 121 or approval of instructor.

428 Geography of Middle East. The Near East emphasizing current political and economic developments. Prerequisite GCU 121 or approval of instructor.

429 Geography of Southeast Asia. Southeastern Asia between India and China. Prerequisite GCU 326 or approval of instructor.

430 Geography of South Asia. India, Pakistan and Afghanistan. Prerequisite GCU 326 or approval of instructor.

431 Geography of the Far East. Japan, China, Korea excluding the U.S.S.R. Prerequisite GCU 326 or approval of instructor.

432 Geography of Subsaharan Africa. A regional analysis, emphasizing south of the Sahara. Prerequisite GCU 327 or approval of instructor.

441 Economic Geography. Spatial distribution of primary, secondary and tertiary economic and production activities. Prerequisite GCU 141 or approval of instructor. Credit 3 hours.

442 Geography of Transportation. Geographic analysis

of wor d trade routes and transportationa systems Prerequ s te· GCU 141 or 441 Credit, 3 hours

443 Marketing Geography. Measurement and analys s of markets channe s of d str but on through wh ch goods move from producer to consumer, and se ect on of reta l sites Prerequisite· GCU 141 or 441 Cred t 3 hours.

444 Applied Urban Geography. Des gned to prepare the student for employment in p ann ng agencies Includes appl cat on of urban geographic princ p es to present day plann ng prob ems Prerequ s te GCU 361 Credit, 3 hours

453 Recreational Geography. Recreat on resource measurement, analys s and deve opment Spat al nter act on of the phys ca sett ng, pub c needs governmenta po cy, env ronmenta qua ty, and re ated pr b ems Prerequ site six hours of geography or approva of nstructor. Cred t 3 hours

455 Historical Geography of Anglo-America. Chang ng geography of the Un ted States and Canada from p e Co umbian t mes to about 1900 Emphasis on evo ving econom c patterns Recommended for soc a stud es teachers and students of Amer can history Cred t 3 hours

461 Geographic Applications of Urban and Regional Planning. Philosophy of the planning concept nature and function of p ann ng comm ssions and deve opment of comprehens ve p ans Prerequis tes GCU 361 or 444† or approva of nstructor Cred t, 3 hours

480 Methods of Teaching Geography. Organ zat on and presentation of appropr ate content n geography Prerequ sites· SED 311† or concurrent regıstrat on and 18 hours of geography or approva of nstructor Cred t, 3 hours.

495 Quantitative Methods in Geography. Statist ca techn ques appl ed to the ana ys s of spat a d str butions and relationsh ps ntroduct on to models and theory n geography. Prerequ s te MAT 106 or approva of nstructor Credit, 3 hours

501 Geography Colloquium. New trends n the d sc pl ne current research be ng conducted by geography students faculty and nvited guests May be repeated for credit Cred t 1 hour.

524 Geographic Area Analysis. Exam nat on of area deve opment w th n a spat a context Geograph c meth odo og es associated w th m croanalys s of pert nent physical, soc al and econom c factors Prerequis tes 15 hours of geography and approva of ınstructor Cred t, 3 hours.

525 Geographic Regional Analysis. Exam nat on of re g onal growth within a spatial context Contemporary theory and methodology ın reg onal sc ence emphas z ing applicat on in geographic and macro land use analys s. Prerequisites 15 hours n geography and approval of instructor. Credit 3 hours

526 Spatial Land Use Analysis. Determ nat on classif cation and analys s of spatia var ations n land use patterns. Examinat on of the processes affect ng and use change. Prerequ s te 15 hours of geography or approva of instructor Cred t 3 hours.

529 Contemporary Geographic Thought. Comparat ve eva uation of current ph osophy concern ng the nature and trends of geography Prerequ s tes 15 hours of geography and approva of instructor Cred t, 3 hours

585 Advanced Research Methods in Geography. Spe c a ized research techn ques and methodo og es n econom c, pol tical or cultura geography Cred t, 1-3 hours

591 Seminar. Selected top cs n econom c po t ca or cu tura geography. Credit 3 hours

596 History of Geographic Thought. Development of geograph c thought from Strabo and Herodotus to Humbo dt and Ritter Cred t, 3 hours

Special Courses: GCU 492 497 498, 499 500 580 584, 590, 592 594, 598 599, 600 680 683, 684 690 691, 692, 700 780, 784 790, 791 792 799. (See page 31)

PHYSICAL GEOGRAPHY

Courses which may be applied toward the General Studies requirement in sciences and mathemat cs

GPH 111 Introduction to Physical Geography. Spat a and funct onal relationsh ps among c mates andforms soi s, water and p ants Three ectures 2 hours labora tory Credit, 4 hours

205 Geographic Methods and Concepts. The metho dolog es techniques and bas c concepts emp oyed n the disc pline Des gned for students major ng in geog raphy. Credit 3 hours

210 Physical Environment. Pr nc p es of physica geog raphy re at ng to env ronmental prob ems pert nent to contemporary soc ety. Pol ut on ma adjusted and use resource exp oitat on Credit 3 hours

211 Introduction to Landforms. Geographic character st cs of major types of andforms stress ng areal assoc at on by use of maps Prerequ s te GPH 111 Two lectures, 3 hours laboratory Credit, 3 hours

212 Introduction to Meteorology. Contro s of weather elements temperature, mo sture, a r pressure and w nds Energy exchange, heat and water budgets Prerequ site. GPH 111 Cred t, 3 hours.

271 Maps and Map Reading. Techn ques of ınterpreta tion of the many types of maps, map project ons and h story of mapping. Prerequis te: GPH 111 Credit 3 hours

312 Applied Meteorology. Measurement and observa tion representation analys s, and forecast ng of weather elements. Includes operat on of field stat on, d agnostic techn ques, and synoptic forecasting Prerequisite: GPH 212† or approva of instructor. Three ectures 3 hours of aboratory Cred t 4 hours

313 Marine Geography. Spat a analys s of the phys cal characterist cs and potential economic and cultura re sources of the oceans. Prerequ s te: GPH 111 or 411 or approval of nstructor. Cred t 3 hours

371 Cartography. Bas c map drafting, gr d compi at on, s mple des gn and use of cartograph c nstruments Prerequ s tes: GPH 111 and 271† or approva of nstructor. Six hours laboratory Credit 3 hours

372 Air Photo Interpretation. Aer a photographs as a means of determin ng topography vegetat on and cu ture; scale use of ndex, vertical and obl q e photographs and stereoscopes Prerequisites GPH 111, 211†. Cred t 3 hours.

381 Geography of Natural Resources. Nature and d s tribution of natural resources and the prob ems and princip es assoc ated w th their use Credit 3 hours

401 Topics in Physical Geography. Open to students qua if ed to pursue independent stud es Prerequ s te· approva of instructor Cred t, 1-3 hours

411 Physical Geography. Introduct on to phys ography and the physica elements of the environment Open only to students who have not taken GPH 111 Cred t 3 hours

412 Topoclimatology. Reg ona and m croc imato ogica variations in cl mate near the surface of the earth em phas zing energy and mass ba ance methods Field work requ red Prerequ s tes. GPH 212† 312† or approval of instructor. Cred t 3 hours

414 Climatic Analysis. Processes that produce var a tions in cl mate over t me and space Inc udes changes in c mate produced by human and natura forces and invo ves the analys s of cl matic data to dent fy tem pora and spatial variat ons. Prerequisite· GPH 212† or approva of instructor Credit, 3 hours

433 Alpine and Arctic Environments. Reg ona study of advantages and imitations of the natural env ronment upon present and future prob ems ınvo v ng resource d str bution, human activ t es and reg ona and nterre gıona adjustments Prerequ sites GPH 111 or approval of instructor. Cred t, 3 hours

481 Environmental Geography. Prob ems of env ron-

mental quality including uses of spatial analysis, research design and field work in urban and rural systems Prerequisite: approval of instructor Credit 3 hours.

491 Geographic Field Methods. Field techniques including use of aerial photos large scale maps fractional code system of mapping urban and rural field analysis. Prerequisite approval of instructor Credit 6 hours.

512 Research Methods and Instrumentation in Climatology. Instrumentation network designs field methods data analysis and computer applications in the field of climatology Field work and use of the computer and calculators will be required Prerequisites GPH 312† or approval of instructor Credit 3 hours

571 Computer Mapping and Graphics. Utilization of the digital computer in analysis and mapping of geographic data Includes plotting surficial display compositing, and graphics Prerequisites GPH 371† and approval of instructor Credit, 3 hours

575 Geographic Applications of Remote Sensing. Use of imaging and nonimaging methods of remote acquisition of data including satellite sensors airborne radar multiband scanning, conventional photographic sensors, and ground based equipment Prerequisites GPH 372† GCU 585 or GPH 491† Credit 3 hours

581 Resource Development. Resource dynamics including the physical, economic cultural political and historical factors influencing production and consumption patterns Prerequisites GPH 381 481† or equivalent Credit 3 hours.

585 Advanced Research Methods in Physical Geography. Specialized research techniques and methodologies Credit 1 3 hours

591 Seminar. Selected topics in physical geography Credit 3 hours

Special Courses: GPH 492 497 498 499 500 580 584 590, 592 598, 599 600 68 683, 684 690, 691 692 700 780 784 790 791 792 799 See page 31

Geology

PROFESSORS:
KRINSLEY (PS F-686), BUSECK, LUNDIN
MOORE, PÉWÉ RAGAN SHERIDAN

ASSOCIATE PROFESSOR:
LARIMER

ASSISTANT PROFESSORS:
BURT KINSLAND SLATT, STOCKER

INSTRUCTOR:
STUMP

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Geology Consists of 45 semester hours Courses GLG 100 or 101 or 30 , 102, 310†, 321†, 323†, 335†, 336†, 424† and 435† or their equivalents are required. Supporting courses required in related fields CHM 113†, 115† 116†, PHY 111† 112†, 113†, 114†; MAT 118†, 226†, ZOL 350. The additional work necessary to complete the major must be taken from the departmental list of approved courses GLG 472, 475†, 476†, 480† cannot be used to fulfill the requirements for a major (See Degree Requirements, pages 52 53)

Bachelor of Science Degree Curriculum

Geology 45 semester hours are required, including the following basic courses or their equivalent: GLG 100 or 101 or 30 , 102, 310†, 321†, 323†, 335†, 336†, 424†, 435† and an approved summer geology field course or at least six credits Supporting courses required in related fields are CHM 113†, 115† 116†, PHY 115†, 116† PHY 111†, 112†, 113†, 114† are acceptable alternatives, MAT 120†, 121†; ZOL 350† To complete the total required hours, other courses in geology or in related fields listed by the department as approved may be taken GLG 472, 475†, 476† and 480† cannot be used to fulfil the requirements for a major One year of foreign language is required French German or Russian is strongly recommended (See Degree Requirements, pages 52 53.)

Bachelor of Arts in Education Degree Curriculum

Departmental Teaching Major

Geology Consists of 42 semester hours of credit of which a minimum of 3 will be in geology The following courses in geology or their equivalents are required GLG [illegible] or 101, 102, 310†, 321†, 323† 335†, 336† 362†, or 435† Additional courses and substitutions that are necessary to complete the major will be selected from geology and closely related fields as approved by the student's advisor Supporting courses required in related fields are CHM 113†, 115†, 116†, PHY 111† 112†, 113†, 114†, MAT 118† GLG 480† is required in the professional education program

Departmental Teaching Minor

Twenty four semester hours will be selected from courses below The following courses or their equivalent are recommended for a teaching minor in Geology (Earth Science GLG 100 or 101, 102, 480 Any of the following courses or their equivalent may be used to complete a minor in Geology Earth Science) GLG 310†, 321†, 323†, 335†, 336, 352†, 4 0 424†, 435†, and 436† Any substitutions for the above courses must be approved by the advisor

Departmental Graduate Programs

The Department of Geology offers programs leading to the degrees of Master of Science and Doctor of Philosophy Consult the *Graduate Catalog* for requirements

GEOLOGY

GLG 100 General Geology. Non aboratory ntroduct on to physica and histor cal geo ogy The earth ts or g n processes that affect t, sequence of events n ts evo u tion and succession of l fe upon it Both GLG 100 and 101 may not be taken for cred t Poss b e f e d tr ps Cred t 4 hours

101 Physical Geology. Bas c pr ncip es f geo ogy Ge o ogy geochem stry and geophys cs n re at on to mater a s and processes act ng upon and w th n the earth's crust Rocks m nera s weathering, earthquakes mounta n bu ld ng processes, vo canoes runn ng water ground water and glaciers Three ectures 3 hours ab oratory. Some f e d trips during aboratory possib e weekend field tr ps Credit 4 hours

102 Historical Geology and Modern Problems. Basic pr nc p es of app ed geo ogy and the use of those pr n-ciples n the interpretat on of geo og c h story Laboratory techn ques n map interpretat on cross sec t ons, and fossi s Three ectures, 3 hours laboratory. Some f e d tr ps dur ng laboratory and possib e week end field tr ps Cred t 4 hours.

220 Rocks, Minerals and Gemstones. dentif cat on and class fication of spec mens with specia reference to Arizona Possib e weekend f e d tr ps Not open to stu dents w th cred t n GLG 323 Cred t, 3 hours

300 Geology of Arizona. H story of the phys ca env ron-ment of Arizona Bas c ge ogy, foss s m n ng energy and water resources, vo canic rocks env ronmenta prob ems. Each student may design h s her own curr c u um. Two ectures, 2 hours laboratory Poss b e weekend field tr ps Credit 3 hou s

301 Geology for Engineers. Phys ca geology emphas z ng structura geo ogy ground water, so genesis and re at on of geo ogy to engineer ng prob ems Two ec tures, 3 hours aboratory. Some f e d trips dur ng aboratory poss b e weekend f e d tr ps Cred t, 3 hours

302 Man and Geologic Environment. Geo og c hazards m nera and energy resources, prob ems of waste d s posa and land use p ann ng e v ronmenta prob ems re ated to so id earth Cred t 3 hours

310 Structural Geology. Geo og c structures and the mechan ca processes nvo ved n the r format on Pre-requisites GLG 101 or 301 Two lectures 3 hours aboratory Poss b e f eld tr ps Cred t 3 hours

321 Mineralogy. Crysta ography crystal chem stry and crystal phys cs as app ed to m nera s, or g n and o ur rence of minerals introduct on to X ray techn q e Prerequ s tes MAT 118†· CHM 115† 116† or con ur rent enro lment Geo ogy majors must enro n GLG 23 concurrent y Cred t 3 hours

323 Mineralogy Laboratory. Techn ques n determ na tive minera ogy and crystal ography hand spec men study. Corequisite· GLG 321† Six hours aboratory Poss ble f e d work Credit 2 hours

335 Principles of Paleontology. Emphasis on preserva t on, growth species concept, and evo ut on as demonstrated by the foss l record Prerequis te· GLG 102 or approval of nstructor Geo ogy majors must enroll concurrent y in GLG 336 Two ectures Cred t, 2 hours

336 Invertebrate Paleontology Laboratory. Morpho o-gy, evo ut on and eco ogy of foss invertebrates w th emphasis on techniques 'n pa eonto ogy. Prerequ s te GLG 102, ZOL 350† S x hour aboratory Cred t, 2 hours

362 Geomorphology. Land-forms and processes which create and mod fy them Laboratory and f eld study of phys ographic features. Prerequis tes GLG 101 310† 424† or concurrent enro ment Two ectures 3 hours aboratory Some f e d trips dur ng laboratory, poss b e weekend f e d trips Cred t 3 hours.

400 Geology Colloquium. Presentat n of recent re-search by geology uniors, sen ors grad ate students facu ty members and inv ted guests Required each semester of a l junior and sen or geology majors May be repeated four t mes for cred t Credit 1 hour

412 Geotectonics. Orig n of cont nents and ocea bas-ns. Evolution of the crust n t me. Drifting sea floor spreading and other arge sca e movements of the earth s crust. Upper mant e processes Emphas s on current work Prerequ s te GLG 310† Cred t 3 hours.

414 Geometrics. Quantitative methods n geo ogy Ap p ication of stat stics and computers to the so ut on of geo og c prob ems. C ass fication ana ys s of va ance trend surface, R and Q mode, factor ana ysis Markov process computer simu at o Prerequis tes MAT 121† 326† ASE 226† MAT 362† is recommended Credit 2 hours.

418 Geophysics. So d earth geophys cs geomagne t sm grav ty seismo ogy, heat f ow, emphas z ng crust and upper mant e Prerequ s tes. GLG 101 or 301 PHY 112† 114† or approva of nstructor Two ectures 3 hours aboratory Some f e d tr ps dur ng aboratory poss b e weekend field tr ps Cred t 3 hours

420 Volcanology. Distr but on of past and present vo can sm, types of volcan c act vity mechanism of erupt on, form and structure of vo canoes geochem stry of vo can c act vity Prerequ s te GLG 424†. Poss b e weekend f e d trips Cred t 3 hours

424 Petrology-Petrography. Theoret ca and aboratory study of the or g n and c ass f cat on of gneous and metamorphic rocks. Opt ca m nera ogy Hand spec men and thin sect on study of rocks Prerequ s tes GLG 321†, 323† Three lectures 6 hours laboratory Possib e weekend field tr ps Cred t 5 hours

431 General Micropaleontology. Morpho ogy class fica-tion and geo ogic s gn ficance of the major groups of microfossi s. Prerequ s te approva of nstructor Two ectures, 3 hours laboratory. Credit 3 hours.

435 Sedimentology. Or g n, transport depos tion and diagenesis of sed ments and sed mentary rocks Phys cal and chem ca analys s and nterpretation of processes affecting sed mentary env ronments and the r products. Prerequ sites· GLG 102 321† 323† and 424† Two lectures 3 hours aboratory Some field trips dur ng aboratory; poss ble weekend f e d tr ps Cred t 3 hours

436 Principles of Stratigraphy. Sources of sed ments depositional env ronments and the pr nc ples n del mit ing, corre at ng and nam ng of strat graph c un ts. Prerequ s tes GLG 102 335† 435† Three ectures. Possib e weekend f e d tr ps Credit 3 hours.

441 Ore Deposits. Or gin, occurrence structure and minera ogy of ore depos ts Prerequis tes GLG 424† or approval of nstructor 3 ectures Possib e weekend f e d tr ps. Cred t 3 hours.

446 Ground Water Geology. Princ p es govern ng the occurrence, movement qua ty class fication and re covery of underground water with specia reference to Ar zona. Prerequ s te GLG 435† Possib e f e d tr ps Cred t 3 hours.

462 Environmental Geology of Cold Regions. Geo og ca and engineer ng mportance of seasona and perenn a ly frozen ground (permafrost) Propert es d s-tr but on or gin of ice n the ground and ts app cat on to engineer ng and land ut l zation prob ems Prerequ sites· GLG 101 435†, PHY 111† and 113† or approval of nstructor. Possib e weekend f e d tr ps Credit, 3 hours

472 Earth Science. Pr nc p es of earth sc ence and the r nf uence n form ng the scen c features on the surface of the earth GLG 472 cannot be taken for cred t by one who has completed GLG 100 or 101 or the r equ va-ents. Poss b e fie d trips. Cred t, 3 hours

475, 476 Earth Science for In-Service Teachers. nte-grated approach to the concepts and pr nciples of earth science Prerequ s te approva of nstructor. Poss b e weekend f e d tr ps Cred t 3 hours each semester

480 Methods of Teaching Earth Science. Organ zat on and presentat on of appropr ate content n earth sc ence, the E S C P laboratory approach preparat on of aboratory and demonstration mater a s Prerequisite

approval of nstructor Possib e weekend f e d tr ps Credit, 3 hours.

481 Geochemistry. Or g n and d str but on of the chem cal e ements Geochemical cycles operat ng in the earth's atmosphere, hydrosphere and thosphere. Pre requisites: CHM 341† or 441† or GLG 321† Cred t 3 hours. (Same as CHM 481

482 Physical Geochemistry. App cat ons of thermody namic and k netic princ p es to geochem ca processes Prerequisite: GLG 321† or CHM 341 or 417† or 441† Cred t 3 hours Same as CHM 482)

485 Meteorites and Cosmochemistry. Chem stry of meteorites and the r re at onsh p to the or g n of the earth so ar system and un verse Prerequisite GLG 481† or 482† Credit, 3 hours (Same as CHM 485

490 Topics in Geology. Specia topics n fo low ng fie ds· m neralogy petro ogy econom c geo ogy, geo chemistry petro eum geology reg ona geo ogy geomorpho ogy, geophys cs pa eontology, stratigraphy, sed mento ogy, f e d geology and structural geology Prerequ s te. approva of instructor May be repeated for cred t Cred t, 1 3 hours

501 Geology of Arizona. H story of the phys ca env ron ment of Ar zona. Bas c geo ogy, foss s, m ning, energy and water resources vo canic rocks environmenta prob ems. Student may design own curr culum spec a project requ red Two ectures 2 hours aboratory Pos s ble weekend field tr ps. Not open to students who have received cred t for GLG 300. Credit 3 hours

502 Geology Colloquium. Presentat on of recent re search by geology juniors sen ors graduate students, faculty members and invited guests. Requ red each semester of al graduate geo ogy majors May be re-peated for a tota of 4 cred ts Credit 1 hour

510 Advanced Structural Geology. Mechanics of rock deformat on, emphas z ng re at onsh p between f e d observat on theory and exper ment Stress stra n s m ple constitutive relationsh ps fa ure cr ter a and the bas s of cont nuum methods Prerequisites GLG 310†, 424† or approva of instructor Poss b e f e d tr ps Cred t 3 hours

518 Applied Geophysics I. Use of the refract on seis mology ref ection se smo ogy and grav ty methods to determine the phys ca propert es and structure of the subsurface Petro eum exp orat on and eng neer ng ap p ications Prerequis tes GLG 418†· MAT 121† Two lectures, 3 hours laboratory Some field tr ps dur ng laboratory, poss ble weekend f e d tr ps Cred t 3 hours

522 Applied Geophysics II. Magnet c e ectromagnet c e ectr ca resist v ty nduced po arizat on se f potentia and rad oact v ty methods appl ed to geolog c prob ems and minera exp oration Prerequisites GLG 418† MAT 121†. Two lectures 3 hours laboratory Some field trips during aboratory; possib e weekend f e d tr ps Credit 3 hours.

523 Advanced Mineralogy-Crystallography. Crysta og raphy pr nc ples of X ray and electron d ffract on defects in crysta s, e ectron m croscopy of minerals Three ectures Prerequ s tes GLG 321† or CHM 441 or equivalent Cred t, 3 hours

524 Chemical Petrology. App ications of thermody-namic princ p es to the study of igneous and meta morphic rocks Modern aboratory techn ques ut zed n so v ng petro ogic problems Prerequisites e ther GLG 424† and 482† or CHM 341†, or approva of instructor Two lectures, 3 hours laboratory. Some f e d tr ps dur ing laboratory, possible weekend field trips Cred t 3 hours

526 Physical Petrology. F ow and fracture of earth ma terials Effects of thermal and deformat ona processes on the or gin of rocks. Study of se ected rock suites Prerequisites GLG 310† and 424†. Three lectures Pos s b e weekend f e d tr ps. Credit, 3 hours.

527 Geology of Carbonates. Phys cal and chem ca analys s of carbonate sediments w th emphas s on nter pret ng depos t ona and post-depos t ona h story Prerequ site. GLG 435† Two ectures 3 hours abora tory Poss b e weekend f e d tr ps Cred t, 3 hours

528 Geology of Clastics. Microscop c geochemica and X ray ana ysis of clast c sedimentary components and textures of conso idated and unconso idated c ast cs Prerequ s te GLG 435† Two lectures, 3 hours abora tory Possib e weekend f e d tr ps Cred t 3 hours

532 Ecological Micropaleontology. Interpretat on of anc ent env ronments through the use of ostracodes benth c foramin fera and other groups Prerequis te GLG 431 or approva of nstructor Two lectures 3 hours laboratory Cred t 3 hours

533 Stratigraphic Micropaleontology. Practice and princ p es of biostrat graphy with emphasis on cono-donts acritarchs calcareous nannop ankton and planktic foram n fera Prerequ site. GLG 431 or ap-prova of instructor Two ectures 3 hours aboratory Cred t 3 hours

561 Glacial Geology. Properties, d str bution and or g n of g acial depos ts, inc ud ng pr nc ples of the r strat g-raphy and correlat on. Env ronmenta geo ogy prob ems n g aciated reg ons Prerequ s te GLG 362† Two ec tures 3 hours aboratory. Some f e d tr ps dur ng aboratory possib e weekend field tr ps. Credit 3 hours

562 Quaternary Geology. Geo ogy of the Quaternary Per od n both g ac ated and ung aciated areas Strat g raphy, correlat on and env ronmenta app cat on of Quaternary deposits Special reference to the South west. Prerequ s te GLG 362† or approva of nstructor Two lectures, 3 hours laboratory Some f e d tr ps dur-ing laboratory, possible weekend f e d tr ps Cred t 3 hours

582 Topics in Geochemistry and Cosmochemistry. Top cs of current interest for students n geo ogy chemistry and other f e ds. Phase equ l br a e ement distr but on meteorites the earth and other p anets Prerequ s te approva of nstructor May be repeated for cred t. Credit 3 hours Same as CHM 582)

583 Phase Equilibria and Geochemical Systems. Natu ral reactions at h gh temperatures and pressures s l cate, sulf de and ox de equ ibr a Prerequ site GLG 482†. Credit 3 hours (Same as CHM 583)

591 Seminar. Cred t 1 3 hours Top cs may be se ected from the fol ow ng·

(a) Igneous, Metamorph c, and Sed mentary Petro ogy
(b) Pleistocene Env ronment
(c) Advanced Geophys cs
(d) Structural Geology
(e) Pa eoeco ogy
(f) Advanced Strat graphy
g) Mineralogy and Crystal ography
(h) Mineral Depos ts
(Geochem stry
(j) Phys ca and Chem ca Sed mento ogy
(k) Biostrat graphy
) Env ronmental Geology

See re ated courses· ASB 541† Archaeo ogica Pol en Ana ysis BOT 490† Pa eobotany

Special Courses: GLG 492 493 494, 498 499 590 592 593, 598 599 690, 691 692 783 790 791 792, 799 (See page 31)

Health, Physical Education, Recreation and Dance

PROFESSORS:
STONE (PEBW 202), G SOLO GREEY MILLER, ODENKIRK, PITTMAN RICHARDSON, STEWART, TOOHEY, WEGNER

ASSOCIATE PROFESSORS:
BRYANT, CORDER, DEZELSKY KAJ KAWA KRAHENBUHL, LESSARD, OSTERHOUDT, PACKER, PANGRAZI, PLUMMER WELLS

ASSISTANT PROFESSORS:
ALDINI, BACHMANN BURKETT, CHEATHAM, DARST, deFRE TAS DUNNOCK, GR ER, HALEY, HASKELL, JONES, KUSH, LITTLEWOOD, P KE, SH RREFFS, WEISS WULK

INSTRUCTORS:
JATEN, SCHNEIDER WHITLEY

LECTURER:
DESJARD N

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Dance—Consists of a minimum of 45 semester hours of credit, of which the following are required: DAH 16(, 380, DA\ 13 , 131†, 230†, 232, 261†, 263†, 4(3†, or 464†, ZOI 201 or 202; PED 385†, or 386† MHI 3\7 Fifteen additional hours must be in no more than two related fields and must be t ken from the departn enta st of approved courses. Two ye irs of credit or equivalent in French is required

Bachelor of Science Degree Curriculum

Health Science (Comn unity He lth Emph sis) Consists of 44 semester hours of c edit Courses HES 1)0 360, 361, 434†, 481 494, BIO 100, ZOL 201, 202†; C HM 101 are re quired. The 9 semester hours of elective credits are selected from related fields by stu dents in consultation with their faculty advisors At least 18 semester hours must be in upper division courses (See Degree Re quirements, pages 52 53)

Physical Education Consists of 38 semester hours of credit of wh ch 28 must be in the major field. Courses ZOL 201, 202†, and PED 170, 335†, 340†, 345†, 483†, 450† and selected physical education activity courses are required. At least 18 sen ester hours must be in upper division courses and the entire program must be planned in consult tion with the student's advisor (See Degree Requirements, pages 52-53)

Recreation Consists of 44 to 52 semester hours of credit Courses REC 160, 210, 330†, 463†, and 472† are required, additionally 200 clock hours of recreation leadership are re quired prior to the senior year The remain ng courses will be selected in consult ti n with ar advisor and determined by tl e needs and in terests of the student. Students n ay select one of the following areas of speci ilization: Com munity Recreation Organizations, Outdc or Recreation, Commercial and Private, Recrea tion Resource Planning and Manigement, and Recreation for Speci il Populatio r s See De gree Requirements, pages 52 53

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Dance—Consists of 45 semester hours of credit of which the following are requ red DAH 160, 380, DAN 130, 131†, 230, 232, 261†, 262, 263, 360, 361, 380, 463, 464 and 490†, PED 385†; ZOL 201 and 202† First semester students should take DAN 130 Dance (Modern and Ballet), and DAH 160, ENG 101; SOC 101, MHL 107 and other General Studies At least 18 hours must be in upper division courses.

Health Science (School Health Emphasis) Consists of 43 semester hours of credit Courses HES 100, 340, 360, 361, 48 , 481, BIO 100; ZOL 201, 202†, CHM 101 are re quired An add tional 9 hours are to be selected from related fields by the student in consultation with the facu ty advisor At least 18 semester hours must be in upper division courses

Physical Education Cons sts of 38 semester hours of credit, of which the following are required PED 170, 335†, 340†, 345†, 37(†, 450†, 480†, 483†, 498; DA\ 367, EED 313, 9 hours of SED 433†. A majors must satisfy proficiency requirements in se ected sports and dance At least 18 semester hours must be n upper division courses and the entire program must be planned with the student's adv sor

Departmental Minor Teaching Field Requirements

(Secondary Education)

Dance—Consists of 24 semester hours of credit. Courses DAN 130, 261†, 263†, 360 and 361 are required Th e rem ining hours are to be selected by the student n c nsultation with an advisor

Health Science Consists of 24 semester hours of credit. Courses HES 100, 34 , 360, 361, 480, 481 are required The rema n'ng hours are to be selected by the student in c nsulta tion w th a health science advisor

Coaching of Athletics (Men and Women) Consists of 32 sen ester hours of credit Courses ZOL 201, 202†, PED 335†, 340†, 346, 383† and 486† are required; plus 9 hours from PED 291† and e ectives selected by the student in consult tion with in advisor

Athletic Trainer's Certificate (Men and Women) Consists of 41 hours of credit

Courses PSY 112†; PGS 100, ZOL 201, 202†; HES 100; FON 141; PED 270†, 282, 335†, 340†, 383†, 485† and PED 486† are required, plus electives selected by the student in consultation with an advisor. Note: Six (6) semester hours of credit or two years' equivalent work of 600 clock hours of internship.

Physical Education (Women). Consists of 31 hours of credit of which the following are required: ZOL 201, 202†; PED 170, 335†, 340†, 345†, 483† and 486†.

Departmental Major Requirements

Bachelor of Fine Arts Degree Curriculum

Dance—Consists of 70 semester hours of credit in dance and related fields. Courses DAH 160, 380; DAN 130, 131† and 230, 232, 261†, 262, 263†, 330, 331, 332†, 463†, 464 and 490†; PED 385†, ZOL 201†, 202†; THE 110; MTC 100 and 107, MUP 131, 132† and 133 are required. At least 30 semester hours must be in upper division dance courses.

First semester students should take: DAH 160, DAN 130 (Modern and Ballet); ENG 101; MTC 100 and 107; SOC 101 or other General Studies.

Departmental Graduate Programs

The Department of Health, Physical Education, Recreation and Dance offers programs leading to the degrees Master of Science in Physical Education, Master of Science in Recreation, Master of Arts in Education (Health Science), Master of Arts in Education (Physical Education), Education Specialist (Physical Education), Doctor of Education (Physical Education), and Doctor of Philosophy (Education Physical Education). Consult the *Graduate Catalog* for requirements.

DANCE HISTORY

DAH 160 Contemporary Dance. Orientation to the field of dance with particular reference to trends. Credit 2 hours.

280 History and Philosophy of Dance. Dance from ancient times to the present. Considerations of dance as an art in relation to other arts; primitive, preclassic and modern forms. Credit, 2 hours.

380 Dance in Diverse Cultures. Influence of dance in selected cultures. Required for dance majors. Credit, 3 hours.

DANCE

DAN 130 Dance. Ballet, folk, modern, social square and other dance activities. Three hours a week. May be repeated for credit. Credit 1 hour.

131 Music for Dance. Elements of music, music structures and their relationship to dance. Emphasis on rhythmic analysis and dance accompaniment. Prerequisite: MTC 100† or approval of instructor. Credit, 2 hours.

230 Dance. Intermediate levels. Continuation of DAN 130. Three hours a week. May be repeated for credit. Credit, 1 hour.

232 Dance Notation I. Survey of systems of dance notation. Emphasis on learning of elementary Labanotation. Credit, 2 hours.

261 Fundamentals of Choreography. Analysis of theme and dramatic ideas drawn from poetry, drama, music and other art forms for use in dance choreography. Prerequisite: approval of instructor. One lecture, 2 hours laboratory. Credit, 2 hours.

262 Dance Production I. Theory of lighting and costuming as related to dance. Credit, 2 hours.

263 Dance Production II. Theory and practice of programming, make up, scenery and sound as related to dance production. One lecture, 2 hours laboratory. Prerequisite: DAN 262 or approval of instructor. Credit, 2 hours.

330 Dance. Advanced levels. Continuation of DAN 230. Three hours a week. May be repeated for credit. Credit, 1 hour.

331 Techniques of Improvisation. Creative exploration for the development of spontaneity. Movement experiences through auditory, tactile, visual, emotional, motor, and other stimuli. Three hours a week. May be repeated for credit. Prerequisite: DAN 130 (Modern) or approval of instructor. Credit, 1 hour.

332 Dance Notation II. Intermediate study of Labanotation. Introduction to effort shape analysis of movement. Prerequisite: DAN 232 or equivalent. Credit, 3 hours.

360 Theory and Practice of Teaching Dance. Folk, square, social and other dance forms. Analysis and acquisition of teaching techniques and teaching materials suitable for school and recreational use. One lecture, 2 hours laboratory. Credit, 2 hours.

361 Theory and Practice of Teaching Dance. Creative and modern. Analysis and acquisition of teaching techniques and teaching materials suitable for school and recreational use. Credit, 3 hours.

367 Children's Dance. Theory and practice of teaching creative, folk, square and other dance forms for children. Designed for dance majors and related curriculum, but open to all students. Credit, 3 hours.

371 Dance Theatre. Performance in specially choreographed dance productions. Prerequisite: approval of instructor. Three hours a week per credit hour. May be repeated for credit. Credit, 1-2 hours.

462 Dance Stagecraft and Production. Lighting, costuming, make-up, scenery and sound as related to dance performance. May be repeated once for credit. Prerequisites: DAN 262, 263 or equivalent. Credit, 3 hours.

463 Advanced Choreography. Investigation and practice of contemporary styles of choreography. Prerequisite: DAN 261, or approval of instructor. Credit, 3 hours.

464 Choreography and Accompaniment. Function of accompaniment for dance; experience in the use of percussion, voice, records, piano and selected instruments in relation to their use in choreography. Credit, 2 hours.

490 Senior Performance in Dance. Original choreography for solo or group performance with analysis and critique of problems encountered in production. May be repeated for total of 4 hours. Prerequisites: DAN 261†, 463† or 464. Credit, 2 hours.

530 Advanced Problems in Analysis of Dance Technique. Theories and principles of human anatomy and biomechanics applied to analysis and evaluation of dance movement. Prerequisite: PED 385† or approval of instructor. Credit, 3 hours.

531 Musical Analysis for Dance Accompaniment. Dance accompaniment emphasizing improvisation. Analysis of experimentation with, and practice in working with composers of music for choreography. Prerequisites: DAN 131†, 464† or equivalent. Credit, 3 hours.

532 Dance Notation III. Advanced study of Labanotation. Experiences in notating and reconstruction of Labanotation dance scores. Prerequisite: DAN 332† or equivalent. Credit, 3 hours.

550 Cultural Concepts of Dance. Cultural concepts, trends, economic, political, and geographical forces in major eras of dance history. Credit, 3 hours.

560 Dance Philosophy and Criticism. Theories of criticism; esthetic experience in dance; relationship to

other art forms· concepts of creat vity, style and art stic truth (Intended to ntegrate and give mean ng to studio ski ls.) Credit, 3 hours

563 Individual and Group Choreography. Orig na choreography created for solo and group performance May be repeated once for credit. Prerequ s te DAN 463†, and 464 or equ valent Cred t 3 hours

570 Creative Research Project. Project n l eu of thes s Or g nal choreography or an nvestigat ve study n a dance area. Approva of graduate comm ttee requ red Credit, 6 hours.

591 Seminar. Cred t 3 hours Top cs may be selected from the follow ng

(a) Dance Education and Adm n strat on

(b) Fi m and Dance

(c) Effort-Shape

Special Courses: DAN 494 498 499, 593 (See page 31.)

HEALTH SCIENCE

HES 100 Personal Health. Modern man and h s strugg e for achiev ng harmony between the nd vidua s slow y changing inner env ronment and the rap d y-chang ng outer env ronment of the culture Credit, 3 hours.

340 School Health. Basic p an of the school health program, health services, health nstruction and schoo health env ronment Analys s of school health prob ems. Credit, 3 hours.

360, 361 Foundations of Health Science. First semester, concepts n the et ology of chron c and degenera- t ve disease and emot ona health and drug addiction app ed to school and commun ty hea th education Second semester concepts n fam ly fe education consumer health educat on and nutrition appl ed to school and commun ty health. Hea th Science majors and minors only. Cred t, 3 hours each semester.

434 Supervised Field Training. Prov des opportunities to observe and work in pub ic and vo untary agenc es e ther n preparat on for beg nning- eve emp oyment or for better understanding of nterrelat onsh ps n com munity hea th programs. Prerequ s te 15 cred t hours in hea th science. May be repeated for a total of 6 credits Credit, 3 hours

480 Methods of Teaching Health. Techn ques and ma teria s for hea th instruct on Health Educat on majors and minors only. Cred t, 3 hours

481 Public and Community Health. Major areas of pub- c and commun ty hea th and princ p es involved n provid ng adequate commun ty health programs, part c ularly in Arizona. Afternoon and evening f e d tr ps may be scheduled. Credit 3 hours

501 Contemporary World Health Problems. Recent d scoveries n medicine, engineer ng and ife sciences and the r appl cation to personal and community health Malnutrition, venereal d seases, tuberculosis ma aria eprosy, parasitical nfestat ons, rad at on environmen tal pol ution. Credit, 3 hours

502 Health Problems of the Southwest. Cocc d o do mycos s, al erg es vector nfestations diabetes among the P ma Indians, arthritis dysenter es rab es a rborne viruses histoplasmosis, san tation, air and water pollu tion pest c de contamination of food products Cred't, 3 hours

503 Field Experience in Community Health. Super vised student participation in community health serv'ce programs such as State and County Health Depart ment, ndian Hea th Service U S Pub 'c Hea th Service and pr vate hea th agencies May be repeated for a total of 6 cred ts. Cred t, 1-6 hours

504 Education for Human Sexuality. Current concepts of human sexua ity with pr nciples of appl cation and curr culum deve opment n a schoo program of health education. Biolog cal, ntel ectual and soc a forces which inf uence sexual matur ty relat onships, dec s on making and respons b e da ly v ng Cred t, 3 hours

505 Drug Dependency: Perspectives and Approaches. Class fication of mood-modify ng substances n terms of effects. Mot vational and soc'a forces contr buting to the dynamics of the problem, contro and treatment Credit, 3 hours.

554 Sociological Aspects of Health Education. Medi- care, Medicaid, World Health Organizat on Peace Corps, the U.S Public Hea th Service the 'nner c ty and hea th, and commun ty health serv ces Cred t 3 hours

560 Curriculum Construction in Health Education. Problems of curricu um construction w th respect to acquisition of materials, establ shment of bas c curr'cu lum philosoph es applicat on of education princ p es and sequence of course content. Cred t 3 hours

Special Courses: HES 494 498 499, 590 591 592, 593 594, 598 599 (See page 31)

PHYSICAL EDUCATION

PED 105 Physical Education Activity. Beginn ng in struct on in adapted phys cal act vities and a var ety of sports go f, ice skating, scuba karate judo handba tenn s, sw mming, we ght tra ning, gymnast cs and other activ t es. Three hours a week May be repeated for cred t. Cred t, 1 hour.

110 Team Sports. Ski ls strategies know edge and techniques of offic at ng major team sports. Opportuni t es to qua ify for intramura assoc ate, ocal and nat onal ratings. 4 hours laboratory. Credit, 2 hours each semester.

170 Nature of Human Movement. Applicat on of move ment concepts as they pertain to sk l analys s and activit es appropriate for elementary schoo s, grades K 8. Credit, 3 hours.

175 Occupational and Physical Therapy. Backgrounds, purposes and functions of the profess ons of physica therapy and occupational therapy the r relationships to hea th professions and community agencies Credit, 2 hours

205 Physical Education Activity. Intermediate levels Continuation of PED 105 Three hours a week May be repeated for cred t. Cred t 1 hour

270 Instructorship in Standard First Aid. For individu als seeking the Standard F rst Aid Certif cate lead ng to qualification as a first aid instructor Prerequ site. must be 18 years of age. Cred t, 1 hour.

282 Physical Education for the Atypical Student. Handicapping conditions found among students and adaptation of exerc ses and act vities to ind vidua needs. Open to all students. Prerequ s te PED 335 or instructor s approva Credit 2 hours.

290 Sports Officiating. Rules and mechan cs of officiat ing used in footbal basketba l, basebal and track and f e d. Credit, 3 hours

291 Theory of Coaching. Theory of coaching compet tive basketbal and footbal Each class meets four hours per week Phys ca education majors and coach- ing minors, or approval of area chair Cred t 2 hours

305 Physical Education Activity. Advanced leve s. Con tinuat on of PED 205 ncludes Red Cross Senior L fe Saving Red Cross Water Safety Instructorship (Prerequ site: Current Senior Red Cross Life Saving Cert ficate), and other aquatic activ ties. Three hours a week. May be repeated for cred t. Cred t, 1 hour.

310 Collegiate Sports. Cred t may be given for partici- pation in competitive sports. For men and women May be repeated for a total of 4 cred ts T me arranged Credit 1 hour. Y grade on y.

335 Biomechanics. Kinematics and dynamics appl ed to human movement Development of b omechan cal con cepts for appl cation n ana ysis and eva uation of neuromuscular ski ls. Prerequ s te ZOL 201. Credit, 3 hours.

340 Physiology of Exercise. Effects of the var ous types of exercise upon body structure and function Prerequi site. ZOL 202 Credit, 3 hours

345 Motor Development and Learning. Development of perceptua motor behav or from nfancy through adult- hood Acqu s't'on of neuromuscular sk ls s exam ned

with references to bio og cal, psychologica and soc a determinants Prerequisites· ZOL 201 and 202† Cred t, 3 hours

346 Psychology of Coaching. Pr nciples of earning appl ed to coach ng sports Psycho ogica and socia problems of coach ng Cred t 3 hours

376 Physical Education for the Elementary School. Scope and values of phys ca educat on and movement education in the elementary school Methods materia s and practice n teach ng act vities for primary, nterme d ate and upper grades Cred t, 3 hours

383 Techniques of Athletic Training. Screen ng and cond tion ng of athletes, prevent on, care and treatment of ath etic injur es, ncludes techniques of app y ng sup portive materia s and use of therapeutic aids Prerequisites ZOL 201 and 202†. Credit 3 hours.

410 Organization and Administration of Intramural Activities. Principles and pract ces of the organization of ntramural programs. Credit 2 hours

450 History and Philosophy in Physical Education. Historica and philosophical heritage of phys cal education from ear y Greek society to present-day phys cal education, emphas zing developments in the United States Credit, 3 hours

480 Methods of Teaching Physical Education. Methods of instruction, organ zat on and presentat on of appropriate content in phys cal education Three ec tures, 2 hours laboratory Cred t, 4 hours.

483 Evaluation in Physical Education. Ana ysis and construct on of tests. Analys s of data and nterpreta tion of measurement in phys cal education programs Cred t, 3 hours.

485 Advanced Techniques of Athletic Training. Prob lems in medica aspects of athlet c train ng, nc ud ng njury exam nat on techniques treatment moda it es and techniques therapeut c exerc se rehab l tation of ath let c injuries Budget ng and secondary schoo adm n stration of ath etic training Prerequ site PED 383. Cred t, 3 hours.

486 Coaching/Athletic Training Internship. Re at on ship of theory of coach ng athlet cs and/or ath et c train ng techniques to pract cal appl cat on of coaching and/or ath etic training techn ques Prerequ s te approval by area cha r. Credit 1-6 hours, Y grade on y.

501 Research Statistics. Stat stica procedures sam p ng techn ques, hypothesis testing, and experimenta des gns as they relate to stud es reported n research publications To be taken pr or to or concurrent w th PED 500 Cred t, 3 hours

505 Research Laboratory. Advanced research tech n ques n use and calibration of aboratory equipment ut l zed in c nematographic ana ysis, cardioresp ratory testing and motor learning exper mentation. Cred t, 3 hours.

515 Facilities and Equipment in Physical Education and Recreation. Principles, standards personnel, de s gns, and equipment ut ized n the plann ng construction and maintenance of ndoor/outdoor fac i ties Credit, 3 hours.

520 Organization and Administration of Athletics. Managing an athlet c program, financing budget pol c es staging and promotion of ath etic contests, schedu es, travel, nsurance and current ath etic trends Credit, 3 hours

525 Theory of Administration in Health, Physical Education and Recreation. Adm n strat ve ph losophies, development of concepts re ated to processes of ad m nistration, types of adm nistrative behavior, tasks and respons bil t es of the adm nistrator evaluat on of the effect veness of adm nistration Cred t, 3 hours

540 Physiological Bases for Physical Activity. mmediate and ong-term adaptat ons to exercise with spec a reference to training and the role of exercise n card o-vascular hea th Credit 3 hours.

545 Motor Learning and Development. Theor es and principles underly'ng motor learning, performance and development. Role of v sual and kinesthetic percept on, and general and specif c ab l ties in motor earn ng and performance Cred t 3 hours

546 Psychology of Coaching. Athletes' behavior n competitive sport, w th emphasis on persona ity and motivationa techniques Cred t, 3 hours

547 Improving Performance in Competitive Athletics. Factors 'n successfu motor performance in sk l s used in nd vidua dua and team sports Cred t, 3 hours

550 Historical Bases of Physical Education. Golden Age of Greece, Rena ssance and modern Europe Cu tural, economic and educationa forces which nfluenced the development of physica education, dance and ath etics in the Un ted States Cred t, 3 hours

552 Philosophical Bases of Physical Education. Idea ism, realism, natural sm exper menta ism and ex stentia ism as they relate to the development of phys cal educat on programs Credit 3 hours

555 Sport and the American Society. mpact of sports upon the American culture, with focus on compet tion economics mythology race re at ons, and the O ymp c syndrome Cred t, 3 hours

572 Trends and Issues in Physical Education. L terature, research, and practices pertain ng to trends prob ems and issues. Credit 3 hours

573 Curriculum Construction in Physical Education. Appl cat on of princ p es pract ces and funct ona ph losophies of curr culum mak ng in phys ca education Prerequ site. major n physical educat on or teach ng experience. Cred t, 3 hours

576 Physical Education for Elementary School Children. Current pract ces and research pertain ng to elementary schoo physica education program. Cred t 3 hours

582 Adapted Physical Education. Contemporary adapted developmenta , remed a and corrective phys cal educat on programs, understanding of princ p es prob ems and recent developments in this area Cred t, 3 hours

583 Principles of Evaluation in Physical Education. Exam nation of l terature and research pertain ng to pr nciples for eva uating performances· statist cal pro cedures necessary to the mplementat on of grad ng plans Credit 3 hours

Special Courses: PED 494 498, 499, 500 580, 584, 590, 591, 592, 593, 594, 598, 680 684, 690, 691 692, 780, 783, 784, 790, 791, 792 799 (See page 31

RECREATION

REC 120 Dynamics of Play. Theoret ca bases of p ay Factors influencing p ay choices and attitudes Ana ysis of game structure and funct on. Cred t, 3 hours

150 Outdoor Living Skills. Theor es and pract ca ski s for outdoor ving. W lderness phi osophy, outdoor ex per ence cu minating in ACA certif cation (if des red). Overn ght trips. Credit 3 hours

160 Leisure and Society. Ana ys s of the human re a-t onsh p to leisure. Historical survey of ph osoph cal, psychologica , and soc oeconom c bases for develop ment of systems that provide e sure programs Cred t, 3 hours.

210 Recreation Leadership. Pr nc p es practices eth cs and profess onal preparat on for eadersh p n the f e d of recreat on. Cred t 2 hours

330 Theory and Principles of Recreation Programming. Foundat ons for effective program plann ng Theory and pr nc p es re ated to varied settings and types of act vity. Forma p ann ng process Prerequ s tes: REC 160† 210†. Cred t 3 hours

384 Recreation for Special Populations. Concepts, methods, sett ngs nvolving recreat onal services as appl ed to specia groups n Amer can soc ety e g youthfu and adu t offenders alcoho cs drug add cts mental y retarded, menta ly I, and phys cal y handi capped. May nclude f e d experience Cred t 3 hours

370 School Camping and Outdoor Recreation. Re a-t onsh p of outdoor recreat on to schoo camping

Planning and operating a school camp. Exploring the increased interest, problems, and concern for outdoor recreation in our society. Credit, 2 hours.

463 Senior Internship. Supervised guided experience in selected agencies. Prerequisites: REC 330†, 472†, senior standing. Recreation majors only. Credit, 1-12 hours.

470 Camp Organization and Administration. Organization and administration of camps. Preparation for camp management; consideration of budget, campsite and personnel. Credit, 2 hours.

472 Administration of Leisure Services. Basic principles of administration and their application to successful administration practices. Analysis of administrative function, structure, and policies. Prerequisite: REC 330†. Credit, 3 hours.

540 Recreation Services for the Aged. Recreational activities, special facilities, use of volunteers, public relations techniques, fund raising, and the dynamics of interpersonal relationships relative to the senior citizen. Credit, 3 hours.

552 Philosophical Foundations of Leisure. Analysis of fundamental philosophical concepts as they relate to principles and practices of organized programs for leisure. Credit, 3 hours.

558 Current Issues in Recreation. Contemporary issues and problems confronting the leisure services profession. Prerequisite: REC 552. Credit, 3 hours.

569 Commercial Recreation. Procedures in determining public needs, initiating enterprise, promoting activity, and evaluating the total project in terms of both proprietor and public. Credit, 3 hours.

570 Outdoor Recreation Planning. Planning for administrative duties in varied recreation settings. Prerequisites: REC 370 or equivalent. Credit, 3 hours.

Special Courses: REC 498, 499, 500, 591, 592, 593.
(See page 31.)

History

PROFESSORS:
KARNES (SS 204), ADAMS, BARLOW, DANNENFELDT, GIFFIN, HUBBARD, PAULSEN, TAMBS, WILSON, YOUNG

ASSOCIATE PROFESSORS:
BURG, FULLINWIDER, KEARNEY, KLEINFELD, LUCKINGHAM, PHILLIPS, R. D. SMITH, STOWE, TRENNERT, WARNICKE, WOOTTEN

ASSISTANT PROFESSORS:
ADELSON, BATALDEN, CARROLL, FOSTER, KAHN, LOEWENBERG, MACIEL, MACKINNON, ROTHSCHILD, L. C. SMITH, TILLMAN, WEINER

LECTURERS:
FIREMAN, NESBY

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

History—Consists of 45 semester hours of credit of which 30 must be in history and 15 in closely related fields to be approved by the advisor in consultation with the student. At least 18 hours in history courses and six hours in the related fields must be in upper division courses. A minimum grade point average of 2.25 in the 30 hours of history courses is required. (See Degree Requirements, pages 52-53.)

Latin American Studies Emphasis—(See Interdisciplinary Studies, page 36.) Consists of the Bachelor of Arts degree requirements in history. At least 30 upper division semester hours of the total program must be in Latin American content courses, including 15 hours in history and 15 in other disciplines. A reading knowledge of Spanish is required, as is the successful completion of *LIA 402 Movements and Meaning in Latin America*. A reading knowledge of Portuguese is suggested. Fulfillment of requirements is recognized by a Bachelor of Arts degree with a major in History—Latin American Studies.

Asian Studies Emphasis—(See Interdisciplinary Studies, page 36.) Consists of the Bachelor of Arts degree requirements in history, with the language requirement being fulfilled with an Asian language. Thirty semester hours of the total degree program must consist of Asian area courses selected with the approval of the departmental advisor. Lower division language courses may not be counted within the 30-hour requirement. Completion of this program is recognized by a Bachelor of Arts degree with a major in History—Asian Studies.

Bachelor of Science Degree Curriculum

History—Consists of 60 semester hours of credit, of which 42 (including HIS 481 and 482) must be in history and 18 in closely related fields and quantitative studies, as approved by the advisor in consultation with the student. HIS 481 and 482 are required for all degree candidates. At least 27 hours in history courses and nine hours in the related fields must be in upper division courses. A minimum grade point average of 2.25 in the 42 hours of history courses is required. (See Degree Requirements, pages 52-53.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

History—Consists of 42 semester hours of credit, of which at least 30 must be in history courses. At least 18 of the history hours must be in upper division courses. At least three hours of credit must be taken in United States history. The remaining history and related area courses must be selected in consultation with an advisor from the Department of His-

tory. A minimum grade point average of 2.25 in history courses is required for admission to practice teaching and for graduation. The course HIS 480 may *not* be counted as part of the 42-hour major requirement.

Departmental Minor Teaching Field

Bachelor of Arts in Education Degree Curriculum

History Consists of 24 hours of credit in history courses, of which at least nine must be in upper division courses. The program must include at least three hours in United States history.

Departmental Graduate Programs

The Department of History offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

HISTORY

Courses listed in pairs or triplicate may be taken in any order.

HIS 100, 101, 102 Western Civilization. Traces origin and development of Western man and his institutions. HIS 100 Ancient World through the Middle Ages, HIS 101, Renaissance and Reformation through Age of Enlightenment. HIS 102 French Revolution to the present. Credit, 3 hours each semester.

103, 104 The United States. Growth of the Republic from colonial times with the first semester covering through the Civil War period and the second continuing to the present day. Credit, 3 hours each semester.

200 Latin American Civilizations. The culture, economics and politics of Latin American nations. *Not open to history majors.* Credit 3 hours.

294 Selected Topics in History. A full description of topics for any semester is available in the History Department office. May be repeated for credit. Credit, 3 hours for each topic.

303, 304 American Cultural History. Culture in a broad connotation including ideas, ideals, the arts and social and economic standards. First semester, the national colonial background and early national period; second semester, the age of industrialism and modern America. Credit 3 hours each semester.

305, 306 Asian Civilizations. The civilizations of India, Southeast Asia, China, and Japan. First semester to mid-19th century; second semester since mid 19th century. Credit 3 hours each semester.

319 Ancient Near East and Egypt. History and civilization of the Ancient Near East and Egypt to the conquest by Alexander the Great. Credit 3 hours.

320 Ancient Greece. History and civilization of the Greek world from the Bronze Age to the Roman conquest of the Hellenistic kingdoms. Credit 3 hours.

321 Rome. History and civilization of Rome from the beginning of the Republic to the end of the Empire. Credit 3 hours.

322, 323 The Middle Ages. Political, socio economic, and cultural developments of Western Europe. First semester, Early Middle Ages; second semester, High Middle Ages. Credit, 3 hours each semester.

324 Renaissance and Reformation. Antecedents and developments of the Renaissance in Italy, its spread to the rest of Europe, and the subsequent changes in religious and political thought. Credit, 3 hours.

326, 327 Early Modern Europe. Social economic cultural, and political changes in 17th and 18th century Europe. First semester, 17th century; second semester 18th century. Credit 3 hours each semester.

329, 330 Nineteenth Century Europe. Political social economic, and intellectual currents in Europe from Napoleon through World War. First semester 1815 1866, second semester, 1866 1918. Credit 3 hours each semester.

331, 332 20th Century Europe. Europe in its world setting since World War. Emphasizing major political and social issues. First semester 1914 1945 second semester 1945 to the present. Credit, 3 hours each semester.

336, 337 Intellectual History of Modern Europe. Major political, social, and economic trends in European thought from the Enlightenment to the present. First semester Enlightenment to mid 19th century; second semester Marxism to the present. Credit 3 hours each semester.

339 Diplomatic History of Modern Europe. From the Congress of Vienna to the present. Credit, 3 hours.

340, 341 Economic History of Modern Europe. Impact of industrialism upon the political, social, and cultural life of Europe. First semester Renaissance to the 19th century; second semester 19th and 20th centuries. Credit 3 hours each semester.

342 Social History of Modern Europe Impact of various socio economic groups on 19th and 20th century European society. Credit, 3 hours.

351, 352 England. Political economic and social development of the English people. First semester to the 17th century; second semester 17th century to the present. Credit 3 hours each semester.

362 The American Indian. History of the American Indian with emphasis on the government's Indian policy and the impact of the white man on tribal culture. Credit, 3 hours.

364 The Black American Experience. The Afro American in American history, thought and culture, emphasizing those aspects that were directly influenced by their presence. Credit 3 hours.

367, 368 The West in American History. First semester the Turner Thesis of the significance of the frontier in American history, beginning with discovery and exploration and continuing to the period of Texas and the Mexican War; second semester the development of the frontier thesis to 1890 emphasizing Arizona and the Southwest. Credit 3 hours each semester.

370 Women in United States History. Examination of lives of prominent American women from colonial times to the present. Credit 3 hours.

380 History of the Mexican-American. Role of the Mexican-American in U. S. history. Credit, 3 hours.

383, 384 Latin America. First semester ancient civilization explorers and conquerors, and colonial institutions, second semester national structure development of the independent republics since 1825. Credit 3 hours each semester.

401 American Colonial History. Political, economic, social and cultural history of the colonial era. Concentrates on English colonies, with some consideration of Spanish, French, and other colonial regions in North America. Credit 3 hours.

403 Early National Period in American History. Political, social and economic development of the United States from the Revolution to 1828. Credit, 3 hours.

404 The Jacksonian Era. American deals with emphasis on equality in the political, social and economic life of the nation, 1828-1850. Credit, 3 hours.

406 Civil War and Reconstruction. Causes and development of the war political, constitutional and social issues of Reconstruction, and their effects on post war America. Credit 3 hours.

407 Populism and Progressivism. Political social economic and intellectual trends in the United States 1877-1918. Credit 3 hours.

409, 410 Recent American History. First semester 1913-1932 Wilsonian diplomacy and the First World War the 1920's the origins of the Great Depression Hoover administration; second semester 1932 1945

the New Deal soc ety dur ng the Depress on, Second Wor d War Credit 3 hours each semester.

411 Contemporary America. The Un ted States from 1945 to the present Credit, 3 hours

413 Origins of the American Economy. American economic growth from the co on al per od to 1900, trade and commerce problems of slavery and agr cu ture, industrial development, and the government's ro e in the economic sector. Cred t, 3 hours.

414 The 20th Century American Economy. Amer ca as a wor d economic power from 1900 to the present bus ness changes and cycles, government regu at on agr culture labor, and the prob ems of a mature economy. Credit 3 hours

415, 416 American Diplomatic History. American rela tions w th foreign powers F rst semester, 1776 1898 second semester 1898 to the present Cred t, 3 hours each semester

417, 418 Constitutional History of the United States. Origin and deve opment of the Amer can const tut ona system. F rst semester co on a orig ns through Recon struction, second semester, Reconstruct on to the present Credit, 3 hours each semester.

419, 420 American Urban History. First semester co o nia t mes to the 19th century second semester, 19th century to the present. Credit 3 hours each semester

421 History of American Labor. Labor union history, deological origins of modern abor aw, and agr cultura labor Emphasis on labor problems and development n the 20th century Credit 3 hours

422 Social History of American Women. Women s role status and achievements in Amer ca Changes in fam y patterns and effects of mmigration, ndustrial zat on and urban zation. Credit, 3 hours

423 Recent American Intellectual History. Develop-ment of social thought, terary trends and phi osoph cal theory from 1890 to the present. Cred t 3 hours.

424 The Hispanic Southwest. Development of the Southwest n the Spanish and Mexican per ods to 1848 Credit, 3 hours

425 The American Southwest. Development of the Southwest from 1848 to the present. Cred t 3 hours

426 The West in the 20th Century. Ro e of the Western states n American history since 1900 with emphasis on pol t cs the conservation movement, ndustry and a bor, and the changing role of ethnic m nor ties Cred t, 3 hours

427 Agriculture in the American West. Western agr culture from the H span c period to the present and tenure, technological changes, government farm pol - c es, and the ro e of the farmer n western econom c development. Cred t 3 hours

428 Arizona. Emergence of the state from ear y t mes to the present. Credit, 3 hours.

430 20th Century Chicano History. H stor cal develop ment of the Ch cano commun ty in the 20th century. Cred t, 3 hours.

431 The French Revolution and the Napoleonic Era. Conditions n France before 1789, the Revolut onary decade from 1789 to 1799, the organizat on of France under Napoleon and the impact of changes in France on European society Credit 3 hours.

433 Modern France. France s nce 1870 Credit 3 hours.

434 Hitler: Man and Legend. A b ograph ca approach to the German Third Reich emphas zing nature of Nazi regime, Wor d War I, and h stor ography. Cred t, 3 hours

435 Modern Germany. Germany since 1840 Cred t, 3 hours

437, 438 Eastern Europe and the Balkans. Peoples and countr es of eastern and southeastern Europe in the 19th and 20th centur es. First semester, 1800 1914, emphasiz ng the Hapsburg and Ottoman Empires; sec-ond semester 1914 to the present, emphas zing the successor states Credit 3 hours each semester.

439 The Modern Middle East. Impact of the Western wor d upon M dd e Eastern governments, re ig on and society in the 19th and 20th centuries problems of modern zation and the ro e of the M dd e East n wor d affa rs Cred t, 3 hours.

441 Imperial Russia. Development of Russian po itical, econom c, socia rel gious and inte ectual nst tutions and trad tions from the end of the 17th century to the col apse of the tsar st autocracy in 1917 Cred t 3 hours

442 The Soviet Union. Development of the Soviet sys tem s nce the Revolution of 1917 emphas z ng ts Russ an, European, As an, and g oba s gnif cance Cred t, 3 hours

443 Russia and the United States. Russ an American re ations from 1800 to the present emphasiz ng per od after 1917. Cred t, 3 hours

445 Tudor England. Po itical, soc al, econom c and cu tural deve opments in 16th century Eng and Cred t 3 hours.

446 Stuart England. Po it ca socia economic, and cu tural deve opments n 17th century Eng and Cred t 3 hours

447 Georgian England. Major soc a economic, pol t cal, and intellectua trends 'n 18th and ear y 19th century Britain. Cred t, 3 hours

449 Modern Britain. Factors contr but ng to Br tain s posit on as the world s eading power in the 19th cen-tury and its deci ne from that posit on n the 20th century. Cred t, 3 hours.

450 British Constitutional History. Historical deve op-ment of the constitutional system of Great Britain from the Midd e Ages to the present, emphasiz ng the growth of democracy Cred t, 3 hours

451 The British Empire. Br t sh imperial sm and colon al sm n Africa the Amer cas Asia and the South Pac fic. Credit 3 hours

456, 457 Iberian Empires. Cu tural economic, pol tical, and soc a development of Spain Portugal, and their emp res F rst semester preh storic Iberia through the Reconquest; second semester, the Age of D scovery through the dissolution of the emp res Credit 3 hours each semester

458, 459 Colonial Latin America. Pol t cal, econom c and social nstitut ons during H spanic ru e in Amer ca. First semester, Iberian and preconquest backgrounds colonial inst tutions of the 16th century second semes ter 17th and 18th century deve opments. Cred t, 3 hours each semester.

460, 461 Spanish South America. Po t ca economic, and soc a deve opment of the Spanish speaking na t ons of South Amer ca since ndependence. F rst semester the 19th century second semester 20th cen tury deve opments. Cred t 3 hours each semester

463 Intellectual and Cultural History of Latin America. Main currents of thought the outstand ng thinkers and their impact on 19th and 20th century Lat n America Cultura and nstitut ona basis of Lat n American l fe. Credit, 3 hours

464 The United States and Latin America. The Latin Amer can struggle for d p omatic recogn t on, attempts at pol t ca union, partic pation n nternational organiza-tions since 1810 and re at ons between the Un ted States and Latin America. Cred t, 3 hours

466, 467 Mexico. Pol t cal, econom c soc a and cu - tural developments. First semester ear iest t mes to 1810, second semester, 1810 to the present Cred t, 3 hours each semester

468 Brazil. Discovery conquest and sett ement by the Portuguese; achievement of independence, rise and fal of the empire problems and growth of the repub ic to the present Credit 3 hours.

470 Chinese Cultural History. Chinese thought and cu ture from Confuc us to the present Credit 3 hours.

471, 472 Diplomatic History of East Asia. Fore gn rela

t ons of Ch na, Japan and Korea. First semester Opium War to 1905; second semester 1905 to the present Credit, 3 hours each semester

473, 474 China. Pol tical, econom c, socia and cu tura h story of the Ch nese people First semester ear y t mes to the 19th century second semester 19th century to the present Cred t 3 hours each semester

475 Modern India. nd a from the Mogul Emp re to the present emphasiz ng the mpact of Br t sh deas on In-d'an l fe and the subsequent growth of nationa ism the deve opment of H ndu Mus m antagon sm and prob-ems after ndependence Credit 3 hours

476 Modern Southeast Asia. mper a sm and revo ut on n 19th and 20th century Southeast As a Credit 3 hours

477, 478 Japan. Pol tical econom c, socia and cu tura h story of the Japanese peop e F rst semester early times to the 19th century, second semester 19th century to the present Cred t, 3 hours each semester

479 The Chinese Communist Movement. Ana ys s of the communist movement n 20th century Chna w th emphas s on ts h stor ca setting Credit 3 hours

480 Methods of Teaching History. Methods n nstruc-tion organizat on and presentat on of the subject mat ter of h story and close y a ed f e ds Cred t 3 hours

481 Quantification in History. Uses of statist ca and quant tat ve techn ques n the study of h stor ca prob-ems n po tical analys s, new economic theory demography, and soc a h story Cred t 3 hours

482 Historical Statistics. Stat st ca routines and com puter programs appl cab e to h stor cal quant f cat on Credit, 3 hours

512 European Historiography. Methods and theor es of wr ters of European h story Cred t 3 hours.

513 American Historiography. Methods and theor es of writers of Un ted States history Cred t 3 hours

514 Latin American Historiography. Methods and theo r es of wr ters of Lat n Amer can history Cred t 3 hours

580 Practicum. Methods and subject matter nst uction n h story The functions and respons b l t es of co lege teaching. Requ red of and open on y to graduate ass s tants. Credit 1 hour.

591 Seminar. May be repeated for cred t Cred t 3 hours. Top cs may be se ected from the fo ow ng areas

(a) United States H story
(b) European H story
(c) Engl sh History
d) Latin Amer can H story
(e) East Asian H story

Special Courses: HIS 294 298, 492 493, 494, 497, 498 499, 500 580, 584 590 591 592, 593, 594 598, 599, 790, 792, 799 (See page 31)

Home Economics

PROFESSORS:
HOOVER (HEC 106), BARKLEY, MONTS, MORGAN

ASSOCIATE PROFESSORS:
BAKER, STANGE STREUFERT

ASSISTANT PROFESSORS:
ARBAUGH, CAMPBELL CARY, CAUBLE, CREIGHTON HUNTER, JEFFERY, MIGUEL, O CONNOR, PETERS, SURBECK W LEY, WOOLDRIDGE

Departmental Major Requirements

The Department of Home Econo ics aw rds the Bachelor of Arts or Bache or of Science degree upon successful completi n of a four ye ar curriculum of 126 semester hours as pre scribed on pages 52-53 under the Col ege of Liberal Arts Courses HEC 330 and 430† re required. Six hours of the home economics courses listed on page 53 and not w thin the major area of specialization may be applied to fulfill the liberal arts Gener al Studies require ments

Bachelor of Arts Degree Curriculum

Home Economics Consists of 45 sen ester hours of credit of which 3 are in home eco nomics and 15 in related fields, 20 semester hours of credit must be in home econom cs upper division The specif c courses will be determined by the student in consultation with the advisor, depending n the area of spec a - zation. (See Degree Requirements, pages 52-53)

Bachelor of Science Degree Curriculum

Home Economics Consists of 50 semester hours of credit of which at least 20 must be in upper division home economics courses The specific courses will be determ ned by the student in consultation with the adv sor, depending on the area of speci liz ation. (See Degree Requirements, pages 52-53)

For either the B.A. or B S degree, students must select one of the following areas of spe cialization

Family Studies Child Deve opment
Human Nutrition Dietetics
General Home Econom cs
Home Economics Education
Home Economics n Business with an option in one of the following Child Develop ment, Decorat ve Arts, Food and Equipment, Textiles and Clothing

When fie d experience s ne uded n the curriculum to complete requ rements for grad uation, students should register for HEC 45 Field Experience, identifying t w th the area of specialization.

American Dietetic Assoc at on requirements consist of 68 hours of approved courses lead ing to an internship See hair of dep rtme t for further information

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree

Home Economics—Consists 1 36 semester hours of credit in home econ m cs Ma or courses required are: TXC 23; FON 141, 142, CDE 232†; PGS 100, SOC 101, CDE 337†, FAS 331†, 357†, HEC 451†, HEE 461†, 480, 481† Select two from HEE 153, DEA 272, 373†. Gener al studies courses re quired: DEA 171, FAS 354, CHM 101 or 113†, a mathematics course, an Amer c an his tory course, and a course in Arizona Constitution and American nat nal govern ment Remaining credits to n eet ma or

requirements are selected in consultation with major advisor.

Center for Family Life Studies

The Center for Family Life Studies is an educational, research and service agency of the University within the College of Liberal Arts and administratively related to the Department of Home Economics The purpose of the Center is to coordinate and develop programs which foster the understanding of family life from an interdisciplinary point of view. Both academic courses and special programs for academic and professional communities, as well as for the general public, are developed and carried out by the Center Policies and programs of the Center are guided by an interdepartmental advisory committee

Departmental Graduate Programs

The Department of Home Economics offers programs leading to the degree of Master of Science Consult the *Graduate Catalog* for requirements.

CHILD DEVELOPMENT

CDE 232 Child Development. Development from conception through later childhood Significance of family membership Recognition of individuality within the universal pattern of human development Guided observations. Prerequisites PGS 100 SOC 101 Credit 3 hours.

337 Nursery School Education I. Discussion and application of methods for guiding young children in activities related to earning experiences Observation and participation in the Child Development Laboratory Prerequisite CDE 232† Two lectures, 3 hours laboratory May include field trips Credit 3 hours

338 Nursery School Education II. Extensive participation in the Child Development Laboratory emphasis on programming implementation and guidance of the child's behavior Prerequisite. CDE 337† or equivalent Application required prior to registration One lecture 3 hours laboratory per credit Credit 4 5 hours May include field trips

430 Family as a Learning Environment. Family interaction which enhances the development and growth of infants or toddlers. Participation with child-parent pairs Prerequisite: CDE 337† or equivalent. Lecture and laboratory Credit, 3 hours May repeat for a total of 6 credits.

434 Organization and Administration of Preschools. Planning, operation and evaluation of programs for young children as related to national regulations, needs of the child, family and community Investigation of exemplary programs Prerequisite. CDE 337† or approval of instructor. May include field trips Credit, 3 hours.

456 Parent-Adolescent Relationships. Dynamics of the relationships between parents and their adolescent children in various segments of the American culture today. Developmental characteristics of adolescence and the corresponding adult stage Prerequisites CDE 232†, FAS 331†. Credit, 3 hours

531 Advanced Child Development. Major developmental theories, related research and their application to family interaction Prerequisite CDE 232†, CED 522 or approval of instructor. Credit 3 hours

532 Behavior of Young Children. Focus on developmental and behavioral problems of early childhood Application of research-based principles to child guidance Prerequisite: 6 semester hours in upper division child development courses or approval of instructor Credit 3 hours

DECORATIVE ARTS

DEH 171 Introduction to Decorative Arts: Basic Design. Elements and principles of art as they relate to design problems in our physical environment May include field trips 2 lectures 2 hours studio Credit 3 hours.

172 Introduction to Decorative Arts: Cultural Influences. Focus on how diverse cultures have expressed themselves through the decorative arts Majors only or approval of instructor May include field trips Credit 3 hours

271 Creative Textiles. Ancient textile techniques and their relationship to today's festyle Creative experiences in a variety of techniques May include field trips One lecture, 4 hours studio Credit 3 hours

272 Housing and Society I. Contemporary American housing. Historical development as it relates to individual a family and community welfare Credit, 3 hours

371 Decorative Textiles. Investigation of the fabrication and esthetic qualities of textiles Cultural and historical expression of design as related to interiors Prerequisite DEH 171 or approval of instructor May include field trips. Credit, 3 hours

373 Home Furnishings. Evaluation of furnishings designed for the home in a functional, economic and esthetic framework. Prerequisite DEH 171 or approval of instructor TXC 322† is recommended May include field trips. Credit, 3 hours.

472 Housing and Society II. Family housing as affected by legislation with application to contemporary housing Credit, 3 hours.

474 History of Interior Furnishings I. The design of furnishings as an expression of culture from antiquity to the 20th century Credit 3 hours

475 History of Interior Furnishings II. Design of furnishings as an expression of culture of the American periods and the 20th Century Prerequisite· DEH 474 or approval of instructor. Credit 3 hours

476 Family Housing Environment. Social and psychological factors affecting family housing Prerequisite SOC 101 or PGS 100 Credit 3 hours

477 Advanced Home Furnishings. Esthetic expression through interior space and its furnishings Prerequisites DEH 373† TXC 322† May include field trips Credit 3 hours.

572 Current Housing Issues. Focuses on selected current housing issues, their relationship to and effect on the family. Credit 3 hours

FAMILY STUDIES

FAS 330 Personal Growth in Human Relationships. Personal development and behavior as related to competency in interpersonal relationships with in the family. Processes of family interaction Prerequisites SOC 101 and PGS 100, or equivalents Credit, 3 hours

331 Family Relationships. Issues challenges and opportunities relating to present day family living. Factors influencing interrelations with in the family Prerequisite course in psychology or sociology. Credit 3 hours

332 Human Sexuality. Relationship of sexuality to family life and to major societal issues. Emphasis on developing healthy positive and responsive ways of integrating sexual and other aspects of human living Prerequisite PGS 100. Credit, 3 hours

354 Consumer Economics. Relationship of the consumer to the economy as a determinant of the family pattern of living Current consumer problems and sources of protection. Credit, 3 hours

357 Management in the Family. Integrated nature of management as a means to realization of individual utilization of resources Focus on decision making Prerequisite· SOC 101 and PGS 100 or equivalent Credit, 3 hours

430 Parent-Child Relationships. Needs of parents and chi dren and the dynamics of parent-chi d nteract on, centering on the years in the family l fe cyc e through the children's elementary school experiences Prerequ s te CDE 232† or FAS 330† or 331†. Credit 3 hours

435 Advanced Family Relationships. Recent research ssues and trends relat ng to fam y nteract on nf u ence of family composition physica env ronment fam ly patterns and values on family dynamics Prereq- u s te· FAS 331†. Credit 3 hours.

436 Conceptual Frameworks in Family Studies. Sign f cant organizing approaches to study of the fami y with particu ar focus on the eco system interact ona and developmental frameworks. Appl cat on to diverse ndi- vidua and fam ly situations. Prerequ s tes: FAS 330† 354 or 454, 357†, and CDE 232† Cred t 2 hours

440 Fundamentals of Counseling. Counsel ng in re a- t on to fam ly interaction; attent on to commun cat on ski s relevant to a var ety of he p ng re at onships. Credit 3 hours

454 Family Financial Management. Major fami y n- come and expenditure alternat ves n attainment of fami y goals Credit 3 hours

535 Family Relationships in the Middle and Later Years. Deve opmenta processes and generat ona re a t onsh ps of the fami y n the midd e and ater stages of the fam ly l fe cyc e Prerequis tes CDE 232† FAS 331† or approval of instructor Credit 3 hours

536 Family Crises and Resources. Spec a problems encountered in the fam y. Ind v dua and community resources for approaching them. Prerequ s tes· FAS 330†, CED 522 or equivalent Credit 3 hours

537 Individual Development in the Family Milieu. The fami y as a framework for human deve opment. Rec p rocal nfluence between ndividual and fam ly development Prerequisites CDE 232† FAS 331† Credit 3 hours

538 Approaches to Marriage and Family Counseling. Methods currently used n marriage and fam ly counse ing and consideration of theoret cal bases underlying the methods Prerequ s te approva of instructor Cred it, 3 hours.

551 Family Decision-Making. Interpretation of dec s on ssues facing fam l es from the perspect ve of time change and development, an eco og ca system ap- proach Prerequ s te FAS 357† or approva of instructor. Cred t, 3 hours

554 Family Economics. Ana ysis of publ c po icy affect ing fam y economic behav or w th respect to d vorce taxation, credit popu at on and other ssues Prerequ site· FAS 354 or ECN 201 or ECN 500† Cred t 3 hours

591 Seminar. May be repeated for credit Credit, 3 hours. Top cs may be selected from the following areas a) Consumer Education· b) Cross-Cultural Management, c) Issues of Scarce Resources, d) Values

FOOD AND NUTRITION

FON 141 Human Nutrition. Bas'c pr nciples of human nutrit on as they relate to health and wel be ng of ndi v duals and fami ies. Emphas s on the nutr ents and factors which affect the r ut l zat on in the human body. Cred t, 3 hours

142 Applied Food Principles. Scient fic princ p es and nutrit on re ated to se ection preparat on and care of food Designed for majors and nonmajors One ecture, 4 hours laboratory. Credit, 3 hours.

341 Food: Management and the Consumer. Factors affect ng the food supp y, consumer protect on, buy ng and management of human and mater al resources Laboratory· P ann ng organ zing, prepar ng and serv ng food management of t me money and energy con sideration of nutrient needs, food qua ty and consumer acceptab lity Prerequis tes. FON 141, 142 HEE 153. Two ectures, 3 hours aboratory Cred t, 3 hours

343 Institutional Food Purchasing. Food purchas ng for nstitut ons, understanding of cost factors, food aws quality standards and basic manufactur ng processes Prerequisite: FON 341†. One lecture 4 hours labora tory. F e d trips may be taken Cred t, 3 hours

344 Institutional Food Services. Organizat on admin s trat on and management of food service n hospita s and institut ons. Prerequ s te FON 343† One ecture, 4 hours laboratory F eld trips may be taken Cred t 3 hours

441 Advanced Human Nutrition. Human nutr t on with an emphasis on metabo sm of nutrients at the ce lu ar leve Prerequisites. FON 141, CHM 361† ZOL 202† Cred t, 3 hours

442 Experimental Foods. Exper mental study of foods nvestigation of current research Prerequ s tes· FON 142 CHM 231†. Two lectures 3 hours aboratory Cred t 3 hours

443 Child Nutrition. Nutritiona needs from prenata deve opment through ado escence food requ rements feed ng practices and nd ces of nutr t onal status. Pre- requ sites· FON 441† CDE 232†, or SOC 101 Cred t, 2 hours

444 Diet Therapy. Methods of adapting modifying and applying normal nutritonal princ ples to abnorma t es of metabol sm Prerequ sites FON 141 CHM 231† or ap proval of instructor Cred t, 3 hours

445 Quantity Food Production. Standard methods of food preparat on in quantity, operat on of institut ona equipment, menu plann ng for nstitut on. Exper'ence n quant ty food servlce. Prerequ sites: FON 141, 344† One lecture 6 hours laboratory May require field tr ps Credit 3 hours.

446 Techniques in Human Nutritional Assessment. Cl n cal and bio-chem cal eva uation of nutritiona sta tus. Prerequisites: FON 441†, CHM 367† CHM 119† and 120† are recommended One ecture, 8 hours abo- ratory Credit, 4 hours.

448 Community Nutrition. Organ zat on w th n the commun ty for de ivery of nutrit ona serv ces Methods for assessment of nutrit ona status of population groups. Prerequ s tes FON 441† SOC 101 Credit 3 hours

449 Geriatric Nutrition. Nutritiona needs pract ces and programs for aging ndiv dua s Prerequis te· FON 141 or approval of nstructor Cred t 2 hours

462 Food and Equipment Industries. Organ zat on econom cs, and market ng as re ated to the food and equipment ndustries Prerequ s tes. HEE 153 FON 142 Cred t, 3 hours

541 Recent Developments in Nutrition. Survey of re search Prerequ s te. FON 441† Cred t, 2 hours.

548 Recent Development in Foods. Deve opments wh ch affect the food supp y Prerequis tes: FON 142 CHM 101 Cred t, 2 hours

HOME ECONOMICS

HEC 230 Family Environment Interaction. Eco og cal study of the fam ly For home econom cs majors on y Credit, 3 hours

430 Contemporary Issues in Home Economics. S gn f cant nationa and internationa ssues and publ c po icies affect ng ndiv dual and fami y wel being. See class schedule for topics offered each semester For majors on y. Prerequisite HEC 230 Cred t 3 hours

451 Field Experience. Superv'sed study in area of stu dent's spec al zation CDE, DEH FAS, FON TXC) in cooperat on w th community business nst tut ons Stu dents must make arrangements with nstructor one semester n advance of enro ment Prerequ s te com p etion of 60 cred t hours and approval of nstructor May be repeated for a total of 3 credits Cred t, 1 3 hours.

500 Research Methods. Log c of epir cal research Re- v ew of research in home econom cs. Research proposal deve oped Cred t 3 hours

HOME ECONOMICS EDUCATION

HEE 153 Analysis of Home Equipment. Equipment for the home. Principles of construction, operation, selection and effective use of equipment. Two lectures, 2 hours laboratory. May include field trips. Credit, 3 hours.

453 Advanced Analysis of Home Equipment. Experimental investigations of portables and major appliances. Focus on current trends. Prerequisite: HEE 153. Two lectures, 2 hours laboratory. May include field trips. Credit, 3 hours.

461 Presentations in Home Economics, I, II, III. I, Application of demonstration principles; II, Multimedia presentations; III, Development of audiovisual materials for home economics. Prerequisite: junior standing required for II or III. One hour lecture, 4 hours laboratory for each module. Credit, 1-3 hours.

480 Methods of Teaching Home Economics. Instruction, organization and presentation of subject matter in home economics. Credit, 2 hours.

481 Teaching Occupational Home Economics. Career orientation related to home economics, cooperative work-related instruction, programs and youth club advisement associated with secondary home economics programs. Open only to home economics majors or minors. May include field trips. Credit, 3 hours.

582 Program Planning and Evaluation in Home Economics. Process of planning and evaluating programs. Open only to home economics majors or minors. Credit, 3 hours.

584 Current Trends of Teaching Home Economics. Focus on teaching home economics related to current issues and problems facing families and society. Open only to home economics majors or minors. Credit, 3 hours.

585 Administration and Supervision of Home Economics Education. Development of individuals for state, city, community and college leadership roles. Credit, 3 hours.

TEXTILES AND CLOTHING

TXC 122 Clothing and Human Behavior. Emphasizes cultural influences, human behavior and design. Credit, 3 hours.

123 Clothing Construction. Construction processes related to fabrics and fashions, study and use of commercial patterns. Course may be waived on successful completion of a placement test given each semester during registration week. One lecture, 4 hours laboratory. Credit, 3 hours.

227 Clothing the Family. Clothing needs of men, women, and children at various stages of the life cycle. May include field trips. Credit, 3 hours.

321 Pattern Designing. Flat patterns used to develop fundamental principles in designing individualized garments. Prerequisites: TXC 122, 123. One lecture, 4 hours laboratory. Credit, 3 hours.

322 Textiles I. Introduction to textile fibers and structures emphasizing performance characteristics, end uses, application and care. Prerequisites: CHM 101, CHM 231† is recommended. Two lectures, 2 hours laboratory. Credit, 3 hours.

323 Textiles II. Legislation and contemporary textile technology affecting today's consumer and marketing personnel. Prerequisite: TXC 322†. May include field trips. Credit, 3 hours.

422 Applied Dress Design. Creative interpretation of dress design developed through the media of draping. Prerequisites: TXC 122, 123. One lecture, 4 hours laboratory. Credit, 3 hours.

423 Clothing Analysis. Specialized processes used with a wide variety of apparel fabrics. Interrelationships between fabric properties and apparel. Prerequisite: TXC 321†. Two lectures, 2 hours laboratory. May include field trips. Credit, 3 hours.

424 History of Costume. Evolution of costume from ancient Egypt to present day. Prerequisites: TXC 122 and ARH 100 or 300. May include field trips. Credit, 3 hours.

426 The Clothing and Textile Industries. Organization and marketing problems and practices specific to the textile and clothing industries. Prerequisites: TXC 122, ECN 201. May include field trips. Credit, 3 hours.

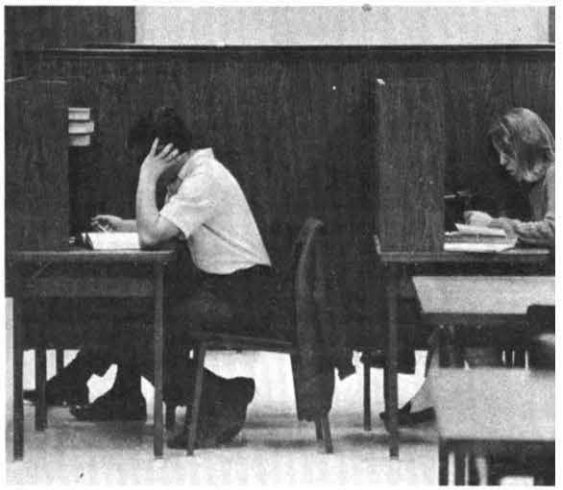
429 Textile Analysis. Introduction to textile testing equipment and evaluation of data. Prerequisite: TXC 323†. Two lectures, 2 hours laboratory. May include field trips. Credit, 3 hours.

521 Experimental Textile Analysis. Current textile research and methods. Individual projects relating to textile performance. Prerequisite: TXC 429†. May include field trip. Credit, 3 hours.

523 Sociopsychological Aspects of Clothing. Sociopsychological theories to the selection and use of clothing. Prerequisites: TXC 122; SOC 101, ECN 201. Credit, 3 hours.

526 Clothing and Textile Economics. International impact of economics and social aspects of production, distribution and utilization of clothing and textiles. Prerequisites: ECN 201, SOC 101, TXC 426. Credit, 3 hours.

Special Courses: CDE, DEH, FAS, FON, HEE, TXC 494, 498, 499, 500, 580, 584, 590, 591, 592, 593, 594, 598, 599.



Liberal Arts

Interdisciplinary (LIA) courses offered by the College of Liberal Arts.

LIA 100 University Adjustment and Survival. Analysis of student motivation and goals. Reinforcement of language facility and study skills. Use of the library. Orientation to University resources and procedures. Credit, 2 hours.

101 The Use of Research Libraries. Interdisciplinary resources and services of the University Library, with an emphasis on research. Open to freshmen and sophomores. Credit, 1 hour.

150 Introduction to Asia. Interdisciplinary orientation to Asian cultures and societies. Also serves as an introduction to further study on Asia, especially in the social sciences and the humanities. This course will be a part of programs in Asian Studies and in the Center for the Humanities. Credit, 3 hours. (Same as HUM 150)

401 The Meaning of the 20th Century. A cross-disciplinary attempt to identify the major intellectual and phenomenological thrusts of the contemporary world. Open to juniors and seniors or by approval of the instructor. Credit, 2-3 hours.

402 Movements and Meaning in Latin America. An interdisciplinary, transnational symposium which will investigate and integrate the various cultural, philosophical, political, and economic trends in Latin America from pre-Columbian times to the present. Team-taught by a rotating panel of Latin Americanists. Open to juniors, seniors, and graduate students. Required of all prospective Latin American Studies graduates. Credit, 4 hours.

Special Courses: LIA 294, 298, 492, 493, 494, 497, 498.

Mass Communications

PROFESSORS:
M LNER (STAUF 231B), BROWN
ASSOCIATE PROFESSORS:
BENNETT, CROWDER, ELLIS
ASSISTANT PROFESSORS:
CRAFT TULE JENNINGS, KEYES, LANCE, MOORE, S LVER

Departmental Major Requirements

Freshmen enrolling in the Department of Mass Communications and students transfer r ng from other departments w thin the University must complete a min mum of 30 semester hours with a n inimum of 2.2 cumu lative grade index before they w be perm tted to enroll in m iss c mn un cat ns courses beyond the 100 level These 30 semes ter hours must include the fo ow ng courses.

	Semester Hours
ENG 101 and 102 or ENG 4	6
POS 100 o POS 300	4
MCO 110	3
Laboratory Science	4
General Studies Electives	13 7
Tota	30

A student who has completed 30 semester hours at another inst tution n ust remove any of the preceding course deficiencies during the f rst two semesters in the department Mass communic ations students must maintain a 2.25 cumulative grade index within their m jor to continue to enroll in courses n the department

To ensure that students get a broad aca demic background in the liber il arts, no more than 33 semester hours of mass communica tions may apply to the 26 semester hours required for graduation. A student must make a "C" or better in all courses in the major in cluding the required related area At least 18 hours of mass communications must be taken at Arizona State Univers ty. All majors must take at least one course in each of the foll ow ing advertising, economics, English (beyond the freshman requirement), history, politic al science and speech.

The journalism sequence in the Dep artment of Mass Communications is accredited by the American Council on Education for Jour al ism

Bachelor of Arts Degree Curriculum

Broadcasting Consists of 45 semester hours of credit of which 30 must be in mass c mmu nications and 15 in closely related fields to be approved by the adv sor in consultation with the student. Required courses are MCO 1 0, 200†, 201†, 332†, 335† and 402. See Degree Requirements, pages 52 53.)

Journalism Consists of 45 semester h ours of credit of which 30 must be in mass communi cations and 15 in c osely related fields to be approved by the advisor in consultation with the student Required courses are MCO 110, 201†, 301†, 313†, 402, 413†, 420†. (See De gree Requirements, p ages 52-53)

Bachelor of Science Degree Curriculum

Broadcasting Consists of 51 semester hours of which 30 must be in m ass com munications and 21 in c osely related fields to be approved by the advisor in consultation with the stu dent. Requ red courses are MCO 110 200†, 201†, 332†, 335†, and 402 In addition to pre viously stated requirements, related field courses must include one course from among MAT 141†, MAT 226†, HIS 481, POS 301, POS 401† or PSY 230†, one course from among POS 410, 411 or 413. Related fie d courses must include 12 hours from one of the following: advertising or graphic arts, English, management, marketing, political sc ence or communication and theatre (See Degree Requirements, pages 52 53.)

Journalism Consists of 51 semester hours of credit of which 30 must be in mass communi cat ons and 21 in closely related fields to be approved by the advisor n consultation with the student. Required courses are MCO 110, 201†, 301†, 313†, 402, 413† nd 420† In ad dition to previously stated requirements related field courses must inc ude one course from among MAT 141†, MAT 226†, HIS 481, POS 301, POS 401† or PSY 230†, one course from among POS 410, 411 or 413 Related field courses must include 12 hours from one of the fo lowing advert sing, economics, English, graphic arts, history or political science (See Degree Requirements, pages 52-53.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Journalism Consists of 45 semester hours of credit. Courses MCO 1 , 201†, 301†, 313†, 351†, 413† and 480† are req ired. An add - tional 23-27 hours, inc ud ng 11 15 hours n mass communications wi be approved by tl e advisor in consultation with the student The remaining courses may be in close y related fields.

Departmental Minor Teaching Field Requirements

Journalism Consists of 24 semester hours of credit. Courses MCO 110, 20 †, 301†, 313†, 351†, 413† and 480† are required The re main ng courses are to be selected in consultation with a journalism advisor

MASS COMMUNICATIONS

MCO 110 Introduction to Communication. Organization, function, and responsibilities of the media and adjunct services. Primary emphasis on newspapers, radio, television and magazines. Credit, 3 hours.

120 Media and Society. Role of newspapers, magazines, radio, television and motion pictures. Not open to mass communications majors. Credit, 3 hours.

200 Fundamentals of Radio-Television. Structure of broadcasting in the United States: history, regulation, organization. Relationship of broadcasting to advertising, research and government agencies. Prerequisite: MCO 110. Credit, 3 hours.

201 News Writing. Writing news for the media. Prerequisites: MCO 110, successful completion of English proficiency requirement, and typing ability of 30 words per minute. One lecture, 4 hours laboratory. Credit, 3 hours.

300 Newsfilm. Film making and film editing techniques emphasizing visual continuity. Prerequisites: MCO 335† and 351† or approval of instructor. Credit, 3 hours.

301 Reporting. Fundamentals of news gathering, interviewing, and in-depth reporting. Prerequisite: MCO 201†. One lecture, 4 hours laboratory. Credit, 3 hours.

313 Editing I. Copyediting and headline writing. Prerequisite: MCO 301†. May be taken concurrently with MCO 301. Two lectures, 2 hours laboratory. Credit, 2 hours.

314 History of Communications. American journalism from its English and colonial origins to the present day. Development and influence of newspapers, magazines, radio, television and news gathering agencies. Credit, 3 hours.

315 Broadcast News. News practices of networks and local broadcasting stations. Practice in broadcast news writing, reporting and editing. Prerequisites: MCO 201†, 335†. One lecture, 4 hours laboratory. Credit, 3 hours.

332 Broadcast Programming. Radio and television programming evaluation, regulation and responsibilities of broadcasters. Prerequisites: MCO 200†, 201†. Credit, 3 hours.

335 Broadcast Equipment Operation. Integrates the use of technical illustration with professional practice in broadcast equipment operation. Prerequisite: MCO 200†. Credit, 2 hours.

336 Television Production. Planning, staging and presentation of television programs. Prerequisite: MCO 335†. Two lectures, 4 hours laboratory. Credit, 4 hours.

340 Magazine Writing. Writing and marketing magazine articles for publication. Prerequisite: MCO 301† or approval of instructor. Credit, 3 hours.

343 Broadcast Announcing. Techniques of radio and television announcing. Prerequisites: MCO 201†, 335†. One lecture, 4 hours laboratory. Credit, 3 hours.

351 Photojournalism. Taking, developing and printing pictures for newspaper and magazine production on a media deadline basis. Students should have their own cameras. Prerequisite: MCO 201† or approval of instructor. Two lectures, 3 hours laboratory. Credit, 3 hours.

401 Public Relations Techniques. Theory and practice of publicity, public relations and related techniques and procedures. Prerequisite: MCO 201† or approval of instructor. Credit, 3 hours.

402 Communications Law. Legal aspects of the rights, privileges and obligations of the press, radio and television. Credit, 3 hours.

412 Editorial Interpretation. The press as an influence on public opinion. The role of the editorial in analyzing and interpreting current events. Prerequisite: MCO 301†. Credit, 2 hours.

413 Editing II. Review of copy editing and headline fundamentals. Newspaper graphics. Prerequisite: MCO 313†. 2 lectures, 2 hours laboratory. Credit, 2 hours.

414 Publications Layout and Design. Advanced work in copy editing. Rewriting and picture editing. Prerequisite: MCO 313†. Two lectures, 2 hours laboratory. Credit, 3 hours.

419 Public Affairs Broadcasting. Theory and practice in planning and producing various types of public affairs programs with particular attention to the television documentary. Prerequisite: MCO 315†. Credit, 3 hours.

420 Reporting Public Affairs. Instruction and assignments in reporting the courts, schools, government, city hall, social problems and other areas involving public issues. Prerequisite: MCO 301†. Credit, 3 hours.

421 News Problems. Trends and problems of the news media, emphasizing editorial decisions in the processing of news. Prerequisite: nine hours of mass communications or approval of instructor. Credit, 3 hours.

430 International Communications. Comparative study of communication and media systems. Information gathering and dissemination under different political and cultural systems. Credit, 3 hours.

431 Broadcast Writing. Principles and techniques of writing for radio and television. Prerequisite: MCO 201†. Credit, 3 hours.

433 Broadcast Station Operation. Program planning, traffic, music, news, continuity, sales and promotion. Operational procedures in the departments of a radio or television station. Prerequisites: MCO 332† and approval of instructor. May be repeated for credit. Credit, 3 hours.

435 Cable Television and Emerging Communications Systems. Structures and utilization of cable television, video cassettes, public broadcasting, instructional and industrial television, and satellite communications. Prerequisites: MCO 332†, 335†. Credit, 3 hours.

437 Television Directing. Directing television programs. Prerequisite: MCO 336†. One lecture, 4 hours laboratory. Credit, 3 hours.

450 Visual Communications. Picture editing for the mass media. Prerequisite: MCO 301†. Credit, 3 hours.

451 Advanced Photojournalism. Imaginative use of the camera in taking difficult photographs of top reproduction quality. Prerequisite: MCO 351†. Two lectures, 3 hours laboratory. Credit, 3 hours.

452 Color Photography. Introduction to photographic principles of color photography. Printing and transparencies for the mass media. Prerequisites: MCO 451† and approval of instructor. Credit, 3 hours.

472 Broadcast Station Management. Organization, procedures and policies of radio-television stations. Financial and creative aspects of station operation. Personnel and production problems, relationship with advertising agencies, networks and sponsors. Prerequisites: ADV 301†, MCO 332†. Credit, 3 hours.

480 Methods of Teaching Journalism. Methods of instruction, organization and presentation of appropriate content in journalism. Prerequisite: six hours of journalism. Credit, 3 hours.

Special Courses: MCO 492, 493, 494, 498, 499, 500, 580, 584, 590, 591 and 592. (See page 31.)

Mathematics

PROFESSORS:
(PS A 216), FELDSTE N, GRACE, JACOBOW TZ, KELLY NERING, SAVAGE SCOTT, SHERMAN, SMITH A WANG

ASSOCIATE PROFESSORS:
ANDERSON, BEDIENT, BUSTOZ DRISCOLL, GOLDSTE N, HASSETT HELTON KUIPER, KURTZ, LEONARD, McDONALD MOORE, N ELSON, SANSONE STEWART, SWIMMER, C. WANG WE SS, YOUNG

ASSISTANT PROFESSORS:
A CKIN, FARMER, FR EDMAN, KATZ, LAKE, LISKOVEC LIVERMORE, McCARTER, OLDEHOEFT, PECK, ROMAN, SHOECRAFT, THOMPSON

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Mathematics Consists of 4 semester hours of which at least 30 must be in mathematics and the remaining hours in closely related fields to be approved by the advisor The required courses in mathematics must include MAT 120†, 121†, 2 2† or 374†, 219†, 300†, 342† and 371† and one 400 level course to be approved by the advisor The department recommends a one year sequence in some closely related field Students who plan to attend graduate school in mathematics should consult their advisor concerning an appropriate curriculum as early as possible (See Degree Requirements, pages 52 53)

Bachelor of Science Degree Curriculum

Mathematics Consists of 55 semester hours of which 40 must be in mathematics and the remaining 15 hours in closely related fields to be approved by the advisor The required 40 hours must include MAT 120†, 21†, 300† and 342† or 442†. (Students who plan to attend graduate school in mathematics should consult their advisor concerning an appropriate curriculum as early as possible) To satisfy the remaining 24 hours the following options are available.

Option 1 General Requires MAT 212† or 374†, 219†, 371† and 372† The remaining hours in mathematics are to be approved by the advisor. These must include 9 hours at the 400 level including a one year sequence The department recommends a one-year sequence in some closely related field

Option 2 Computer Science Requires 243†, 302†, 305† or 306†, 326†, and 464† or 466† The remaining 9 hours in mathematics must consist of three courses selected from at least two of the following groups

Computing Systems MAT 305†, 405†, 406†, 407†, 408†

Numerical Analysis MAT 464†, 465†, 467†

Probability and Statistics MAT 421†, 422†, 423†, 425†, 427†

Theory of Computation MAT 40 †, 403† 415†, 416†

(See Degree Requirements pages 52 53)

Option 3. Applied Mathematics Requires PHY 115-116, MAT 371†, 372†, 374†, 421†, 422†, 461†, 462†, 464† Students are strongly urged to take MAT 451 (Mathematical Modeling) and PHY 117 118 (Physics Laboratory) Students should choose additional courses from among MAT 305†, 415†, 416†, 419† 423†, 425†, 427 , 443†, 463† 465† and 475†

Option 4 Probability Statistics Operations Research Required courses MAT 219†, 371†, 372†, 421† and at least two of MAT 422†, 423†, 425†, 427† The remaining 6 hours in mathematics must be approved by the advisor It is recommended that the hours be chosen from MAT 305†, 422†, 423†, 425†, 427†, 464†, 465†, 466†. A one year sequence in a closely related area is also recommended

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Mathematics *Option 1.* Consists of at least 36 semester hours in mathematics. Required courses are MAT 120†, 121†, 212† (or 342† and 374†), 219†, 300†, 310†, 420†, 443† and 483†. MAT 484† is required as part of the 31 hour professional education requirement, but cannot be counted as part of the 36 hour major requirement

Mathematics—*Option 2* This option may be exercised only in combination with Option 2 in Chemistry (page 68) or Physics (page 107). The mathematics portion of this 60 hour program consists of 30 semester hours of credit in mathematics Required courses are MAT 120†, 121†, 212†, 219†, 310† and 443† A computer science course MAT 300†) is recommended

Departmental Minor Teaching Field Requirements

(Secondary Education)

Mathematics Consists of at least 24 semester hours of credit. Required courses are MAT 120†, 121†, 212†, 219† and 310†

Departmental Graduate Programs

The Department of Mathematics offers programs leading to the degrees of Master of Arts and Doctor of Philosophy Consult the *Graduate Catalog* for requirements

MATHEMATICS

MAT 105 The Creative Art of Mathematics. Designed to acquaint students in the arts humanities and social sciences with the nature of modern mathematics Rec

ommended for students e ect ng a s ngle mathematics course. Cred t, 3 hours

106 Intermediate Algebra. Top cs from basic a gebra such as linear equat ons, po ynom a s, factor ng expo nents roots and radica s. Prerequ s te mastery of one year of high school algebra as demonstrated by appropriate score on P acement Exam nation Cred t 3 hours

107 Basic Computer Programming. For nonmathematics majors. S mple programming language t me shared communicat on with computers, elementary data pro cess ng. (Does not satisfy L beral Arts Genera Stud es Laboratory requirement.) Two lectures, 2 hours abora tory Cred t, 3 hours

115 College Algebra and Trigonometry. A pre ca cu us course on those top cs n a gebra and tr gonometry which are essent a to the study of ana yt c geometry and calculus Not open to students w th cred t n MAT 117 or 118. Prerequis te Three semesters of h gh school algebra or MAT 106† Cred t 4 hours

117 College Algebra. A pre ca cu us course on top cs n algebra and propert es of elementary functions wh ch are essent a to the study of analyt c geometry and cal cu us Not open to students w th cred t n MAT 115 Prerequ s te· three semesters of h gh school algebra or MAT 106† Cred t 3 hours

118 Plane Trigonometry. Concepts of a gebra and geometry measures of angle propert es and graphs of the trigonometric functions fundamenta dent t es, ad d tion and ha f ang e formu as nverse tr gonometr c functions, pr nciples of tr ang e solut on solut on of tr - gonometric equat ons comp ex numbers Not open to students w th cred t n MAT 115 Prerequ s te three semesters of high schoo algebra or MAT 106† Cred t 2 hours

119 Finite Mathematics. Top cs from set theory proba- b ity and l near algebra Applicat ons w be emphasized Prerequ s te MAT 115† or 117† or equ va lent Cred t, 3 hours

120 Calculus I. D fferent al and ntegra ca cu us of e ementary functions. topics from ana yt c geometry essent a to the study of ca cu us. Prerequ s tes MAT 115† or 117† and 118† or equ va ent. Cred t 5 hours

121 Calculus II. Further app icat ons of ca culus part al d fferentiation mu t p e ntegra s and nf nite ser es Prerequisite MAT 120† or equiva ent Credit 5 hours

141 Mathematics for the Social, Life and Management Sciences. Set theory, systems of equat ons matr x a gebra and other topics of interest to students n the socia , ife and management sc ences May be taught w th 3 lectures and 2 recitat ons per week or as a regu- lar lecture meet ng 4 hours per week Prerequ s te MAT 106† or high schoo equ va ent Credit 4 hours

142 Mathematical Analysis. Differentia and ntegral calcu us of elementary funct ons, w th app icat ons Not open to students w th credit in MAT 120 Prerequisite. MAT 115† or 117† or 141† or equ va ent Cred t 3 hours

180, 181 Theory of Arithmetic. Number systems ntui tive geometry, elementary a gebra, and measurement as embod ed in manipu at ve mater a s. Recommended for prospect ve e ementary school teachers Prerequ site for MAT 181: MAT 180 or approva of nstructor Cred t, 3 hours each semester

212 Calculus III. Top cs from ca cu us, near a gebra and inear d fferent al equations Prerequ s te MAT 121† or equivalent Cred t 5 hours

219 Finite Mathematical Structures. Top cs from set theory comb natoria ana ysis probabi ty stat st cs, linear algebra inear programming, graph theory and stochast c processes Prerequis te MAT 117† or equ v a ent Credit 3 hours

226 Elements of Statistics. Bas c concepts and meth ods of statist cs, inc ud ng descript ve stat st cs s gn f cance tests, estimat on, samp ng and corre ation Not open to majors in mathemat cs or the phys ca sc ences Prerequisite. three semesters of h gh schoo a gebra or MAT 106†. Cred t 3 hours

243 Discrete Mathematical Structures. ntroduct on to latt ces graphs Boolean algebras and groups with emphas s on top cs re evant to computer science Pre- requ s te sophomore stand ng or approval of nstructor Cred t 3 hours.

260 Calculus for Applied Sciences I. Analyt c geome- try d fferentia and integra calculus of se ected elementary funct ons emphasiz ng phys ca interpreta t on and problem solv ng Not open to students with credit in MAT 120. Prerequ s tes MAT 115† or 117† and 118† Cred t, 3 hours

261 Calculus for Applied Sciences II. Different a and integra ca culus of add tiona e ementary funct ons emphasiz ng phys ca interpretation and prob em so v ing. Not open to students w th cred t n MAT 120 Prerequ s te: MAT 260† or approval of nstructor. Cred- it, 3 hours

300 Introduction to Computer Science. Structured programm ng concepts prob em solving methodo o- g es, wide y used algor thms and data structures. Requ red for subsequent computer science study Pre requ s te MAT 115† or equ va ent Credit 3 hours

302 Abstract Computing Machines. Representat ons of fin te state mach nes Equ va ence and reduction Hom- ng and distinguishing exper ments Mach ne identification. Mach ne decomposit ons Memory and information loss. Prerequ s te: MAT 243† Credit 3 hours

305 Languages and Data Structures I. Forma def ni- tions of representative languages; data structures such as arrays, queues, trees, storage a ocat on schemes, nformation bind ng, run time environments. Prerequi site. MAT 300† or equivalent Cred t 3 hours

306 Concepts of Assembly Languages. Informat on representat ons computer organ zation assembly an guage programming w th emphas s on generic fac ities techn ques and data structures, superv sory system fac l t es Prerequisite· MAT 300† or equ valent Credit, 3 hours

310 Introduction to Geometry. Congruence area, par allel sm, similar ty and vo ume, Euclidean and non- Eucl dean geometry. Prerequ s te MAT 121†. Cred t, 3 hours.

326, 327 Intermediate Statistics. E ementary probab l ty theory probab l ty functions d stribut on funct ons, point est mat on, hypothes s test ng stat stical tests appl cat ons. Prerequ s te for MAT 326· MAT 120† or 142† or 260† or equiva ent prerequ s te for MAT 327· MAT 326† Credit 3 hours each semester

342 Introduction to Linear Algebra. L near equat ons and matr ces vector spaces and near transformations e genva ues and eigenvectors Emphas zes man pu at ve ski ls Prerequisite. MAT 120† or 142† or 260† or ap proval of nstructor Cred t 3 hours

362 Advanced Mathematics for Engineers and Scientists I. Complex numbers determ nants matr ces part al different ation mu t ple ntegra s vector ana ys s and Four er series Prerequ s te· MAT 212† or approva of instructor. Credit 3 hours

363 Advanced Mathematics for Engineers and Scientists II. Special functions comp ex var ab es, integra transforms, partial different a equat ons and probab l ty Prerequ site: MAT 362† or approval of nstructor Cred t, 3 hours.

371 Advanced Calculus I. Cont nu ty Tay or s theorem, part a d fferentiat on, mpl cit-function theorem vec tors linear transformat ons and norms n R mu t p e integrals power ser es. Prerequ s te MAT 121† Cred t, 3 hours.

372 Advanced Calculus II. Maps from R to R ne and surface integrals, divergence and Stokes theo- rems, R topo ogy series un form covergence improper ntegrals (Not open to students w th cred t in MAT 460). Prerequ site MAT 371† Cred t 3 hours

374 Introduction to Ordinary Differential Equations. First order equations, inear equations constant coeffi- cient equations, regular singular points, Besse s

equat on, linear systems, ex stence, and un queness theorems. Prerequ s te MAT 121† Credit 3 hours

380 Arithmetic in the Elementary School. H stor ca numeration systems, overv ew of e ementary number theory nclud ng pr mes factorizat on divis b ty, bases modular systems, l near congruence and cont nued fractions. Prerequ s te MAT 181† or approva of n structor Cred t, 3 hours.

381 Geometry in the Elementary School. nformal geometry nc uding concepts of length area, vo ume, simi ar ty and congruence. C ass ficat on of figures, stra ghtedge and compass constructions mot on geom etry Prerequ s te MAT 380† or approva of instructor Cred t, 3 hours

401 Theory of Formal Languages. Theory of grammar methods of syntact c analys s and spec ficat on, types of artif cia languages re at onship between forma an- guages and automata Prerequ s te: MAT 243† or 342† Cred t 3 hours.

403 Analysis of Algorithms. Des gn and ana ys s of computer algorithms us ng analyt cal and emp r ca methods. Formal mode s of computation, comp exity measures, design methodo ogies, recent deve opments. Prerequ sites MAT 243† 300† and 326† or equiva lent. Credit, 3 hours.

405 Languages and Data Structures II. F le organ za- t on and management Re evant data structures and languages, access methods, storage dev ces wide y used algorithms Prerequ s tes· MAT 305† and 306† or equ va ent. Credit 3 hours

406 Modern Computer Architecture. D gita computer ntegrat on and resu t ng software cons derations d g ta arithmetic, storage dev ces and access techn ques ntercomponent commun cat on microprogramm ng representat ve machine architectures Prerequ s te MAT 306† or equ va ent. Cred t 3 hours

407 Elementary Concepts of Operating Systems. De sign and mp ementation of supervisory system components. Input output methods process manage ment mult programming systems storage manage ment, f le systems, software deve opment Prerequ s te· MAT 406† or equivalent Credit 3 hours

408 Compiler Construction. introduct on to program m ng language imp ementation. Imp ementat on strategies. compi at on interpretat on, trans ation Ma jor comp lat on phases. lexica analys s, semantic analysis, opt m zat on code generation Prerequ s tes MAT 305† and 306†, or equivalent. Cred t, 3 hours

410 Introductory Topology. Topology of the rea num bers, equivalence of sets, transf nite nduction Designed to deve op the student's critica faculties and creat ve ab lities n mathemat cs. Prerequ s te. MAT 121†. Credit, 3 hours.

412 Projective Geometry. Projective geometry and its relationship to Euc idean and other geometr es Prereq uis'te: MAT 342† or 442† MAT 310† is recommended. Cred t, 3 hours

413 Differential Geometry. The c ass ca and modern theor es of curves, surfaces and d fferential man fo ds with an ntroduct on to the ca cul of d fferent a forms and tensors. Prerequisite. MAT 371† Cred t, 3 hours.

415 Combinatorial Mathematics I. Permutat ons and combinat ons recurrence re at ons, generat ng func- tions graph theory and comb nator a proof techn ques Prerequisites· MAT 121† and 342† Credit 3 hours

416 Combinatorial Mathematics II. Continuat on of MAT 415 consider ng some advanced aspects of the theory as wel as app ications Top cs to be chosen transport networks matching theory b ock designs coding theory, Po ya s count ng theory, and app cat ons to the phys cal and ife sc ences Prerequis te MAT 415† or approval of nstructor MAT 443† s recom mended. Credit, 3 hours

419 Linear Programming. Linear programm ng and the s mplex algorithm, network problems quadratic and nonlinear programming Prerequis te· MAT 120† or 142† Cred t, 3 hours

420 Introductory Applied Statistics. Introductory prob ab l ty, descr ptive stat st cs, samp ing distr but ons parameter est mation tests of hypotheses ch square tests, regress'on ana ys s analys s of var ance nonpar- ametric tests. Prerequ s te. MAT 115† or 117† or 141† or equ va ent Cred t, 3 hours

421 Probability. Laws of probabi ty, comb nator a anal- ys s, random var ab es probabi ty distr but ons, expectat on, moment generat ng funct on, transforma tions of random variables, centra l m t theorem Prerequisite: MAT 371† or equ va ent Credit 3 hours

422 Deterministic Operations Research. Determin stic nventory theory, l near programming, transportation and networks, determ nistic dynamic programming sequenc ng and scheduling, basic non near program- m ng search problems Prerequ s tes. MAT 121† and 342† Credit, 3 hours.

423 Stochastic Operations Research. Probab st c n ventory theory, basic queue ng theory dec s on theory probabi istic dynam c programm ng dec s on prob ems on (semi) Markov cha ns, bas c stochast c program m ng. Prerequis te· MAT 421† Credit, 3 hours

425 Stochastic Processes. Markov cha ns stationary d str but ons, pure jump processes, second order pro- cesses and other top cs n stochastic processes Prerequisites. MAT 421†, and 342† or 442†. Cred t, 3 hours.

427 Mathematical Statistics. Lim ting d stribut ons, n- terva est mation po nt est mat on suff cient statist cs tests of hypotheses Prerequis te MAT 421† Cred t 3 hours.

430 Mathematical Logic. Propos t ona ca cu us, f rst order theories, f rst order pred cate ca cu us, cons s tency and comp eteness Gode s theorems Prerequ s te. MAT 302† or 342† or approva of nstruc tor Credit, 3 hours

432 Theory of Sets. Equiva ence re at ons and part tions, sim larity mapp ngs ord na numbers, card na numbers we l-order ng theorem equ va ents of the ax- om of choice axiomat c set theory Prerequisite. MAT 342† or approval of instructor Cred t 3 hours

442 Advanced Linear Algebra Deeper and more ab stract study of the topics n MAT 342 nvariant subspaces canonical forms and matr ces inear pro gramm ng, dua spaces b near and quadrat c forms and multi near algebra. Prerequ s te MAT 342† or equ valent Cred t, 3 hours

443 Abstract Algebra I. ntroduct on to the most mpor tant a gebra c structures nclud ng groups r ngs integral doma ns, and f elds Prerequ s te· MAT 342† or approva of instructor. Credit 3 hours

444 Abstract Algebra II. Cont nuation of MAT 443 Unique factorization doma ns modu es and f e ds to gether w th appl cations of abstract a gebra to var ous branches of mathematics. Prerequis te MAT 443† Cred t, 3 hours

445 Theory of Numbers. Pr me numbers un que facto rizat on theorem, congruences D ophant ne equat ons, pr m t ve roots quadratic rec procity theorem Prerequ - site. MAT 342† or 442† Cred t, 3 hours

451 Mathematical Modeling. An n depth study of one or more mathematica mode s wh ch occur in the phys - cal or b ologica sc ences, May be repeated for cred t w th approva of nstructor Prerequ sites. MAT 212† or 342† and 374† or approva of nstructor. Cred t 3 hours

460 Applied Real Analysis. Ve tors, curv near coord nates, Jacob ans, mpl c t funct on theorem, ne and surface integra s, Green s Stokes and divergence theorems. (Not open to students w th cred t n MAT 372 . Prerequ s te MAT 212† or 342† Cred t, 3 hours

461 Applied Complex Analysis. Analyt c funct ons, complex integrat on, Taylor and Laurent ser es res due theorem, conformal mapping, and harmonic funct ons Prerequisite. MAT 121† Cred t 3 hours.

462 Partial Differential Equations. Second order partial

d fferent a equat ons emphas zing Lap ace wave and d ffus on equat ons, so utions by the methods of charac ter st cs, separat on of variab es and ntegra transforms Prerequis te MAT 212† or 374† Cred t, 3 hours

463 Transform Theory and Operational Methods. Four er, Lap ace, and other transforms app cat ons to boundary value prob ems genera ized functi ns and modern operational mathemat cs Prerequ s te ap proval of nstructor Credit 3 hours

464 Numerical Analysis I. Theory and methods for. numer ca so ut on on of a gebra c and transcendenta equat ons, terative methods approximat on; quadra- ture, so ut on of d fferent a equat ons Those seeking a methods survey course shou d take MAT 466 Prerequi- s tes MAT 300† or equ va ent and 342† and 371†, or approval of nstructor Cred t 3 hours

465 Numerical Analysis II. Cont nuat on of MAT 464 Prerequisite MAT 464† Credit 3 hours

466 Applied Computational Methods. Numer ca meth ods for quadrature, differentia equat ons, roots of non inear equations nterpo ation, approx mation inear equat ons, f oating-point ar thmet c, roundoff error Pre- requ sites. MAT 121† 300†, or equ valent Cred t 3 hours.

467 Computer Arithmetic. Number systems hardware/software ar thmet c overf ow sign f cance round ng mu tiple prec s on automat c error contro · mpact on anguages, arch tectures robust programm- ming software deve opment. Prerequ sites MAT 300† or equivalent, and 466† or approval of nstructor Cred- t, 3 hours.

472 Intermediate Real Analysis. ntroduct on to the Lebesgue ntegra , metr c spaces normed spaces, fixed po nt theorems, orthogona bases, Four er ser es Pre requ s tes. MAT 342† or 442† and 372† or approva of nstructor. Cred t, 3 hours

475 Differential Equations. Asymptot c behav or of so- utions of linear and non inear ord nary d fferentia equat ons, stabi ty Sturm-L ouv e prob ems boundary value prob ems s ngu ar point behav or of autonomous systems Prerequ s te. MAT 374† or equ va ent Cred t 3 hours.

480 Mathematics in the Upper-Elementary Grades. An ntroduction to probab ity and statist cs nc ud ng open- ended data gather ng and process ng counting tech n ques samp ing strategies, est mation, and dec sion making Prerequ s te MAT 381† or approva of nstruc tor Cred t 3 hours

481 Mathematics in the Upper-Elementary Grades. E ementary functions and their app cat ons A thorough nvest gation of some of the a gor thms of bas c ar th- met c. Prerequis te: MAT 480† or approva of nstructor Cred t, 3 hours

483 Mathematics in the Secondary School. Top cs n geometry, number theory a gebra and ana ys s Em phasis on un fy ng pr nciples. Prerequis te MAT 310† or 412† or approval of nstructor Credit 3 hours

484 Mathematics in the Secondary School. Exam na t on of secondary schoo curr cular mater al, analys s of nstruct ona dev ces Teach ng strateg es eva uat ve techniques d agnosis and remediat on, and problem solving Prerequ s te. approval of instructor Credit 3 hours

485 History of Mathematics. Top cs from the h story f the orig n and development of mathemat ca deas Pre requisite MAT 212† Credit 3 hours

501 Programming for Graduate Research. ntroductory course for graduate research comput ng. Subrout ne and program l braries for mathematica and stat st ca problems, batch and t meshar ng env ronments, data f les, programm ng for specia dev ces such as d g ta plotters off ine equipment Two lectures, 2 hours abo ratory Cred t, 3 hours

504 Computer Performance Evaluation. Top cs p computer system measurement and eva uat on hardware/software monitors work oad character zation program behav or adaptive schedu ing, s mulat on models measurement nterpretat on Prerequ s te MAT 407† or equ valent Cred t 3 hours

507 Operating System Theory. Formal methods app ed to. contro of concurrent processes determin stic and probab list c schedu ng aux ary storage paged storage a ocat on mu t programmed memory manage ment Prerequis tes MAT 326† and 407†, or equ va ent Credit, 3 hours.

508 Advanced Compiler Construction. Forma pars ng strategies, opt m zat on techn ques se f-comp ng com- p ers comp er writing systems extens b ty and transportabi ty cons derations recent deve opments Prerequisite: MAT 408† or equiva ent Cred t, 3 hours.

509 Topics in Computer Science. Prerequ s te ap prova of nstructor May be repeated for cred t w th approva of instructor Cred t, 3 hours each semester for each spec f c top c

510, 511 Point Set Topology. Topo og ca spaces metric spaces, compactness connectedness oca propert es product and decomposit on spaces map p ngs cover ng properties, separat on propert es Prerequ s te. MAT 371† or 410† or approva of nstruc tor. Cred t 3 hours each semester

513 Algebraic Topology. Homotopy theory s mpl cial and s ngu ar homo ogy, cohomo ogy Prerequ s tes MAT 443† and 510† or approval of nstructor May be repeated for credit with approva of nstructor Cred t 3 hours for each spec f c top c

524, 525 Advanced Probability. Measure theoret c foundat ons of probabi ty d str bution funct ons and character stic funct ons law of large numbers and cen tral mit theorems conditiona probab t es mart ngales, and topics n stochast c processes Prereq- u s tes: MAT 421† and 571†, or approva of nstructor Cred t 3 hours each semester

526, 527 Theory of Statistics. L m t g d str but ons mult variate ana ys s correlation and regression, quadrat c forms in normal var ab es est mat on, stat st ca hypotheses ana ys s of var ance and covar ance sequential ana ysis nonparametr c nference, dec s on theory Prerequisites. MAT 427† and a know edge of the a gebra of matr ces or approva of instructor May be repeated for credit w th approva of instructor Cred t 3 hours each semester for each spec fic topic.

528 Topics in Stochastic Processes. Prerequ s te ap- proval of instructor. May be repeated for credit w th approval of instructor. Cred t 3 hours for each spec f c top c

529 Topics in Statistics. Prerequ s te approva of n- structor May be repeated for cred t w th approval of nstructor. Cred t 3 hours for each spec f c top c

543, 544 Abstract Algebra. Groups modules r ngs and fields, Ga o s theory homo og ca a gebra, representa tion theory. Prerequisite· MAT 444† or approva of instructor Credit, 3 hours each semester

546 Algebraic Geometry. Prerequ s te MAT 443† or equiva ent Cred t 3 hours

547, 548 Group Theory. Groups w th operators compo sition series, so vable groups abe ian groups Sylow's theorems, near groups Prerequ s te approva of n- structor Cred t, 3 hours each semester

549 Topics in Algebra. Prerequ s te approva of in- structor May be repeated for cred t w th approva of instructor Cred t 3 hours for each specif c top c

550, 551 Methods of Mathematical Physics. Matrices orthogonal funct ons, integral equat ons ca culus of var ations, e genvalue prob ems, perturbat on methods boundary value prob ems Prerequ s tes MAT 342† and 372† or 461†, or approva of nstructor May be repeated for cred t w th approva of instructor Cred t 3 hours each semester for each spec fic top c

552, 553 Tensor Analysis. A gebra and ca culus of ten- sors and differential forms app ication ons to geometry and various branches of app ed mathemat cs. Prerequ - s tes. MAT 342† and 371† or 460† or approva of nstructor Cred t, 3 hours each semester.

584, 585 Advanced Numerical Analysis. F nite differ ence equat ons orthogonal polynom als quadrature approx mat on and ntegrat on theory, numer ca so u t on of differential equat ons nume ca l ear a gebra Prerequ s te MAT 464† or approva of nstructor May be repeated for cred t with approva of nstructor Cred- t 3 hours for each semester for each spec f c top c

589 Topics in Analysis. Prerequ s te approva of structor May be repeated for cred t w th approva of instructor Cred t 3 hours for each specif c top c

570, 571 Real Analysis. Lebesgue teg at on se ected funct on spaces, different at on, abstract measure theo ry e ements of funct ona ana ys s Prerequ s te MAT 372† or approva of nstructor Cred t 3 hours each semester

572, 573 Complex Analysis. Ana yt c funct ons se es and product representat ons entire and meromorph c funct ons norma fam i es, R emann mapp ng theorem harmonic funct ons, Riemann surfaces Prerequ s te MAT 371† or approval of nstructor Cred t 3 hours each semester

574, 575 Theory of Ordinary Differential Equations. Systems ex stence proofs s ngu ar t es asymptot c behav or of so ut ons boundedness of so ut on e gen va ues and eigenfunctions perturbat on theory Prerequisite MAT 372† r approval of nstru tor Cred it, 3 hours each semester

576, 577 Theory of Partial Differential Equations. Exis tence and un queness theorems boundary va e and in t al value problems character st cs Green s func t ons maximum pr nciple d str but ons and weak so ut ons Prerequ s te know edge f Lebesgue tegra- t on or approval of nstructor Cred t, 3 hours each semester

578, 579 Functional Analysis. Loca y convex normed and H lbert spaces L near operat rs spectral the ry and appl cat on to classica ana ysis Prerequ s te MAT 472† or 571† or approval of nstructor Cred t 3 hours each semester.

582 Modern Mathematics for Teachers. Theory of sets rea number system , transf n te number and other se- ected top cs Prerequ s te approva of n tructor Cred t 3 hours

583 Abstract Algebra for Teachers. Postu at ona ap proach to a gebra e ementa y mathemat ca systems nc uding groups and f e ds Prerequ s te approva of nstructor Cred t, 3 hours

584 Teaching College Mathematics. Methods and earn ng d fficu t es n the teach ng of nstruct ona ower div s on co ege mathemat cs courses Prerequ s te· approva of nstructor. Cred t 3 hours

585 Modern Geometry for Teachers. Euc dean projec t ve and non-Eucl dean geometr es Prerequ s te approva of nstructor. Credit, 3 hours

587, 588 Analysis for Teachers. Sub ect matter n mathematics appropr ate for acce erated prog ams in secondary schoo s, nc ud ng ana ytic geometry and ca cu us Prerequ s te. approval of structor Cred t 3 hours each semester.

591 Seminar. Credit 2-3 hours Top c may be se ected from the fo low ng

(a) Analys s
(b Appl ed Mathemat cs
(c Probabi ty
(d) Topology
(e) Algebra
(f) Mathemat ca Statist cs
(g Mathemat ca Log c
(h) Numer ca Analys s
(i Computer Sc ence
(j) Mathemat cs Educat on
(k) Comb nator al Mathemat cs
(l) Operat ons Research

Special Courses. MAT 294 298 492 493 494 498, 499, 590, 592 594 598, 599 792 799 (See page 31

Military Science

(Army ROTC)

PROFESSOR:
GUFFEY (MAIN 240)
ASSISTANT PROFESSORS:
LACY HIGBE, PERREAULT JOHNSON

Purpose. The Department of Military Science curriculum consists of the Basic Course (MIS 101, 102, 201 and 202) and the Advanced Course MIS 301, 302, 401 and 402 The goal of this profession al education is to prepare selected students with leadership po tential to be commissioned Army officers within the national defense structure of the United States. Specific objectives include p viding students an understanding of the nature and operations of the U S Army, developing the leadership and managerial poten tial of the students, developing students' ab ti es to think creatively, to speak and write effectively; and to provide the student with an appreciation of the requirements for national secur ty Upon graduating from the University, each student who has successfully completed the Advanced Course will receive a commission in the United States Army Reserve

Appointments as Second Lieutenants in the Regular Army are available to outstanding students who desire a career in the military service.

General Qualifications. Male or female students entering Army ROTC must be a citizen of the United States (non citizens may enroll but must obtain citizenship prior to commissioning), (2) be of sound physical con dition, (3) be at least 17 years of age for entrance into the Advanced Course and be able to complete all commissioning require- ments prior to age 28 Students with prior active military service or previous high school ROTC may be given credit for or apply the Basic Course

Qualifications for Admittance to the Advanced Course. (1) Successful com pletion of the Basic Course for the student in the four year ROTC program For the student in the two year program, selection for is successful completion of the six week basic summer camp. (2) Passing of the ROTC Qualifying Examination (3) Passing the Army physical examination 4) Attainment of a minimum cumulative grade point average of 2 "C") for the first two years of college work and maintenance of that minimum during the period while enrolled in the Advanced Course

Four-Year Program. Students normally enroll in Army ROTC during their freshman

year. They take the Basic Course during the first two years, receiving a total of 8 semester hours credit for the four semesters of study. Upon satisfying the requirements stated above, they enter the Advanced Course where they will earn 10 semester hours of credit for the four semesters of study. In addition, students will attend a six week advanced summer camp at an Army post between their junior and senior years. Upon successful completion of the Advanced Course and requirements for a degree, they are commissioned as Second Lieutenants in the United States Army Reserve.

Two-Year Program. Students must have two academic years of college work remaining, either at the undergraduate or graduate level or a combination of the two. This program is designed primarily for the junior college transfer or for the student transferring from a college or university where the four year Army ROTC program was not available. Students seeking enrollment in the two year program should make application during the spring semester of the year in which they desire to enter the program. They must pass the ROTC Qualifying Examination, the Army physical examination, and must be selected by an interview board of Army officers. After successfully completing a six week basic summer camp at an Army post (normally conducted during June and July), students may enroll in the Advanced Course. They then follow the same program and meet the same requirements as stated for Advanced Course students in the four year program.

Pay and Allowances. Advanced Course students in their junior and senior year receive $100 per month for the 20 months of enrollment in the Advanced Course. The student also receives one-half the pay of a second lieutenant during his attendance at the six week advanced camp. Uniforms, housing and meals are provided at camp without cost to the students and they are reimbursed at the current mileage rate for travel to and from the camp. Students who enter the two-year program will receive the pay of an Army recruit during attendance at the basic summer camp as well as the current mileage rate for travel to and from the camp.

Scholarship Programs. The Army ROTC offers scholarship programs for outstanding young men and women who are motivated toward a career as professional officers in the Regular Army. These scholarships pay for all fees, tuition and books, and provide $100 per month subsistence allowance while the scholarship is in effect. A scholarship for four years is available to freshmen who will enter the four-year program. Applications must be submitted in accordance with a schedule furnished high school counselors. Selection is made on a nation wide basis. Scholarships are available for three-, two-, and one-year periods commencing with the sophomore, junior and senior year of ROTC, respectively. Applications are open to cadets in good standing in the program and selection is made by an interview board composed of University faculty members and Army officers in the ROTC detachment. Acceptance of any of the four scholarship programs requires a service commitment to serve in the active Army for a period of four years after commissioning.

Active Duty Requirements. Graduates of Army ROTC may spend from three months to three years of active duty depending on U.S. Army Reserve options. Scholarship students, students who receive flight training, and those students who desire an Army career and receive a Regular Army commission have additional amounts of time added to their basic three year commitment. A delay from call to active duty for up to four years is available to outstanding students who desire to earn a graduate degree.

Graduate and Professional Studies Programs. Special programs for graduate and professional studies are available to both Regular Army appointees and U.S. Army Reserve appointees in the following areas: medicine, dentistry, veterinary medicine, osteopathy, religious studies, legal studies, pharmacy or specialized fields of medicine.

MILITARY SCIENCE

MIS 101 Basic Military Science. Organization and mission of the Army, the military and American society, introduction to military leadership theory: situational/contingency approach to basic problems in small unit leadership. One lecture, 1 hour Leadership Practica. Application. 101L. Credit, 2 hours.

102 Basic Military Science. Learning theories and principles of instruction, development of instructor knowledge, skills and attitudes, instructional aids, student presentations. One lecture, 1 hour Leadership Practical Application. 102L. Credit, 2 hours.

201 Basic Military Science. Evolution of warfare and theories of conflict, organization and roles of the U.S. Department of Defense, national security, interdisciplinary approach to leadership and management, resource management, small unit operations, effective techniques for decision-making, student presentations. One lecture, 1 hour Leadership Practical Application (201L. Credit, 2 hours.

202 Basic Military Science. Military geography, use of maps and aerial photographs; fundamentals of small unit operations; functions and responsibilities of unified military leaders; command and control systems. One lecture, 1 hour Leadership Practica. Application (202L). Credit, 2 hours.

301 Advanced Military Science. Theory, organization and dynamics of military forces in combat operations, small unit offensive and defensive tactics. Prerequisites: MS 201† and 202†, or equivalent. Three lectures, conferences, 1 hour Leadership Practica. Application. Credit, 3 hours.

302 Advanced Military Science. Roles of the branches of the Army, organization of the special and general staff; preparation for applied leadership, command and staff relationships. Prerequisites. MS 201† and 202†, or equivalent. Three lectures, conferences, 1 hour Leadership Practical Application, 3 day field training exercise. Credit, 3 hours.

401 Advanced Military Science. The mi itary ega sys tem; evo ut on of the U S Army se ected campaigns and leaders through the Span sh American war oppos ing strateg es object ves, attitudes re at onsh ps to changing soc al, economic, po t cal and m tary nst tu- t ons Prerequ sites. M S 301† and 302† Two ectures conferences 1 hour Leadersh p Practica Appl cation, 3 day f e d train ng exercise Cred t 2 hours

402 Advanced Military Science. Se ected campa gns and leaders from 1917 to the present, U S pos t on n the contemporary wor d and ts mpact on m l tary command and management career p ann ng and per sonal affairs. Prerequisites M S 301† and 302† Two ectures 1 hour Leadersh p Pract ca App cat on 3 day f e d tra n ng exerc se Credit 2 hours

Philosophy

PROFESSORS:
ARNER CARNEY

ASSOCIATE PROFESSORS:
HUMPHREY PS A 521) G ESCHEN
GULESER AN

ASSISTANT PROFESSORS:
CREATH FITCH HOWELLS, VOT CHENKO,
WH TE

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Philosophy The ma or n philosophy co ns sts of 45 semester hours of credit Th rty ho rs must be in philosophy, ne udi g 24 uppe di vision hours, and 15 hours or r ore n re ated fields to be determ ned by the student in c n sultation with his adv s or Required courses are PHI 3)1 302, 30 , 313, 31 or 314 ar d 316 or 317 Students pl nning t go n t graduate work n ph l sophy sh uld c nsult adv sor n order to select ppr pri te 4( ) level courses A minimu n 2 0 grade a er ge is ec essary for ll courses u f lling the r requirements (See Degree Requir ments pages 52 53.)

Departmental Graduate Programs

The Department of Philosophy offers pro grams leading to the degree of M ster of Arts that will prepare one for either te ch ng n a community college or pursu ng a Ph D n ph losophy Consult the *Graduate Catalog* for requirements

PHILOSOPHY

PHI 101 Introduction to Philosophy. Exp orat on of some bas c ph losoph ca prob ems concern ng man h s va ues and the nature of u t mate rea ty Not open to students who have taken PHI 300 Cred t 3 hours

103 Principles of Sound Reasoning. Fa ac es trad t onal ogic of the sy og sm, e ementary parts of symbo c logic, nduct ve og c and other related top cs Credit 3 hours

111 Introduction to Ethics. Ob gat on goodness jus- t ce, mora ity and the r re at ons to ut ity mora reason ng pun shment, and soc a structure Credit 3 hours

113 Introduction to Mathematical Logic. Symbol c techn ques emphas z ng dedu t ons and proofs in the propos t ona and f rst and second order pred cate ca cu E ther ax omatic or natura deduction systems may be used Cred t, 3 hours.

300 Existence, Knowledge and Value. A cr t ca ph lo soph ca examinat on of man and soc ety God the foundat ons of knowledge and the nature of mora ty Not open to students who have taken PH 101 Credit, 3 hours

301 History of Ancient and Medieval Philosophy. His- tory of western ph osophy from ts beg nn ngs to the Rena ssance Cred t 3 hours

302 History of Modern Philosophy. H story of western phi osophy from the Rena ssance through Kant Cred t 3 hours

303 Contemporary Analytic Philosophy. A ms a d methods of such 20th century ph osophers as Frege Moore, Russe W ttgenste n Carnap Ayer W sdom Ry e Aust n Strawson, Qu ne and Se ars w th app ca tion to metaphysics and ep stemo ogy Credit 3 hours

304 Existentialism and Phenomenology. An ntroduc- tion to th s movement through a study of ts major f gures e.g. K erkegaard, Dostoevsky, N etzs he Hus ser He degger Buber Sartre Camus Mer eau Ponty B nswanger May, Frankl and R c uer Cred t 3 hours

305 Ethics. nvestigat on of mora conduct focus ng on such concepts as goodness rightness duty and jus t ce, exam nat on of theor es such as deonto og sm uti tar an sm formalism, re at vism and ego sm n wh ch these concepts occur Credit 3 hours.

306 Applied Ethics. Ph osophical techn ques are used to eluc date such v ta moral ssues as sexua perver s on, c vi d sobed ence, abortion, pun shment vio ence and pacif sm suic de, and euthanas a Cred t 3 hours

307 Philosophy of Law. The nature and source of aw and its relation to morality. Lega rights lega enforce ment of mora s civ l d sobed ence, ab ity and responsib ty pun shment jud c a reason ng just ce property d fferences between theor es of natura and pos tive aw Cred t, 3 hours.

308 Philosophy of Art. Centra prob ems n ph losophy of art *e g.*, the nature of a work of art, modern and tra ditiona theories of art esthet c percept on and experience, object v ty and re at vity n art cr tic sm Credit 3 hours

309 Social and Political Philosophy. A ternat ve pr nc p es and methods relevant to prob ems of human assoc at on and conf ict just ce and power, freedom and qua ty autonomy and order are d s u sed. Cred t 3 hours

310 Political Ideologies. Pr nc p es under y ng democra cy, soc a sm commun sm, anarch sm and fasc sm C ass ca and modern authors consu ted *e g* P ato Ar stot e Mach'ave l, Hobbes Hege Locke M Marx Len n Bakun n, Sore and Marcuse Cred t 3 hours

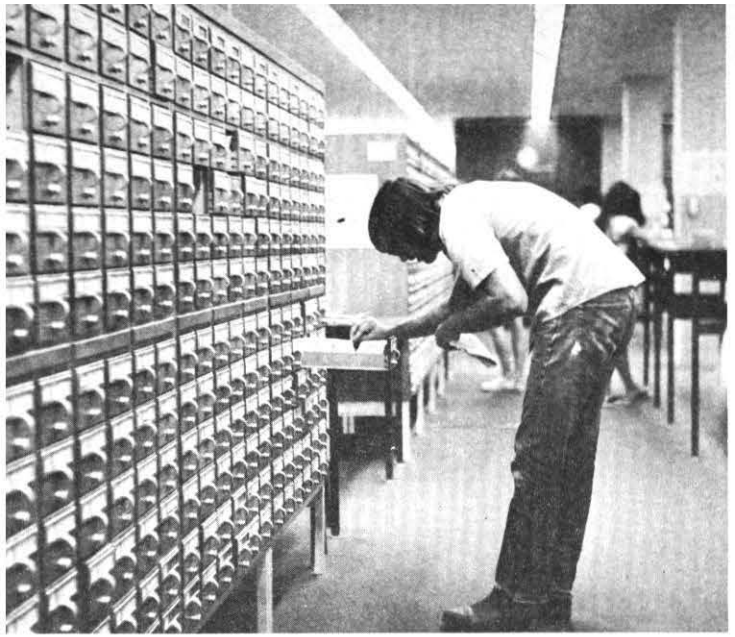
311 Philosophy in Literature. *The Oreste a, The D v ne Comedy Moby Dick The Tria* and *The Four Quartets* ntroduce ph losophica prob em such as the nature of moral goodness and man s relat on to the wor d and other men Cred t 3 hours

312 Theory of Knowledge. The nature, sources and mits of human know edge Theories of truth *a pr or* concepts and know edge emp r ca concept and knowledge percept on nduct on know edge of the externa wor d Credit 3 hours

313 Symbolic Logic. Methods of e ementary mathemat ca log c F rst-order predicate a cu us dent ty, descr pt ons, re ations soundness and comp eteness w be cons dered. Prerequ s te PH 103 or 113 or equ va ent Cred t 3 hours

314 Philosophy of Science. The structure and just f ca t on of sc ent fic theor es explanat on and theory change The ro es of observation and aws theoret ca concepts and entities reduct on probab ty, conf rma t on space and time and causat on. Cred t 3 hours

315 Philosophy of Language. Prob ems perta n ng to the nature of anguage mean ng reference, truth def nit on ana yt c ty trans atab ity, synonomy, and



contributions of contemporary linguistics. Credit, 3 hours.

316 Metaphysics. Investigation into the real: appearance *vs.* reality, perception, realism *vs.* idealism, materialism *vs.* mentalism, the concepts of mind and person; substance, universals, space and time, causation. Credit, 3 hours.

317 Philosophy of Mind. Nature of consciousness. The common sense view of mind and perception, behaviorism, materialism, dualism, phenomenalism, self-knowledge, knowledge of other minds. Credit, 3 hours.

318 Philosophy of Religion. Nature and justification of religious belief. Arguments for the existence of God, mysticism, theistic and pantheistic conceptions of God and creation. Credit, 3 hours.

319 Indian Philosophy. Selections from the *Upanishads* and the *Gita* and of representative orthodox and heterdox Indian schools, including the Carvaka, Jain, Nyaya, Yoga, and Vedanta. Credit, 3 hours.

320 Buddhist Philosophy. The philosophic expressions of the principal Southern and Northern Buddhist schools, beginning with Theravada and including Madhyamica, Vajrayana, and Zen. Credit, 3 hours.

325 Philosophy of Social Science. Philosophical problems surrounding the aims, structure, and methods of theories in the social sciences. Credit, 3 hours.

330 Theory of Value. Topics in ethics, esthetics or social philosophy, such as listed in PHI 305-310. In *Schedule of Classes*, title following course number indicates topic covered. Description of course materials is available in the departmental office. May be repeated for credit under different specific titles. Credit, 3-4 hours for each specific topic.

340 Topics in Metaphysics and Epistemology. Metaphysical, epistemic, logical, or historical topics are examined, such as listed in PHI 312-319, but more concentrated. In *Schedule of Classes*, title following course number indicates topic covered. Description of course materials is available in the departmental office. May be repeated for credit under different specific titles. Credit, 3-4 hours for each specific topic.

401 Rationalism. Examination of Descartes, Spinoza, Malebranche, Leibniz, Broad, Blanchard, and Chisholm. Prerequisite: one course from among PHI 302, 312, 315, 316, 317, 340 or any PHI 400-level course. Credit, 3 hours.

402 Empiricism. Examines one or more philosophers such as Bacon, Hobbes, Locke, Hutcheson, Shaftesbury, Butler, Berkeley, Hume, Reid, Mill, Carnap, Ayer. Prerequisite: one course from among PHI 302, 312, 315, 316, 317, 340 or any PHI 400-level course. Credit, 3 hours.

403 German Idealism. Examines one or more philosophers such as Kant, Fichte, Schelling, Hegel, Schopenhauer, and Nietzsche. Prerequisite: one course from among PHI 302, 312, 315, 316, 317, 340 or any PHI 400-level course. Credit, 3 hours.

404 Phenomenology. Methodology of such philosophers as Brentano, Meinong, Husserl, Heidegger, Sartre, and Merleau-Ponty. Prerequisite: one course from among PHI 303, 304, 312, 315, 316, 317, 340 or any PHI 400-level course. Credit, 3 hours.

405 Pragmatism. Examines such philosophers as Peirce, James, Dewey, Schiller, Lewis, Mead, Carnap. Prerequisite: one course from among PHI 302, 303, 312, 314, 315, 316, 317, 340 or any PHI 400-level course. Credit, 3 hours.

406 Philosophical Figures and Movements. Detailed study of one or two prominent philosophers, *e.g.*, Kant, or of a movement, *e.g.*, ancient skepticism. See *Schedule of Classes* for name of philosopher or movement. May be repeated for credit for different philosophers and movements. Prerequisite: approval of instructor. Credit, 3 hours.

494 Special Topics. In *Schedule of Classes*, title following course number indicates topic covered. Description of course materials is available in the departmental office. Prerequisite: approval of instructor. Credit, 1-4 hours.

498 Pro-Seminar. Concentrated analysis of philosophical topics or of the works of a particular author. Prerequisite: approval of instructor. Credit, 1-3 hours.

591 Seminar. Credit, 1-3 hours. Topics may be selected from the following:

(a) Theory of Knowledge
(b) Social and Moral Philosophy
(c) Metaphysics and Logic
(d) History of Philosophy

Special Courses: PHI 492, 493, 497, 499, 590, 592, 598, 599. (See page 31.)

Physics

PROFESSORS:
WORK (PS F-470), COWLEY, HESTENES, KEVANE, KYRALA, LU, MUNCH, NIGAM, RAWLS, ROY, SNYDER, STONER, STROJNIK, TILLERY, WALKER

ASSOCIATE PROFESSORS:
AHMADZADEH, BENIN, HANSON, JACOB, KAUFMANN, PAGE, STARRFIELD, VOSS

ASSISTANT PROFESSORS:
AANNESTAD, ACHARYA, MARZKE, SPENCE

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Physics — *Option No. 1.* Designed for students who wish to pursue physics at the bachelor or graduate degree level, this option consists of 45 semester hours of credit. Required courses are PHY 115†, 116†, 117†, 118†, 321†, 322†, 331†, 332†, 333†, 334†, 441†, 461†, and 465†. Additional courses in physics and other related fields will be selected with the approval of the advisor. Related courses will include MAT 120†, 121†, and 212†, or 374† and 342†. One year of credit in college level French, German or Russian is strongly recommended, particularly for the student who intends to pursue a graduate degree in physics.

Physics — *Option No. 2.* An interdisciplinary program designed for students who wish to obtain an undergraduate physics preparation for entry into other professions or graduate programs. Required are 54 semester hours of credit, at least 30 of which are in physics

(PHY) courses including PHY 115†, 116†, 117†, 118†, 321†, 331†, 333† and 461†. The remaining courses will be selected from physics and an area of concentration as approved by the student's advisor. Examples of possible areas of concentration are astronomy, physical chemistry, applied mathematics, geophysics, biological physics, philosophy of science, scientific journalism, etc., as well as pre medical and pre law programs. Related courses will necessarily include MAT 120†, 121†, and 212† or 342†, and 374†. One year of credit in a college level foreign language is strongly recommended for the student who wishes to pursue graduate studies in a discipline which has a foreign language requirement.

Astronomy. The astronomy faculty is a subgroup of the Physics Department. It offers both General Studies courses in astronomy to the University community and astronomy and astrophysics courses for the science major. Although an undergraduate major in astronomy is not available, a physics major who takes all the upper division AST courses will have sufficient preparation for entrance into a graduate school in astronomy.

Science Education. Formally attached to the Physics Department, the science education faculty has primary responsibility for activities related to the teaching of science at the elementary and secondary level, particularly those which cut across the boundaries of the individual sciences. Members of this group, with the cooperation of faculty members of the various science departments, in addition to offering formal courses and supervising general science requirements in the various degree programs for teachers, maintain a science education materials center and the Arizona Portal School Program. Other facilities include a planetarium used both for formal instruction and as a resource for schools in the area.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

General Science. Consists of 42 semester hours of credit. Required courses are CHM 113†, 231†; PHY 111†, 112†, 113†, 114†; BOT 100; ZOL 111; GLG 472; AST 321; PSE 460† or 480. Electives must be approved by the general science minor advisor.

Physics. *Option No. 1.* Consists of 40 semester hours of credit. Required courses are PHY 111†, 112†, 113†, 114† (or 115†, 116†, 117†, 118†), 321†, 331†; PHY 460† or 361†, PHY 463† (2 hours). An additional nine hours in upper division physics (PHY) or physical science (PHS) courses will be approved by the advisor in consultation with the student. Remaining courses to complete the major may be in physics and/or closely related fields, subject to the approval of the advisor.

Physics. *Option No. 2.* A student may elect this option in conjunction with either mathematics or chemistry majors. The physics portion of this program consists of 30 semester hours, with the following courses required: PHY 111†, 112†, 113†, 114† (or 115†, 116†, 117†, 118†), 321†, 331†; PHY 460† or 361†, PHY 463† (2 hours). The remaining courses to complete the 30 hours may be in physics and/or closely related fields, subject to the approval of the physics advisor.

Departmental Minor Teaching Field Requirements

Physics. Consists of 24 semester hours of credit. Required courses are PHY 111†, 112†, 113†, 114† (or 115†, 116†, 117†, 118†), PHY 460 or 361†; one hour of PHY 463†. Remaining hours to complete the minor are selected from courses in physics, astronomy (upper division), and physical sciences (upper division) approved by the physics advisor.

General Science. Consists of 24 semester hours of credit. Required courses are MAT 117†; CHM 101 or 113†, PHY [illegible]† (or 111†, 112†, 113†, 114†), AST 121 or 321, BOT 100, ZOL 100; GLG 100 or 472. Remaining hours are selected with the approval of the minor field advisor.

Physical Science. Consists of 24 semester hours of credit. Required courses are MAT 117, CHM 101 or 113†, PHY [illegible]† (or 111†, 112†, 113†, 114†), AST 121 or 321, 322); GLG 100 or 472. Electives must be approved by the physical science minor advisor.

Departmental Graduate Programs

The Department of Physics offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements. The Department has administrative responsibility for the interdepartmental program leading to the Master of Natural Sciences degree.

Physics Department General Studies Courses for Non-Majors

A PHY, AST and PHS courses satisfy the General Studies science and mathematics requirement. The following courses presume no prior background in mathematics beyond high school algebra and geometry.

Physics: PHY 101, 320†

Astronomy: AST 121, 321, 322

Physical Science: PHS 110, 360, 370, 380, 410, 411, 412

PHYSICS

PHY 101 Introduction to Physics. Emphasizes applications to life in the modern world. Understanding of elementary algebra is presumed. Three lectures, 1 recitation, 2 hours laboratory. Credit 4 hours.

111, 112 General Physics. Noncalculus treatment of the

pr nciples of physics for nonphys cs majors Students whose curr cula requ re a aboratory course must a so register for PHY 113†, 114† Prerequ s te tr gonometry. Three lectures, 1 rec tation Cred t 3 hours each se mester.

113, 114 General Physics Laboratory. E ementary expe- r ments n physics May be taken concurrent y w th or subsequent to PHY 111† 112† respectve y Two hours laboratory Cred t 1 hour each semester

115, 116 University Physics. Pr nciples of phys cs us ng ca cu us Prerequisite· Concurrent enro ment n MAT 120†, 121† respectve y For phys cs aboratory at th s eve enro l n PHY 117† 118† Four lectures 1 rec ta t on. Cred t, 4 hours each semester

117, 118 University Physics Laboratory. ntroductory exper ments measurements and techn ques n phys cs Prerequ s te Cred t or concurrent enro ment n PHY 115† 116† Two hours laboratory Credit 1 hour each semester.

251 Waves. V brat ons and wave phenomena w th app cations to acoust cs and opt cs Propagation ef ect on refract on, nterference and d ffract on Prerequ s te PHY 116† or ECE 202†

321 Newtonian Mechanics. Vector ca cu us K nemat cs and dynamics of part c es Conservat ve res st ve and centra forces Dynam cs of a charged part cle Many part c e systems The two body prob em and co s ons R g d body dynam cs. Motion n non nert a reference frames Prerequisites PHY 116† MAT 121† concurrent enro ment n MAT 212† or equ va ent Credit 4 hours

322 Analytical Mechanics. Lagrange s and Ham ton s equations Constraints. Coup ed osc lators E ements of continuum mechan cs elast c ty and hydr dynam cs Prerequisite PHY 321† Cred t 4 hours

331 Electricity and Magnetism. Vector f e ds and vec tor calcu us E ectrostat c f e ds Conductors and capac tors. Currents of charge Ohm s aw charge con- servat on C rcu t theory Magnet c f e ds and the Lorentz force E ectromagnet c nduct on F e ds n mat- ter D sp acement current Maxwel s equat ons Prerequ s tes: PHY 116† MAT 212† or equ valent Credit 4 hours

332 Electromagnetic Fields. Maxwel s equat ons Sca lar and vector potent a s Lap ace s equat on and boundary value prob ems Mag etostatics E ectromag netic waves propagat on n med a, ref ection and refract on Prerequis te. PHY 331† Cred t 4 hours

333 Intermediate Physics Laboratory I. Exper ments selected n consu tation with nstructor to su t the stu dent s needs and nterests Outs de effort toward p ann ng the experimenta approach and wr t ng reports is expected Prerequ s tes PHY 117† 118†, 321† or concurrent enrol ment) Three hours aboratory Cred t, 2 hours

334 Intermediate Physics Laboratory II. Cont nuat on of PHY 333. Prerequis te PHY 333† Three hours labo- ratory Cred t, 2 hours.

351 Optics. Geometr ca and phys ca opt cs wave mo t on nterference, d ffract on mag ng refract on polarizat on opt ca nstruments te escopes spectro meters, m croscopes e ectron m croscopes) holography, asers Prerequ s tes. PHY 116† MAT 121† Credit 3 hours.

361 Modern Physics. Special relat v ty and int oductory quantum theory with app cat ons drawn from atom c nuclear and so id state phys cs Prerequ s te PHY 116† or ECE 203†. Cred t, 3 hours

401, 402 Mathematical Methods in Physics. E ements of vector ca cu us comp ex var ab es, ord nary and par- t al different a equat ons ntegra transforms spec al functions determ nants matrices probabi ty and sta t st cs. Prerequ s tes MAT 212† PHY 321† Cred t 3 hours each semester

434 Circuit Theory and Electronics. Network theory character stics of non near elements, vacuum tubes and trans stors Bas c c rcu ts and the r appl cat ons n phys cal measurements Prerequ s tes PHY 331† 334† Three lectures, 3 hours aboratory Cred t 4 hours

441 Statistical and Thermal Physics I Stat st ca and exper mental basis of heat temperature and entropy Mechan ca and statist ca basis of the aws of thermo dynamics Appl cat ons of macroscop c thermody- nam cs Phase equil br um Prerequ s tes PHY 321† 331† Credit 3 hours

442 Statistical and Thermal Physics II. Pr nc p es and app cat ons of statistical mechan cs Quantum stat stics of deal gases and simp e so ds Equ l br um of phases and chem ca species Transport theory rrevers b e processes and f uctuat on Prerequ s te PHY 441† Credit 3 hours.

452 Advanced Optics. Wave theory of d ffract on and mag ng w th coherent and partia y coherent ght m age format on eva uat on and process ng ntroduct on to quantum optics· e ectron optics Prerequ s tes PHY 331† 351†, PHY 401† 402† recommended Cred t 3 hours

453 Optics Physical Measurements. Experimenta techn ques and theory of opti al measurements Extra aboratory practice in the p ann ng of exper ments or gan zat on and presentation of results Prerequ site. PHY 334† (or concurrent enr t ment) Three hours abo atory Credit 2 hours

460 Elements of Atomic Physics. E ectron and atomic physics. Des gned for teachers and students not major ing n phys cs Prerequ s te one year of co lege physics. Cred t, 3 hours

461 Modern Physics. Spec a re ativ ty or g n of quan- tum theory the nuc ear atom elementary part cles ntroductory quantum mechan cs atom c and mo ecu ar spectra. Prerequisites PHY 321† 331† MAT 212† Cred t 4 hours

462 Nuclear Physics. Static propert es of nuc e nat ra and induced radioactivity, nuc ear react ons nuc ear models and energy eve s, mesons and hyperons, nter act on of photons and electrons w th matter. Prerequisite. PHY 461† Credit 3 hours.

463 Physical Measurements. Exper ments n mechan cs and heat e ectr city and magnet sm opt cs and modern phys cs Des gned for teachers and students ot major ng n phys cs. Prerequis te PHY 112† Three hours aboratory. May be repeated for a max mum of 3 hours cred t Cred t 1 hour

465 Advanced Physics Laboratory I. Cont nuat n of PHY 333 334 at a more advanced leve Prerequisites PHY 333† 334† 331† or oncurrent enro ment Three hours laboratory Credit 2 hour

466 Advanced Physics Laboratory II. Cont nuat on of PHY 465 Prerequ sites PHY 465† 461† Cred t 1 3 hours May be repeated for cred t

471 Quantum Mechanics. Wave mechan cs Schrod n ger s equation, barr er prob ems operators and eigenfunct ons harmon c osc l ator one-e ectron atoms Prerequisites PHY 322†, 461† or approva of instructor. Cred t 3 hours

472 Quantum Mechanics. Matrix mechan cs angu ar momentum, perturbat on theory scattering theory Pre requ site: PHY 461† or approva of nstructor Cred t 3 hours

480 Methods of Teaching Physics. Evaluat on of var ous approaches to the teach ng of h gh schoo phys cs Preparat on of demonstrat ons and exper ments Or gan zation of a laboratory Des gned for secondary schoo physics teachers Prerequ site· approva of n- structor Credit, 3 hours

481 Solid State Physics. Structure e astic propert es and dynamics of crysta s e ectron mot ons in crysta s under applied fields. Prerequ s te PHY 471† Credit 3 hours

495 Project Research. Superv sed pro ect n exper menta physics Prerequisite four hours se ected from PHY 333† 334† 453† and 465† May be repeated for cred t. Cred t 1 3 hours *Note approva of faculty member under whose d rection the work s to be done must be obtained before reg strat on*

501, 502 Methods of Theoretical Physics. Prov des mathemat ca foundations for graduate stude ts n bas c and app ed physics Comp ex var ab es vector spaces operators matr ces ord nary d fferent al equa t ons, ntegra equat ons and transforms and spec a functions May inc ude add t ona top cs Prerequ s tes PHY 401† 402† or approva of nstructor Cred t 3 hours each semester

503 Physical Applications of Group Theory. Funda menta s and app icat ons of the theory of f n te and cont n ous groups as they occur n phys cs Atom c mo ecu ar, so d state and e ementary part c e phys cs Prerequ site· approva of nstructor Cred t 3 h rs

510, 511 Astrogeophysics. Phys ca propert es of the structures and systems of the un verse fr m the ga ax es and stars to the nter ors of the p anets Pre requ s tes PHY 322† 332† or approva of nstru to Cred t, 3 hours each semester

521 Classical Mechanics. Var at ona pr n ip es La grange s and Ham ton s equat ons r gid body mot on canonical transformat ons Ham to Jacob theory Pre requ s te PHY 321† Credit 3 hour

522 Advanced Topics in Class cal Mechanics. C nt n uum mechan cs, e ements of hydrodynam cs e ast c ty theory spec a re at v ty Prerequis te PHY 322† 521† Cred t 3 hours

523 Relativity. Spec a and genera theor es of re at v ty Prerequ s tes. PHY 522† 532† or approva of structor Cred t, 3 hours

531 Advanced Electricity and Magnetism. E e tr tat cs a d maqnetostat cs Potent a theory theory of const tutive relations Maxwe s eq at ons The wave equat on p ane e ectromag et c waves cav t es and wave gu des. Prerequ s te PHY 331† or approva f nstructor Cred t 3 hours

532 Electrodynamics. Spec a theory of re at v ty cov ariant formulation of e ectromagnet c nte act ons nhomogeneous wave equat ons L enard W echert p tent a s· rad at on f e ds nteract o s of charged partic es and electromagnet c waves scatter ng d sper s on. Prerequ sites PHY 332† 531† or approva of nstructor Credit 3 hours

541 Statistical Physics Probab l ty theory and pr nc - p es of stat st ca nference Eva at ng exper menta data foundat ons of stat st ca mech an cs Genera aws of the thermodynam c fron m croscop c theor e Ca cu at on of spec f c propert es of bu k matte Prerequ s tes PHY 441† 471† 442† des rab e Cred t 3 hours

542 Advanced Topics in Stat stical and Thermal Physics. Theory of rrevers b e processes On ager- rec procity aws fluctuation diss pat on theorem, re axa- tion and transport processes in f uids and p asmas L ouvi le equat on, the BBGKY hierarchy of distr but on funct ons· k net c theory, hydrodynam cs from many body theory, phase changes and equ l br um ferro magnet sm Prerequ site PHY 541† Cred t 3 hours

551 X-Ray and Electron Diffraction. Fresne and Fraun hofer d ffract on in ntegra formu at on D ffract on of X rays and neutrons by crysta att ces Structures of so ds nc ud ng crysta structure ana ys s Theory and techniques of e ectron m croscopy d ffract on of crysta ne noncrysta ne spec mens Prerequ s tes PHY 451†, 481† or approva of nstructor Cred t 3 h urs

561 562 Nuclear Physics. Two nuc eon nte act o Clebsch-Gordon coeff c ents nternuc eon forces me son theory and h gh energy scatter ng nuc ear b nd ng energy nuc ea mode s trans t on probab ty est mates nuclear react ons beta decay Prerequ s tes PHY 462† 576† or approva of nstructor Cred t, 3 hours each semester

564 Molecular Spectra and Structure. Mo ecu ar spec tra from the v ewpoint of quantum mechan cs nclud ng the ana ys s of e ectron c v brat ona and rotat ona spectra of po yatom c mo ecu es and the use of group theory to s mpl fy the ca cu at ons Prerequ s te PHY 471† Cred t 3 hours

568 Elementary Particle Physics. C ass f cat o of par t c es phenomeno ogy of strong e ectromagnet c and weak nteract ons cross sections decay rates sot p c p'n and h gher symmetr es tructure of react on amp tudes Prerequ s te PHY 577† Cred t 3 hou s

569 Elementary Particle Theory Theoret ca m de for strong e ectromagnet c and weak nteract ons ana yt c S matr x dispers on re at ons current a gebras me d um a d h gh energy mode s Prerequ s te PHY 568† Cred t 3 hours

576, 577 Quantum Theory. Abstract appr ach to quan tum mechan cs n Hi bert space observab es and the r correspond ng operators eigenstates and e ge va ue quantum dynam cs approximat on methods systems of dent cal particles angular momentum and group repre sentat on theory, col s o pr cesses re at v st c quantum theory Prerequis tes PHY 471† 522† Cred t 3 hours each semester

578, 579 Relativistic Quantum Theory. Re at v st c one part c e equat ons K e n Gordon equat on D rac eq a t on second quantization the ry f scatter ng S matr x Feynman d agrams quantum e ectrodynam cs renorma zat on procedures Prerequ s tes PHY 577† Cred t 3 hours ea h semester

581 Solid State Physics. Quantum theory of so ds n c ud ng phonons, att ce spec f c heats band structure models Ferm surfaces thermal expans on p asmons e ectron-phonon interact ons and scatter ng by att ce defects Prerequisites PHY 481† 472† 576† (or con current enro ment) Cred t 3 hours

582 Solid State Physics. Elements of transport theory thermal conduct on, e ectron c conduct on n meta s mobi ty n sem conductors Ha effect magnetores s tance and se ected topics of current research Prerequisite· PHY 581† Cred t 3 hours

595 Current Physics Literature. Week y sem nar to n troduce the graduate student to current act v ty in phys cs through the contemporary terature Cred t 1 hour May be repeated for red t

ASTRONOMY

AST 121 20th Century Astronomy Earth as a p anet the so ar system, stars ga ax es and co mo ogy n tended for nonsc ence majors Three ectures observatory and planetar um exper ence Cred t 3 hours

125 Introduction to Observational Astronomy. Astro nom cal observat ons and exper ments Use of the te escope wi l be stressed Photograph c and planetar um exper ence Even ng meet ngs May be taken concurrent y w th or subsequent to AST 121 321 Two hours aboratory Cred t 1 hour

321 Discovering the Solar System. H story of a tronc- my astronom ca nstruments coord nate system p anets sun and format on of the so ar ystem Prereq u s te e ementary a gebra Three ectu es observatory and p anetar um exper ence Cred t 3 hours

322 Stars and the Universe. D stance methods used n astronomy stel ar structure and evo ut on nterste a med um ga axies and cosmo ogy P erequ s te e e mentary a gebra Three ectures observat ry a d p anetar um exper ence Cred t hours

325 Intermediate Observational Astronomy. Cont ua t on of AST 125 Observat ons w th te escopes and use of photography n astronomy Even ng meet ngs Pre requ s te AST 125 May be taken co current y w th or subsequent to AST 321 or 322 Tw hour ab rat y Credit, 1 hour

351 The Solar System. Spher ca and grav tat na as tronomy planets, comets or g n of the so ar system Prerequ s tes PHY 116† MAT 212† Cred t 3 hours

352 Stellar Astronomy. Ste ar d stan e sca e photo e e tr c photometry terste ar matter ste ar dynam cs, b nar es var ab e stars ga ax es and osmo og Prerequ s tes PHY 116† MAT 212† Cred t 3 hours

421 Stellar Astrophysics. The phys cs of ste a atmo spheres dent fcat on of ste ar spectra ste ar

structure and evolution. Prerequisites: PHY 321†; MAT 212†. Credit, 3 hours.

422 Interstellar Astrophysics. Physics of the interstellar medium, gas and dust clouds, interstellar molecules, gaseous nebulae, magnetic fields, cosmic rays. Prerequisites: PHY 321†; MAT 212† Credit, 3 hours.

PHYSICAL SCIENCE

PHS 110 Physical Universe. The universe as a unit; stars, solar system, earth and atoms. Nature of matter and energy. Three lectures, 2 hours laboratory. Credit, 4 hours.

361, 362 Science and Man. Emphasis upon man of his technological civilization and consideration of recent advances in both pure and applied physical sciences. PHS 361: mechanics, electromagnetic radiations and astronomy. PHS 362: geology, chemistry and nuclear energy. Courses may be taken in either order. Credit, 2 hours each semester.

370 Ideas of Physics. Relationships of physical concepts to other areas of knowledge. Recent offerings have been: (1) basic concepts in physics; relativity, complementarity, uncertainty, etc.; (2) current topics of research and public interest; (3) methods for developing and assessing new ideas. See *Schedule of Classes* and consult Physics Department for current titles and sectional offerings. May be repeated for credit. Credit, 1-3 hours for each topic.

375 The Energy Crisis. Current problems in energy resources, production, consumption and conservation. No physics or mathematics prerequisites. Students registered for 3 hours will participate in a discussion group as well as attend lectures. Credit, 2 or 3 hours.

380 Strategy and Tactics in Science. Basic principles and procedures for constructing scientific models. Conservation, symmetry, and causality principles. Isolation, control, and estimation of variables. Examples from science and application to everyday situations. Credit, 2-3 hours.

410 Origins of the Physical Sciences. Origins of astronomy, chemistry, physics and mathematics in the cultures of Mesopotamia, Egypt, China and India. Credit, 3 hours.

411 Development of the Physical Sciences. Hellenistic mathematics, physics, chemistry and astronomy. Arabs and the physical sciences; their role in spreading the physical sciences to Europe. The development of the physical sciences in Europe until the time of Newton. Credit, 3 hours.

412 Concepts of Modern Physics. For upper division non-physics majors. Important conceptual advance of physics during the 20th century: Special and general relativity, quantum theory, elementary particle physics, astrophysics, cosmology. No physics or mathematics prerequisites. May be taken for honors credit. Credit, 3 hours.

413 The Social Impact of Modern Physics. Technological and social issues raised by developments in physics during the 20th century: nuclear energy, lasers, semiconductors, nucleon weaponary, etc. Prerequisite: PHS 412. May be taken for honors credit. Credit, 3 hours.

SCIENCE EDUCATION

PSE 220 Physical Science for the Elementary Teacher. Physical science concepts and processes based on recent elementary school science education curricula. Must be taken in sequence: PSE 220, 221. Three-day field study. Credit, 3 hours.

221 Biological Science for the Elementary Teacher. Biology and earth science concepts and processes based on recent elementary school science education curricula. Must be taken in sequence: PSE 220, 221. Three-day field study. Credit, 3 hours.

460 Science in the Junior High School. Important science areas suitable for the junior high school. Recent developments in curricula; laboratory techniques and processes of science are stressed. Credit, 3 hours.

480 Methods of Teaching Physical Science. Methods of instruction, organization and presentation of appropriate topics in physical science. Prerequisites: SED 311, 15 hours of physical science or approval of instructor. Credit, 3 hours.

Special Courses: PHY, PHS, AST, PSE 294, 298, 492, 493, 494, 497, 498, 499, 500, 580, 584, 590, 591, 592, 594, 598, 599, 700, 780, 783, 784, 790, 791, 792, 799. (See page 31.)

Political Science

PROFESSORS:
SIMON (SS 410), ALISKY, HINK, HOLMES, JO, KAMINSKY, MASON, PEEK, RICE, SCHWADA, SWAGERT, WHITE

ASSOCIATE PROFESSORS:
BERMAN, DALGLEISH, McGAW, READER, WOLF

ASSISTANT PROFESSORS:
BOWEN, DAGGER, KEATING, LAMPERT, MERRILL, NECHEMIAS, STOOKEY, WALKER, WATSON, YOUNGBLOOD

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Political Science Consists of 45 semester hours of credit of which 30 must be in political science and 15 in closely related fields to be approved by the advisor in consultation with the student. Four courses are required: either POS 100 or 300; either 250 or 260; and both 301 and 302. At least 15 hours in political science must be selected from courses in the POS 400 series. Courses POS 311, 330 and 360 may not be counted toward a major in political science.

Students who major in political science must have a 2.0 average for all courses which count toward the major. Upper division courses which count toward the major must have "C" grades or better; no more than one "D" grade in a lower division course may be counted in the major. (See Degree Requirements, pages 52-53.)

Latin American Studies Emphasis (see Interdisciplinary Studies) Consists of the Bachelor of Arts degree requirements in political science. At least 30 upper division semester hours of the total program must be in Latin

American content courses, 15 hours in political science and 15 in other disciplines. A reading knowledge of Spanish is required, as is the successful completion of *LIA 402 Movements and Meaning in Latin America.* A reading knowledge of Portuguese is suggested. Fulfillment of requirements is recognized by a bachelor's degree with a major in Political Science-Latin American Studies.

Asian Studies Emphasis (see Interdisciplinary Studies)—Consists of the Bachelor of Arts degree requirements in political science plus a minimum of two years of Chinese or Japanese. Thirty semester hours of the total degree program must consist of Asian Studies courses selected with the approval of the advisor. Fulfillment of these requirements will be recognized by a Bachelor of Arts degree-Asian Studies.

Bachelor of Science Degree Curriculum

Political Science—Consists of 51 semester hours of credit of which 36 must be in political science and 15 in closely related fields to be approved by the advisor in consultation with the student. Four courses are required: either POS 100 or 300; either 250 or 260; and both 301 and 302. At least 21 hours in political science must be selected from courses in the POS 400 series. Courses POS 311, 330 and 360 may not be counted toward a major in political science.

Students who major in political science must have a 2.0 average for all courses which count toward the major. Upper division courses which count toward the major must have "C" grades or better; no more than one "D" grade in a lower division course may be counted in the major. (See Degree Requirements, pages 52-53.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Political Science—Consists of 45 semester hours of credit, 30 of which must be in political science and 15 in closely related fields. Six courses are required: either POS 100 or 300; either 250 or 260; 301, 302, 411, and 480†. Courses POS 311, 330 or 360 may not be counted toward a major in political science.

Students who major in political science must have a 2.0 average for all courses which count toward the major. Upper division courses which count toward the major must have "C" grades or better; no more than one "D" grade in a lower division course may be counted in the major.

Departmental Minor Teaching Field Requirements

Political Science—Consists of 24 semester hours of credit in political science courses. Five courses are required: either POS 100 or 300; either 250 or 260; 301, 302, and 411. POS 311 may not be counted toward a teaching minor in political science.

Students who minor in political science must have a 2.0 average for all courses which count toward the minor. Upper division courses which count toward the minor must have "C" grades or better; no more than one "D" grade in a lower division course may be counted in the major.

Departmental Graduate Programs

The Department of Political Science offers programs leading to the degrees Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

POLITICAL SCIENCE

POS 100 Government and Politics. Major philosophies and institutions of modern government. Illustrative material derived primarily from American government. Meets the federal government requirement for teacher certification. Not open to students with credit for POS 300. Credit, 4 hours.

250 Comparative Government. Introduction to the comparative study of political systems. Credit, 3 hours.

260 International Relations. Contemporary international affairs; major problems in each of the important geographic regions. Credit, 3 hours.

300 American National Government. Powers, functions and agents of American political institutions. Meets the federal government requirement for teacher certification. Not open to students with credit for POS 100. Credit, 3 hours.

301 Empirical Political Inquiry. Logic of political inquiry including research problems, concepts, hypotheses, theories, measurement, data collection and analysis. Credit, 3 hours.

302 Evaluative Political Inquiry. Public values, illustrations from classical and modern periods: justice, liberty, equality, obligation, linguistic analysis, ideology, and relationships between political ideas and culture. Credit, 3 hours.

311 Arizona Constitution and Government. Constitution and government of the State of Arizona. Not open to students having credit for POS 411. Meets the Arizona government requirement for teacher certification. May not be counted for the major, teaching major or teaching minor in political science. Credit, 2 hours.

330 Current Issues in National Politics. Major issues facing the national government in the domestic field. May not be counted for the major or the teaching major in political science. Credit, 3 hours.

360 Current Issues in International Politics. Principal issues involving the nation-state system in the world today. America's role in the international arena. May not be counted for the major or the teaching major in political science. Credit, 3 hours.

401 Political Statistics. Nonparametric statistics, multiple and partial correlation, factor analysis and analysis of variance. Prerequisite: POS 301 or approval of instructor. Credit, 3 hours.

403 Survey Research. Sample design, questionnaire construction, interviewing, data processing and analysis. Prerequisite: POS 301. Credit, 3 hours.

410 Urban Government and Politics. Politics and administration of city and town government in the United States. Problems, forms and services of city government. Credit, 3 hours.

411 State Government. Major problems of state gov-

ernment nc uding const tut ona rev s on governmental reorganizat on, eg s at ve apport onment and other matters espec a y Ar zona government Meets the Ar zona requ rement for teacher cert f cat on Cred t 3 hours

412 Metropolitan Government and Politics. Po it ca process n the metropo s with an exam nation of gov ernmenta organizat o s and dec s on-mak ng structures. Cred t, 3 hours

413 Legislative Process. Lawmak ng process fo owed n se ected legis at ve bod es compos t on of member sh p organizat on, powers mpact of interna and external forces on eg s at on. Cred t 3 hours

414 The American Presidency. Office ro e and power of the American Presidency in the Amer can pol t ca system Credit 3 hours

420 Introduction to Public Administration. Role of the admin strator n the pol t cal process with an exam na tion of the bas c concepts of bureau racy Credit 3 hours.

421 Comparative Subnational Politics. Po t ca pro cesses and inst tut ons at the subnationa eve s of government nclud ng loca contr but ons to nat ona deve opment and nat onal subnat ona re at onsh ips Cred t, 3 hours

424 Regulatory Politics. Deve opn ent and mp ementa- t on of governmenta po cies regu at r g bus nes act vity *e g* ant -trust, consumer and env ronme ta protect on and abor re at ons Cred t 3 hours

425 Public Policy Development Re at onsh ps between pol cy deve opment and adm n strat ve proces es as affected by the var ous ro es of eg s at ve bod es exec- ut ve and adm n strat ve agenc es Cred t 3 h urs

428 Comparative Administration. Theor es techn ques and procedures ut lized n adm nistrat ve organ zat ons of nations and governmental un ts at var ous stages of development Cred t 3 hours

430 American Political Parties. Deve opme t of the Amer can party system Party organ zat on and fun - tions. Cred t 3 hours

431 Public Opinion and Propaganda. F rmat on ex press on and nfluence of nd v dua and organ zed op n on on pol tical nstitut o s Prerequ s te POS 01 or approva of instructor Cred t 3 hours

432 Introduction to Political Behavior. Po t ca act v t es of peop e n the community and in governmenta inst tut ons us ng behav ora techn ques Prerequ site POS 301 or approval of nstructor Cred t 3 hours

433 Pressure Groups. A ms techn ques and nf uence of nterest groups n Amer can po t cs Cred t 3 h urs

434 Comparative Politics. Po t ca part es, pressure groups, e ect ons, egislators and execut ves stud es from a cross nat ona perspective Effect on po it cs of d fferences in pol t cal culture and sty e and soc o- econom c attr butes Cred t 3 hours

435 Modernization and Political Change. Pol t cal and soc al prob ems associated w th modern zat on Emp r ca focus on one or more developing reg ons Cred t 3 hours.

436 Electoral Behavior. Vot ng behav or and the att tudes percept ons and act v ties of the cit zenry n the pol t ca process Prerequisite POS 301 or approva of nstructor Credit 3 hours.

437 Political Socialization. Process by which ind v du a s acqu re polit cal y re evant nformat on va ues att tudes, and behavior consequences of soc a zat on for soc ety and the re at onsh p between personal ty and po t cs. Prerequisite POS 301 or approva of nstructor Credit, 3 hours

438 Revolution and the Social System Causes and consequences of revo ut on dent fication of system c structures and nst tut ons conducive to rad ca and moderate patterns of conf ict reso ut on Cred t 3 hours

439 Minority Group Politics in America. Ro e of m nor ity groups n Amer can po t cs Credit 3 hours

440 History of Political Philosophy I. Western po t ca phi osophers and the r theor es to the 17th century Cred t 3 hours

441 History of Political Philosophy II. Weste n po t ca ph osophers and the r theor es from the 17th to the 20th century Cred t 3 hour

442 American Political Thought. Po t ca the r es and movements from the co on a per od to the present Credit 3 hours

443 Analytical Revolution in Contemporary Political Thought. The thought of representat ve anthropo og cal econom c pol t cal, psycho og ca and soc o og ca contr butors *e g*, Ma now ki Keynes Dah Freud, Weber Parsons to the study of po t cs Cred t 3 h urs

444 Normative Revival in Contemporary Political Thought. The thought of some leading contemporary po itical ph losophers *e g.* Camus, Sartre Strauss Marcuse Oakeshott . Cred t, 3 hours

445 East Asian Political Thought. Contemporary pol t cal deas and theor es n East As a and the mpact of Western ncluding Marx st thought on the revo utionary process of Ch na. Cred t 3 hours

448 Government and Politics of East Asia. A compara t ve ana ys s of the po t ca moder zat on exper ences of China and Japan focus ng on the r d ffer ng reactions to the West. Cred t 3 hours

449 Parliamentary Government and Politics. Exam nes such par amentary systems as Great Br ta n Ire and Canada, Austra ia and New Zealand Cred t 3 hours

450 Government and Politics of the Soviet Union. De script on and comparat ve analys s of Soviet government and nstitutions Appraisa of the Sov et econom c sys- tem and ncentives, and of the mach nery for contro of the people. Cred't 3 hours.

451 Governments and Politics of Eastern Europe. Modernizat on mu t -ethn c ty, e t sm bureaucracy re gional sm and riva ry n East Europe Cred t 3 hours

452 Governments and Politics of China. Backgr und of the Communist revo ut on pol tical processes and devel opmenta prob ems in Ch na from a comparative perspective. Cred t, 3 hours.

453 Governments and Politics of South America. Governmenta institutions po t ca processes and devel opmental problems of the South Amer can states Cred t 3 hours.

454 Government and Politics of Mexico. Mex can feder a , state and loca governmenta nst tutions Cred t 3 hours

455 Governments and Politics of Central America and the Caribbean. Governmenta nst tut ons pol t cal pro cesses and deve opmenta prob ems of the nat on states and dependent areas of Centra America and the Car bbean Credit 3 hours

456 Governments and Politics of Western Europe. Structures and behav or of governmenta nst tut ons and po it cal processes n se ected co ntr es of Western Europe Credit, 3 hours

457 Governments and Politics of Central Europe. Structures and behav or of governn enta nst tut ons and po t ca processes in Centra Europe East German Swiss, West German and Austrian systems Cred t 3 hours

458 Governments and Politics of South and Southeast Asia. Po t ca background governmenta nst tut ons po it cal dynam cs and deve opmenta prob ems of South and Southeast As an nat ons Credit 3 hours

459 Governments and Politics of Africa. Governmenta inst tutions and processes of po it cs south of the Sa hara Cred t, 3 hours

460 World Politics. Theoretica exam nat on of ne or more aspects of nternationa po t cs *e g* fore gn pol cy negotiat ons, al iances cr ses, wars nternat ona systems. Cred t, 3 hours

461 American Foreign Policy. Un ted States n wor d affa rs, fore gn po cy s nce Wor d War Techn ques in formulat ng American foreign po c es Cred t 3 hours

462 International Relations of the Communist World.

Nature and objectives of fore gn po icy of the Commu n st camp, emphasiz ng Soviet foreign po cy and the Sino Soviet conf ict Credit 3 hours

463 Inter-American Relations. D p omat c re at ons among the Latin Amer can states. Deve opment of U.S foreign po icy toward Lat n America Cred t, 3 hours

464 American Defense Policy. Problems and ssues of the organ zat on and contro of the defense estab sh ment of the U.S. Cred t 3 hours.

465 International and Regional Organizations. Theory deve opment and practices of nternat onal and supra nat ona organ zations Credit 3 hours.

467 Comparative Defense Policy. Problems and ssues of the organization and contr l of effect ve defense es tabl shments w thin the context of various po t cal systems. Cred t 3 hours

468 Comparative Asian Foreign Policies. Fore gn po cies of the As an states emphasiz ng the r secur ty re at ons and movements toward regiona sm Cred t, 3 hours

470 Law and Society. Nature, purposes and sanctions of law sources of law; pr vate and pub ic aw, common and civ l law Courts and admin strat on of just ce. Cred t, 3 hours

471 Constitutional Law I. Deve opment of the Un ted States Constitut on as ref ected in dec s ons of the Su preme Court, jurisd ct on and organ zat on of the federal courts judicial rev ew; separat on of powers; federa sm, the commerce clause, national tax ng and spend ng power; state po ce power. Cred t, 3 hours

472 Constitutional Law II. Deve opment of the Un ted States Constitut on as ref ected n dec sions of the Supreme Court. Due process, equa protect on of laws, ndividua rights c v berties Credit 3 hours.

473 Judicial Decision-Making. Relationship of po t ca cu ture inst tutional ro es and personal attr butes and attitudes to judic a decis on mak ng Cred t, 3 hours

474 International Law. Law of the nat ons as developed by custom and agreement and as exhib ted n dec s ons of nternat ona and national tr buna s Credit, 3 hours

480 Methods of Teaching Government. Methods of n struct on, organ zation and presentation of subject matter in pol t ca sc ence Prerequ s tes. SED 311† or concurrent y, and 15 hours n pol tical science or approval of nstructor Cred t, 3 hours

494 Special Topics in Political Science. Chosen from the various f elds of pol tical sc ence Credit 3 hours

498 Pro-Seminar. Smal group study and research for advanced students with n the r major area Prerequ s te· major n the department or approval of nstructor Credit, 3 hours

500 Research Methods. ssues and ogic of empir ca research inc ud ng concepts hypotheses theor es re search des gn data co ect on and ana ys s Cred t 3 hours

510 American Government. Analys s of forms process es, and nstitut ons of Amer can government Cred t 3 hours

520 Public Policy and Administration. Literature survey regard ng the development, mplementat on and effects of public pol cy. Attent on g ven to pol cy mak ng mod e s, adm n strat ve dec sion mak ng, mpact of publ c po cies, and pol cy eva uation Credit 3 ho rs

540 Political Theory. Major po itica theor sts, po t ca phi osophies and perenn a top cs n the h story of po t ca thought.

550 Comparative Government. Major theoret cal ap proaches and models used n cross-nat ona ana ysis of pol tical nst tut ons and processes Credit 3 hours

560 International Relations. Major themes, approaches, and research concerns n the nternat ona re ations iter ature Trends n contemporary nternat onal re ations dec sion-mak ng models, foreign po cy theory and in ternationa systems ana ys s. Cred t 3 hours

570 Public Law. Read ngs and analys s n pub c aw n c uding adm nistrat ve aw comparative aw, const tutiona aw, jurisprudence, and the ega process Cred t, 3 hours

591 Seminar. Cred t, 3 hours Research projects may be selected for nvestigat on from the fo low ng areas·

(a) Amer can Government
(b) Publ c Po icy and Adm n strat on
(c) Po it ca Theory
(d) Comparat ve Government
(e) Internationa Re at ons
(f) Publ c Law
(g) Methodology

598 Special Topics Course. Var ous areas of po t ca science Cred t, 3 hours

792 Research. Projects n various areas of po itica sc ence Requ red of a l, and open o ly to, doctora students Credit, 3 hours

Special Courses: POS 492 493, 499 590 592 599 790 799. (See page 31.)

Psychology

PROFESSORS:
GOODSTE N (PSY B-237) BRAUN, HAYGOOD, JONES LANYON, L NDER MEYERSON, VESTRE

ASSOCIATE PROFESSORS:
BARDR CK, BRAVER CHART ER, C ALD NI, FEHR KILLEEN, LESHOWITZ, LEV NE LINDHOLM, MERRILL, MILLER, PARKINSON, REICH ROSS

ASSISTANT PROFESSORS:
EDNEY, E SENBERG, HOMA SADALLA, SANDLER, WELLMAN, ZAUTRA, ZEGIOB

INSTRUCTOR:
R TCH E

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Psychology Consists of 4> seme ter hours, o which 27 must be in psychology and 18 in re lated courses to be approved b the advisor in consultation with the student. Required courses in psychology are PGS 10(, PSY 23)†, 29(†, one course from among PSY 323†, 324†, or 325†; and at least two m re upper div sion courses. Required related courses are M \T 117† and 119†, or their equiv i e ts, wh'ch stu dents are encouraged to complete ear y in th ir college careers. (See Degree Requirements, pages 52-53.)

Bachelor of Science Degree Curriculum

Psychology Consists of it least 51 semester hours, of which 30 must be in psychology and a minimum of 21 hours n related courses t be selected by the student in consult ation with the advisor Required courses in psychology are PGS 100, PSY 230† and 290†, one course from among PSY 323†, 324†, or 32>†; and at least

two more upper division courses Required re lated courses are MAT 117† and 119†, or their equivalents, two semesters of physics, chemis try, geology or astronomy, and two semesters of biology, zoology, physiology, or microbiol ogy. (See Degree Requirements, pages 52–53

Departmental Minor Teaching Field Requirements

(Secondary Education)

Consists of 24 semester hours of credit taken in consideration of the prerequisites listed for courses

Departmental Graduate Programs

The Department of Psychology offers pro grams leading to the degree of Doctor of Philosophy. Consult the *Graduate Catalog* for requirements

PSYCHOLOGY (PSY)

Courses which may be applied toward the General Studies requirement in sciences and mathematics

PSY 112 Experimental Analysis of Behavior. Bas c pr n- c ples of behav or ana ys s, w th emphas s on the contro and modificat on of human behav or Course s self-paced ncludes a aboratory Cred t 4 hours.

230 Introduction to Statistics. Bas c concepts n de- scriptive and inferent a stat st cs emphas zing app cations to psychology. Prerequisite: PGS 100 MAT 117† s recommended Credit 3 hours

290 Experimental Psychology. P ann ng, execution analys s and reporting of behav oral experiments. Litera ture, procedures and nstruments n representative areas of psycho og cal research. Requ red for psychol- ogy majors. Prerequ s te. PSY 230† or equiva ent. Two ectures, 3 hours aboratory. Cred t 4 hours

323 Sensation and Perception. The re at onsh p of aud tory and visua perception to under y ng sensory physiolog cal mechan sms App ication of current re search and theory in a laboratory env ronment Prerequisite: PSY 290† or approval of the nstructor. Two lectures, 1 hour rec tation, 3 hours aboratory Cred t 4 hours

324 Learning and Memory. Processes under y ng infor mat on storage and retrieva Prerequ s te PSY 290† or approva of instructor Cred t, 3 hours

325 Physiological Psychology. Relat onsh ps of phys o logical processes to behav or Emphasis is on nervous system funct on ng. Prerequ s tes PGS 100 or two courses in biolog cal science preferab y both, PSY 290† or approval of nstructor Cred t, 3 hours.

330 Statistical Methods. Advanced app cation of statis- t cs to psychology. H gh y recommended for students interested n attending graduate schoo Prerequis te: PSY 230†. Three lectures, 1 hour laboratory Credit, 3 hours

399 Independent Study. Design and execut on of orig na research projects under faculty superv s on Prerequisite: approval of nstructor May be repeated for a total of 9 hours. Cred t, 1-3 hours

420 Advanced Analysis of Behavior. Rad ca behav or sm, emphasiz ng laboratory research and appl cations in the contro of human behav or Prerequisite: PSY 112 or 290†. Credit 3 hours

423 Animal Behavior. Genera ty of behaviora laws throughout the an ma kingdom as wel as behav or pat terns spec fic to d fferent spec es Prerequ s te upper d v s on stand'ng. Credit 3 hours

425 Biological Bases of Behavior. Crit ca study of phys iolog cal psycho ogy; bra n mechanisms under y ng mot vation, earn ng, etc Prerequ site PSY 325† Two lectures 2 hours laboratory Credit 3 hours

426 Neuroanatomy. Structure and funct on of mam ma an brain ncluding sheep brain dissect on Prerequ site: upper d v sion standing Three ectures 3 hours laboratory Cred t, 4 hours

434 Human Information Processing. Concepts derived from the b olog cal and soc a sc ences Consists of comb nations of sem nars and laboratory projects under the superv sion of var ous psycho ogy facu ty Prerequ - s te approva of nstructor. Cred t, 4 hours.

490 Course Programming. Supervised exper ence in the deve opment and adm nistrat on of programmed nstruc t on. Designed for students who proctor se f-paced or personal zed courses. May be repeated for a tota of 3 cred ts Credit 1 3 hours.

498 Pro-Seminar. Offer ngs wi be se ected from topics of current nterest in psycho ogy Credit 3 hours.

501 Supervised Teaching. Exper ence n and examina tion of perspectives on teaching undergraduate psychology Prerequ s tes. graduate standing n Psychol- ogy and approval of nstructor Credit 4 hours.

505 Advanced Social Psychology. Major research top ics and paradigms n soc a psychology Systematic developments in theory and research. Group processes, attitude format on and change, and social perception Prerequ site. approva of instructor Credit 3 hours

506 Survey of Research in Environmental Psychology. Major topics and parad gms n the study of man env ronment relat onships. Credit 3 hours

507 Research Methods in Environmental Psychology. Techn ques of nvestigat on in environmenta psychol ogy. Prerequisite. approval of nstructor Cred t 3 hours

514 History of Psychology. H storica deve opment of psycho ogy as a sc ence and profession Credit 3 hours

520 Advanced Experimental Analysis of Behavior. Con temporary research iterature in the exper mental analys s of behavior. Prerequisite PSY 420† Cred t 3 hours.

522 Methods and Instrumentation in Psychological Research. E ectron c and electromechanical nstrumen tation n psychological research, nc uding train ng n the programm'ng and use of the departmental computer Prerequisite: approval of nstructor. Cred t 3 hours

524 Advanced Physiological Psychology. Contr but ons of physiologica processes and bra n funct on to funda mental behaviora processes Credit 3 hours.

528 Sensation and Perception. Princ p es of sensory and perceptual processes emphas zing research l tera ture. Credit 3 hours

529 Inferential Statistics. Princ p es of stat st ca infer ence, correlat ona analys s, and test construct on. Credit, 3 hours

530 Intermediate Statistics. Cont nuat on of PSY 529 Psycholog ca stat stics emphas zing the ana ys s of var- ance and the design of exper ments. Prerequ s te PSY 529 or equ valent. Credit, 3 hours

531 Mathematical Model Techniques. Exp cat on of techniques for representing psycho ogical theor es through mathemat ca equat ons. Probab ity theory, Markov chains, and difference equations are emp oyed for the purpose of translating verba statements nto mathemat ca statements Prerequisite co lege a gebra Credit, 3 hours

534 Information Processing. Processes by wh ch sen sory nput s transformed, reduced e aborated stored recovered, and used Cred t 3 hours

535 Cognitive Processes. Contemporary research and theory in the psycho ogy of cogn t on Cred t, 3 hours.

540 Advanced Developmental Psychology. Theory and methodology perta ning to the study of chi dren empha sizing research find ngs and the r imp ications

Prerequisite: admission to Psychology Ph D program or approval of instructor Credit 3 hours

550, 551 Advanced Social Psychology. Theory and research concerning interpersonal perception, decision-making, attitude formation and change, group processes, social motivation, and interaction processes Prerequisite: PSY 505† or approval of instructor Credit 3 hours each semester.

553 Social Influence. Research literature relevant to attitude formation and change conformity, obedience, power, compliance and attribution Prerequisites PSY 550†, 551†, or approval of instructor Credit, 3 hours

555 Research Methods in Social Psychology. Review of research techniques Laboratory and field research analyzed applications to specific topics Prerequisite PSY 505† Credit 3 hours.

556 Social Perception. Attribution theory, attraction cognitive organization, impression formation, social judgment, scaling procedures for social stimuli Prerequisites. PSY 550† 551† or approval of instructor Credit, 3 hours

558 Interpersonal Processes. One or more topics chosen from empathy, modeling, various processes contagion, group phenomena social communication behavior exchange Prerequisites PSY 550† 551†, or approval of instructor Credit 3 hours

564, 565 Somatopsychology. Factual and theoretical psychological aspects of chronic illness physical disability and mental retardation Credit 3 hours each semester

569 Advanced Study of Personality. Personality as a theoretical concept in psychology including definitional problems, behavioral and traditional approaches the measurement of personality and current research issues Prerequisite approval of instructor Credit 3 hours.

571, 572 Psychological Assessment. Measurement theory and research relating to clinical assessment techniques, especially personality and intelligence tests Supervised practice in the various assessment procedures. Prerequisite: admission to clinical Ph D. program Credit 3 hours each semester

573 Psychopathology. Theory and research relating to the contribution of psychological social physiological and genetic factors to the development and persistence of abnormal behavior Prerequisite admission to Psychology Ph D program or approval of instructor Credit, 3 hours

574, 575 Psychotherapy and Behavior Modification. Major current theories and methods used in modifying abnormal behavior including traditional psychotherapy and behavior therapy emphasizing research literature and application to clinical research. Prerequisite: credit or concurrent enrollment in PSY 571† 572† Credit, 3 hours each semester

576, 577 Clinical Practicum. Supervised experience in development of professional skills in clinical psychology including the application of assessment procedures psychotherapy and behavior modification techniques with children and adults, and consultation Prerequisite. credit or concurrent enrollment in PSY 574†, 575† Credit 3 hours each semester

578 Experimental Personality. Laboratory course investigating problems in experimental personality research emphasis on providing skills necessary for independent work Prerequisite. PSY 573† Credit 3 hours.

581 Advanced Clinical Assessment. Theory and methodology pertaining to the study of children, emphasizing research findings and their implications Prerequisite: advanced standing in clinical Ph D program or approval of instructor Credit, 3 hours

582 Community Psychology. Community systems intervention techniques consultation models history and current status of community mental health movement conceptualization of the roles of community psychologists in social system intervention Prerequisite: advanced standing in Psychology Ph D program or approval of instructor Credit 3 hours.

583 Child Psychopathology. Major theories and research related to the development of deviant behaviors in children, including some supervised experience in child assessment. Prerequisites PSY 571† 572† or approval of instructor Credit, 3 hours

584 Advanced Treatment Methods. Advanced theory research and techniques of psychological treatment methods Prerequisites PSY 576†, 577† and approval of instructor Credit 3 hours for each specific topic

586, 587 Advanced Clinical Practicum. Supervised experience directed toward the development of specialized professional skills in clinical psychology in one of the following areas (individual psychotherapy group therapy marital therapy, family therapy, or child psychotherapy Prerequisites PSY 576† 577†, and approval of instructor. Credit 3 hours each semester

588 Consultation Methods. Several theories and strategies of organizational consultation The development of consultational skills through simulation and practical experience. Prerequisite advanced standing in Psychology Ph.D program or approval of instructor Credit 3 hours

591 Seminar. Credit 3 hours

Special Courses: PSY 494 584, 590 592 599, 700, 790 791 792, 799 (See page 31)

PSYCHOLOGY (PGS)

Courses which may be applied toward General Studies requirement in social and behavioral sciences

PGS 100 Introduction to Psychology. Major areas of theory and research in psychology Participation in departmental-sponsored research or an educational equivalent alternative activity required Credit 3 hours

270 Psychology of Adjustment. Principles of mental health, adjustment, conflict stress and coping processes derived from clinical and experimental research Prerequisite PGS 100 Credit 3 hours

306 Environmental Psychology. Concepts and research strategies in the study of man's behavior in interaction with his physical environment Prerequisite PGS 100 Credit, 3 hours

310 Social Psychology and Mental Health. Social and cultural influences on mental health and illness, emphasizing current issues and related research Prerequisite PGS 100 Credit, 3 hours

315 Personality Theory and Research. Definition and description of personality in terms of theoretical and methodological approaches Prereq site. PGS 100 Credit 3 hours

330 Human Sexual Behavior. Sexual development variations and deviations in sexual behavior and sexual disorders. Prerequisite: PGS 100 Credit 3 hours

331 Sexual Identification. Theories and research in the development of sexual identification concepts of femininity and masculinity, social roles and attitudes Prerequisite. PGS 100 Credit 3 hours

341 Developmental Psychology. Behavior development analyzed in terms of psychological principles Current research in human development Prerequisite. PGS 100 Credit, 3 hours

350 Social Psychology. Individual and social behavior Analysis of concepts and research dealing with social variables Prerequisite PGS 100 Credit 3 hours

414 History of Psychology. Historical development of psychology from philosophical beginnings to the present. Prerequisite: PGS 100 Credit 3 hours

426 Clinical Psychology. Clinical psychology as a science and profession. Historical development methods of interviewing and assessment, and methods of therapeutic intervention Prerequisite senior status or approval of instructor. Credit, 3 hours

427 Psychology of Aging. Behavioral attitudinal and

emotional phenomena associated with matur ty and old age; analysis both of the pos t ve abi ities and resources which may be retained as wel as the stresses of dy ng death and gr ef Prerequ s te· PGS 100 Cred t, 3 hours

430 Industrial Psychology. Psycholog cal contr but ons to the understanding of organ zations and management systems, motivation and work performance human fac- tors in systems des gn and eva uat on and personne selection and testing Prerequ s te PGS 100 Cred t 3 hours.

441 Child Psychology. Exper menta and theoretica t erature in chi d deve opment and behavior Prerequ s te PGS 341†. Cred t, 3 hours

442 Psychology of Adolescence. Methods and f nd ngs of recent stud es of the deve opment growth and prob ems of ado escents w th mp ıcat ons for educat on. Prerequisite: PGS 341† Credit 3 hours

443 Psychology of Exceptional Children. Behavior of ch ldren classed as exceptional n re ation to the prob- lems of assessment treatment and educat on Menta def c ency, hab t disturbances speech d sorders learn- ing disabi t es, psychophys o og c d sorders. Prereq uisite PGS 341† or approva of nstructor Cred t 3 hours.

444 Directed Child Study. Superv sed exper ence w th ch ldren in the pre schoo program of the Ch d Study Laboratory. Prerequ s te CDE 232† or PGS 341† and approva of instructor May be repeated for a tota of 9 cred ts Cred t, 1 3 hours

451 Experimental Social Psychology. Design onduct ana ys s and report of experimenta nvestigat ons of so c a psycho ogica phenomena Prerequ s tes· PSY 290† and PGS 350† Credit 3 hours

458 Group Dynamics. Theor es and methods of group eadersh p, group effect veness communication w th n groups and relat ons between groups and ind v dua members Prerequ s te PGS 350† Cred t, 3 hours

459 Attitudes and Attitude Change. Concept of att tude. Rev ew of theory and research nclud ng techniques of measurement Analys s of att tude change at both mass and ndividual evels Persuas ve commun cation, balance mode s, cognit ve, perceptua and mot vationa determ nants Prerequisite PGS 350† Credit, 3 hours

466 Abnormal Psychology. Theory and research re ated to the understanding of abnormal behav or Prerequ s te PGS 100 Cred t, 3 hours

Special Courses: PGS 494 498 584 590, 592 599 700 790 791, 792 799 (See page 31)

Center for Public Affairs

PROFESSOR:
HENRY (SS 220) BECKER
ASSISTANT PROFESSORS:
BROWN, HALL, MANK N O'SULLIVAN ER BES SACKTON

The Center for Public Affairs has been established as a separate academic unit located within the College of Liberal Arts. Its basic aims are (1) to offer a graduate education program including the Master of Public Administration degree and mid career education, (2) to maintain a research program designed to identify problems, produce information and propose solutions to major public problems, (3) to provide a high level of public service in relation to governmental needs in the State of Arizona

PAF 500 Research Methods. Approaches and tech n ques for the gathering of data n pub c adm n strat on for survey research and methodo ogy Var ous data ana ys s methods Prerequ s te PAF 501 or forma educational background n stat st cs Cred t 3 hours

501 Statistics in Administration. App cat on of statist ca methods to prob ems in finance personne survey and p anning Prerequ s te POS 301 or MAT 226† or equivalent Cred t, 3 hours.

502 Computers in Administration. Exper ence n use of computer technology for publ c admin strat on problem solv ng Credit, 3 hours

503 Organizational Theory. Organ zat ona theories and current research emphasis w th appl cat on to pub c adm n strat ve organ zations Cred t 3 hours

504 Comparative Administration. L terature on compar at ve pub ic adm nistration theory Bureaucrac es and their impact on the pol t cal deve opment process Se lected nations wi l be stud ed Cred t, 3 hours

505 Intergovernmental Relations. Evo ution growth present status and characteristics of the U S. federal system of government Federa state relat ons state- loca relations, reg ona ism counci s of government n- terstate cooperat on grants in a d and revenue sharing Credit, 3 hours.

506 Regional Cooperation, Programs and Associations. nter and intrastate reg onal pol t ca and administrative cooperat ve dev ces and bodies Cred t 3 hours

507 Bureaucracy and Public Affairs. Pub c adm n stra t on cover ng pub ic eth cs organizat on theory, personne , budgeting systems ana ys s and cr t ca pub- l c po cy ssues. Credit, 3 hours

510 Governmental Budgeting. Lega , soc a , econom c and po t ca nature of governmenta budgets and the budgetary process Theories and soc a consequences of budget dec sion-making and pract ces of budget contro Cred t, 3 hours

511 Governmental Finance Management Sources of fund ng management of funds and debts and genera pattern of expend tures n states ount es, cit es, and d str cts Cred t 3 hours.

512 Public Affairs Economics. Role of econom cs n publ c affairs w th examples from transportat on urban form, Rio Sa ado project, hous ng land use f ood con tro growth aspects of energy economics Cred t 3 hours

520 Public Management. The management process n government and pub ic agenc es w th emphas s on the execut ve eadership within the pub c sector Credit, 3 hours.

521 Public Personnel Management. H story of the c v serv ce, recruitment se ection posit on and wage c assi f cat on motivational ana ysis publ c union sm and eth cs n the pub ic serv ce Cred t 3 hours

522 Public Labor Relations. R se of pub c un onism manageria pol cy toward unionism confl ct reso ution impact of union sm on budgets, personne po ic es and public po icy Cred t, 3 hours.

523 Public Information Systems. Systems ana ysis con cepts and theory as applied to adm nistration Alternat ve modes of informat on organ zat on and their mpact on pub ic decision mak ng Cred t 3 hours

524 Community Conflict Resolution. nterdiscip nary approach to understanding the dynamics of community confl ct Strateg c considerat ons n po cy des gn and advocacy; potent a react on to conf ict Relevant mode s and research find ngs generated by both case stud es and comparat ve methods Credit 3 hours

525 Public Program Management. Governmenta ser vice programming formulat ng f nanc ng, operating evaluating and report ng Analys s of nteragency re a t onships and the role and conduct of research the programming process. Cred t, 3 hours

530 Management of Urban Government. Adm n strat ve pract ces and behav or within the urban po it cal adm n

istrative environment. Functional areas such as citizen participation, urban planning, urban transportation, and the conflicts between urban politics and administrative efficiency. Credit, 3 hours.

531 Comparative Urban Administration. Development of urban governments within different cultural, social and political milieu. Cities within developing countries as well as in the developed countries of Europe and North America. Credit, 3 hours.

532 Urban Planning Administration. Historical and present day uses of urban planning and procedures for its implementation. Basic principles and practices. Credit, 3 hours.

533 Politics of Urban Planning. Urban planning policy issues frequently faced by local, state and federal government. Consideration of the relationships between the political leader, the professional planner and the citizen. Credit, 3 hours.

535 The City and County Manager. The manager's role and resources in the differing forms of administrative, legislative and community sectors. Credit, 3 hours.

540 Public Policy Analysis. Theories which attempt to explain public policy formulation. Application of social science to policy issues. Credit, 3 hours.

541 Topics in Public Policy Analysis. May be repeated for credit. Credit, 3 hours. Topics may be offered from the following: (a) Aging, (b) Art, (c) Education Policy, (d) Environmental Public Policy, (e) Health, (f) National Public Policy, (g) Public Safety, (h) Recreation, (i) Transportation, (j) Welfare.

542 Science, Technology and Public Affairs. The influence of science and technology on governmental policy-making; scientists as administrators and advisors; governmental policy-making for science and technology; government as a sponsor of research and development. Credit, 3 hours.

543 Public Management of Land. Extent, basis, procedures, and consequences of land management by agencies of federal, state and local governments. Credit, 3 hours.

544 Preparation of Reports in Public Administration. Intensive practice in written and oral presentation of reports to conferences covered with problems in public administration. Visual aid techniques. Credit, 3 hours.

591 Seminar. Credit, 3 hours. Topics may be selected from the following: (a) General Public Administration, (b) Public Finance Administration, (c) Public Management, (d) Urban Affairs and Urban Planning, (e) Public Policy Analysis.

Special Graduate Courses: PAF 580, 584, 590, 592, 594, 598, 599. (See page 31.)

Sociology

PROFESSORS:
LINDSTROM (SS 321), ANDERSON, AXELROD, FARBER, HOULT, HUDSON, MANHEIM, MAYER, OWEN, SEBALD

ASSOCIATE PROFESSORS:
GORDON, HARDERT, J.M. JOHNSON, NAGASAWA, PFUHL, WHITAM

ASSISTANT PROFESSORS:
ALTHEIDE, BARBER, BIDNICK, COBAS, GOGEL, J.C.M. JOHNSON, LANER, SNOW, SULLIVAN

Departmental Major Requirements

Bachelor of Arts and Bachelor of Science Degree Curricula

Sociology Departmental requirements are the same for the Bachelor of Arts and for the Bachelor of Science degrees; see the College of Liberal Arts section of this catalog for the additional requirements for B.A. and B.S. degrees. The departmental requirement for either degree consists of 45 semester hours of credit of which 30 must be in sociology and 15 in closely related fields to be approved by the advisor in consultation with the student. The 30 hours must include SOC 101 or 301, 390†, 391†, 483† or 484† or 485† and one course from at least three of the following five areas: institutional forms and processes, demography and ecology, social problems, social organization and social psychology (details available in the department office). At least 18 semester hours must be in upper division courses. (See Degree Requirements, pages 52-53.)

Department Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Sociology—Consists of 63 semester hours of

credit of which 30 hours must be in sociology and are exactly those courses required for the Bachelor of Arts or Bachelor of Science degree in sociology. Of the remaining hours, two groups of 12 hours each and one of 6 hours are generally taken in related social sciences plus SED 480†.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Sociology Consists of 24 semester hours of credit, at least six of which will be upper division. SOC 101 or 301 is required. The remaining 21 hours must be approved by the sociology advisor in consultation with the student, and must include at least one course from at least three of the following five areas: institutional forms and processes, demography and ecology, social problems, social organization and social psychology (details available in the department office).

Special Emphasis Program

Public Safety Emphasis A public safety emphasis is available for law enforcement and fire fighting personnel in either the Bachelor of Arts or Bachelor of Science major in sociology. The 30 hours must consist of SOC 340†, 360†, 440†, 446†, 447†, and SWU 470†. In addition to SOC 101, 390†, 391†, 483† or 484† or 485†. Applicable courses taken outside the Department of Sociology may be used to meet the requirement of 15 hours in closely related fields approved by the advisor in consultation with the student. Upon graduation, those successfully completing the program will receive recognition by a statement on the student's transcript.

Departmental Graduate Programs

The Department of Sociology offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

SOCIOLOGY

SOC 101 Introductory Sociology. Fundamentals of sociology: organization of human groups and society, processes of interaction and social change. Not open to students who have credit for SOC 301. Two hours lecture, one hour laboratory. Credit 3 hours.

250 The Community. Development and organization of institutions in human communities of various types. Prerequisite: SOC 101. Credit, 3 hours.

251 American Society. Systematic analysis of the major institutions of economic activity, political structure, science, education and religion in contemporary America. Prerequisite: SOC 101. Credit, 3 hours.

301 Principles of Sociology. Intensive and critical analysis of the concepts of sociology. Not open to students who have credit for SOC 101. Credit 3 hours.

305 Courtship and Marriage. A functional approach to marriage: courtship, engagement, marital adjustment. Credit 3 hours.

332 The Modern City. Growth, characteristics and problems of the modern city. Prerequisite: SOC 101 or 301. Credit, 3 hours.

333 Population Problems. Theories of population change, births, deaths, migration, population policies. Prerequisite: SOC 101 or 301. Credit 3 hours.

340 Sociology of Deviant Behavior. Introduction to and analysis of deviant behavior. Delineation of the sociological and social psychological factors which give rise to deviant behavior such as suicide, drug addiction, homosexuality, prostitution, etc. Prerequisite: SOC 101 or 301. Credit, 3 hours.

341 Modern Social Problems. Race relations, poverty, unemployment and other current issues. Credit, 3 hours.

351 Industrial Sociology. Social and cultural analysis of industry. Occupational roles, status and social participation of workers. Prerequisite: SOC 101 or 301. Credit 3 hours.

352 Social Change. Patterns of social change, resistance to change and change-producing agencies and processes. Prerequisite: SOC 101 or 301. Credit, 3 hours.

360 The Social System and the Individual. Interaction patterns between the social culture, order and individuals, socialization process, norms, roles and statuses, collective behavior. Prerequisite: SOC 101 or 301. Credit, 3 hours.

362 Sociology of Adolescence. Cultural values and the social processes that help explain the development of the phenomenon of modern adolescence, including investigation of adolescent subcultures and cross cultural references. Prerequisite: SOC 101 or 301. Credit 3 hours.

365 The Sociology of Mass Communication. A sociological exploration of the major mass media as a communicative process in American society. Credit 3 hours.

390 Social Statistics. Application of statistical methods to research problems in sociology: problems of scale construction, measure of central tendency and variability, simple relationship statistics, sampling and presentation of data. Prerequisites: SOC 101 or 301 and MAT 106† or its equivalent or passing a proficiency examination to be administered by the Department of Sociology. Credit 3 hours.

391 Sociological Research. Methods of sociological research, including the fundamental assumptions underlying research, and some practical experience in research design, data collection techniques and data analysis. Prerequisites: SOC 101 or 301, 390† or approval of instructor. Credit 3 hours.

392 Practicum in Survey Research I. Provides practical experience in conducting a significant research project: survey design, questionnaire construction, sampling, data collecting, coding and preliminary data processing. Prerequisite: SOC 391† or permission of instructor. Credit, 3 hours.

393 Practicum in Survey Research II. Continuation of SOC 392. Provides practical experience in analysis and reporting survey data. Prerequisite: SOC 392†. Credit 3 hours.

401 Comparative Sociology. Cross cultural study of basic social institutions, methodology of cross cultural research, case studies of three or four different societies, concentrating on one other than the United States. Prerequisites: six hours in sociology including SOC 101 or 301, or ASB 102 or approval of instructor. Credit, 3 hours.

410 Sociology of Religion. Interrelationships of culture, society and religion, religion and economic and political institutions, social change and religion. Emphasis on American society and institutions. Prerequisites: six hours in sociology including SOC 101 or 301, or approval of instructor. Credit, 3 hours.

415 The Family. The family considered from the institutional viewpoint: its historical development, and its adaptation to a changing culture; the family system in many cultures. Prerequisites: six hours in sociology in

c ud ng SOC 101 or 301, or approval of nstructor Credit, 3 hours

416 Marriage Problems in Contemporary Society. Mar- ta and fam ly prob ems in today s soc ety from the v ewpoint of personal and cu tura adjustment Prerequi sites: s x hours n soc o ogy nc ud ng SOC 101 or 301, or approva of instructor Cred t, 3 hours

432 Human Ecology. Patterns and laws of societ es ad justments to the phys cal env ronment d st but on of communit es and nst tut ons. Prerequ s tes six hours n soc o ogy nc ud ng SOC 101 or 301 or approva of n structor Credit, 3 hours

433 Demography. Science of popu ation ana ys s; prob ems n measurements of the s ze compos t on and changes n popu at on Prerequ s tes. six hours n soc o ogy nc ud ng SOC 101 or 301 or approva of nstructor Credit, 3 hours

440 Racial and Ethnic Minorities. Prob ems of minor - t es in the Un ted States and n other rac a y and ethn cal y heterogeneous societ es Eva uat on of theo r es of prejudice and of research deal ng w th d scr minat on, desegregation and ass mi ation Prereq u s tes. six hours n socio ogy nc ud ng SOC 101 or 301 or approval of nstructor Credit 3 hours

446 Sociology of Crime. The process of cr m na zat on exp or ng the behav or of the def ners of cr me and the behav or of those def ned as cr minals Prerequ sites SOC 101 or 301 and 340† or approval of nstructor. Credit, 3 hours

447 Sociology of the Judicial System. The adm n stra t on of just ce nclud ng aw enforcement, the courts and penal agencies Prerequisite SOC 446†, or approva of instructor. Credit 3 hours

448 Social Gerontology. Soc a aspects of ag ng, status and ro e of the e der y and related problems personal and soc etal adjustment to o d age and cu tural var a t ons n viewpoint Prerequ s te SOC 101 or 301, or approva of nstructor Cred t 3 hours

452 Sociology of Complex Organizations. Soc o og ca stud es of government agenc es, industr a f rms, abor unions, mil tary estab shments and other arge-sca e organ zations Prerequisites. s x hours n soc ology n c uding SOC 101 or 301, or approval of nstructor Credit, 3 hours

453 Social Class and Stratification. Soc a c asses and the funct on of these group ngs in a soc ety Prerequ s tes six hours in soc ology inc ud ng SOC 101 or 301, or approval of nstructor Cred t 3 hours

454 The Afro-American in Modern Society. Soc a and cu tura her tage of B ack Amer cans ach evements and current trends Prerequ s te approval of nstructor Cred t, 3 hours

455 Collective Behavior. Socia causes and conse- quences of such non- nstitut ona zed forms of behavior as crowds cults publ cs socia movements and revo u tions. Prerequis tes six hours n soc ology nc uding SOC 101 or 301, or approval of nstructor Credit 3 hours

456 Political Sociology. Soc a factors assoc ated with voting behavior the nature and structure of the e ec torate and po it ca part es and the nature of nat ona and nternat onal power structure. Cred t, 3 hours

462 Social Control. S gn f cance of socia control n so ciety and the var ous methods used by nd v dua s and groups to control others. Prerequisite. SOC 360† or ap proval of nstructor Cred t 3 hours

463 Small Group Interaction. Theoret ca and app ed aspects of soc al nteraction, emphas z ng the processes invo ved n sma groups Prerequis te· SOC 360† or ap prova of nstructor Cred t, 3 hours

483 History of Social Thought. Soc a thought n human cu ture Background of modern soc o ogy. Prerequ s tes six hours in soc ology inc ud ng SOC 101 or 301 or ap- proval of instructor Cred t 3 hours

484 Contemporary Theory. Contemporary ssues and cr ses n soc al theory w th major focus on part cu ar theorists deo og ca factors n theory ph losoph cal s sues, the nature of theory and ts re at onsh p w th methodo ogy. Prerequ s te SOC 101 or 301, or approval of nstructor Credit, 3 hours

485 Sociology of Knowledge. Relat onsh p between so cia cond tions and the development of knowledge n modern society. Prerequisite· SOC 101 or 301, or ap proval of nstructor Cred t, 3 hours

496 Advanced Social Statistics. Quant tat ve methods probab l ty samp ing ana ysis of var ance mu t p e and partial regress on, and analys s of covar ance Prerequ - s te. SOC 390† or equ valent Cred t, 3 hours

498 Pro-Seminar. Topics to be se ected. Cred t 3 hours.

500 Research Methods: Problems of Measurement. Logical and ph osoph cal prob ems of measurement. Sca ng methods. Un d mens ona scales and the r mu t dimens ona genera zat on Item analys s and c uster ng techn ques Factor analys s. Computer app ication ons to real data. Prerequ s te· SOC 391† or approval of nstruc tor. Credit 3 hours

501, 502 Practicum in Survey Research. A one year research pract cum n survey field work, ana ys s, and report ng in the Phoenix Area Study Prerequ s te SOC 391†. Credit 3 hours each semester

507 Computer Application in Sociology. Appl cat ons of computers to data analysis and theory construction n sociology Prerequisites SOC 496† and 532 or approval of nstructor. Cred t 3 hours

515 Studies of the Family. Current deve opments n the study of marr age and the fam ly Prerequ s te approva of instructor Credit 3 hours

532 Studies in Ecology and Demography. Current ter ature n eco ogy and demography group and ndiv dua projects Prerequis te· approva of nstructor Cred t 3 hours

533 Urban Systems. heoret ca ana ys s of modern so c a structure with part cu ar attent on to growth and change in metropol tan areas Prerequ s te SOC 532 or approva of nstructor Cred t 3 hours

546 Sociology of Law. Law as a socia nst tut on ts or gins and deve opment and cur ent problems Prerequ s te approva of nstructor Cred t 3 hours

585 Development of Sociology. A graduate level orien tation to socio ogy as a scholar y d sc p ne and an emp rical science emphasiz ng 19th and ear y 20th cen tury scholars Prerequ s te. approva of nstructor Cred t, 3 hours

586 Philosophical Issues in Social Theory. Ph osoph cal ssues related to the deve opment of an empir ca sc ence of human and soc a phenomena Prerequis te· approval of nstructor Credit 3 hours

591 Seminar. Cred t 3 hours Topic may be se ected from the fo low ng

(a) Col ective Behavior
(b) Complex Organ za- t ons
(c Dev ant Behav or
(d) Ethnic Groups
(e) Sma l Groups
(f) Soc al Organizat on
g) Soc a Prob ems Theory
h) Soc a Psycho ogy
) Soc a Strat fication
Soc ology as an Aca demic D sc p ne

595 Methodological Issues in Sociology. Bas c meth odological ssues n the app ication of sc ent fic methods to the study of human soc a l fe. Emphas s on l mited number of major works, w th contrast ng approaches to ssues Prerequisite· SOC 391† or approval of nstructor Credit 3 hours

Special Courses. SOC 298 492 493 494 497, 499 590 592, 599, 700 780, 791, 799 (See page 31)

Zoology

PROFESSORS:
ALVARADO (LS C-226), BENDER BERTKE, CAZIER, COLE GERKING HADLEY HANSON, LANDERS, PATTERSON PIKE, RASMUSSEN, WOOLF

ASSOCIATE PROFESSORS:
ALCOCK, CHURCH, CLOTH ER FOUQUETTE, HASBROUCK, JUSTUS, McGAUGHEY, MINCKLEY OHMART

ASSISTANT PROFESSORS:
BE SWANGER BISSONETTE, COLL NS, FISHER GOLDSTE N, HAZEL RUTOWSK

LECTURER:
M LSTE N

Departmental Major Requirements

The Department offers course work in the ecol ogical, systematic, physiological, genetic morphological, developmenta and behav oral areas of zoology Organisms are studied at the molecular, cellular, ind vidual and population levels of organization Majors are expected to attain a basic knowledge in each of these areas and levels

Bachelor of Science Degree Curriculum

Zoology—Consists of a minimum of 30 hours in the major. Required major courses are BIO 101, 102†, 445†; plus at least one course from each of the following areas· ecology, systemat ics morphology, physiology, genetics, development, behavior. Required supplementary courses are. CHM 113, 115†, 121†, and either of the following chemistry sequences, CHM 331†, 332†, 335† and 336† or CHM 231† and 361†; ASE 226†; MAT 115, 142† or 120†, 121†; PHY 111, 112†, 113†, 114†, one year of a foreign language. (See Degree Re quirements, pages 52-53)

Wildlife Biology Consists of a minimum of 65 hours in the major Required major courses are: BIO 101, 102†, 217†, 320†, 340†; ENT 300†; ZOL 270†; BAS 460†, BOT 370†, 420†; plus a minimum of four courses from the following: ZOL 411†, 412†, 413†, 414†, 420†, 424†, 471†, 472†, 473†, 474†; GLG 101; ERA 325†; 326†; ENT 400†; BOT 450†, CEE 361† Students electing the *Wildlife Management Option* are also required to take ZOL 411†, 412†; ERA 401†, 402† Students electing the *Fisheries Management Option* are required to take ZOL 413†, 414†, BIO 426† Electives may include courses in administration, eco nomics, management and recreation Required supplementary courses are CHM 113, 115†, 116†, 231†; MAT 115, 142†; BIO 415†, ASE 226†; COM 100. Students who anticipate doing graduate work should include in their undergraduate program CHM 331† 332†, 335†, 336†; and PHY 111, 112†, 113†, 4† (See Degree Requirements, pages 52 53)

Entomology Consists of a minimum of 37 hours in the major Required courses are: BIO 101, 102†, 320†, 340†, 445†, ZOI 280†, 360†, ENT 300†, 420†, 425†, 430†, 551†. Requ red supplementary courses are CHM 113, 115†, 121†, and either of the following chemistry sequences, CHM 331†, 332†, 335† and 336† *or* CHM 231† and 361†; ASE 226†, MAT 115, 142† *or* 120†, 121†; PHY 111, 112†, 113†, 114†, one year of a foreign language (See Degree Requirements, pages 52 53)

Departmental Graduate Program

The Department of Zoology offers programs leading to the degrees of Master of Science and Doctor of Philosophy Consult the *Graduate Catalog* for requirements.

BIOLOGY

BIO 100 The Living World. Pr nciples of b ology Not offered for credit to students who have had advanced b ology in high school Cannot be used for major credit n the biolog ca sciences. Three hours lecture, 2 hours aboratory. Credit, 4 hours.

101, 102 Biological Principles and Processes. Biolog ca concepts emphasiz ng fundamenta pr ncip es and the interp ay of structure and funct on at the molecu ar, cel lu ar, organismal, and popu at on evels of organization For majors n biolog ca sc'ences and preprofess ona students n health re ated sciences (B O 101 is a prereq- uisite for BIO 102). Three hours lecture, 3 hours laboratory. Credit, 4 hours each semester

217 Introduction to Fisheries and Wildlife Management. Management of co d and warm water fisher es and terrestr a w ldl fe, emphasizing management of eco systems. Prerequis tes. 8 semester hours of bio og cal sciences and approval of instructor Cred t 3 hours

218 History of Medicine. Deve opment of medica concepts. Credit, 1 hour

300 Natural History of Arizona. P ant and an mal com mun t es of Arizona. Cannot be used for major cred t in the b ological sc ences Prerequ s te jun or stand ng. Credit, 3 hours

310 Special Problems and Techniques. Qua if ed undergraduates may formu ate and investigate a spec f c b ological prob em under the direction of a faculty mem ber. The nvest gation may nvolve brary field laboratory or a combinat on of the techn ques Prerequ - s tes conference w th the facu ty member and approval of the problem and techniques by the facu ty member and departmental cha r May be repeated for a tota of 6 cred ts Credit, 1-3 hours

318 History of Biology. Development of b olog cal concepts. Prerequisite 12 semester hours of b o ogica sciences Credit, 2 hours.

320 Fundamentals of Ecology. Organ zation, function ng and deve opment of eco og ca systems energy f ow b ogeochem ca cycl ng, environmental re ations popu lat on dynamics. Prerequisites B O 102† or approva of instructor. Credit, 3 hours

330 Ecology and Conservation. Eco og ca and bio og ca concepts of conservat on use of bas c and app ed eco ogy to understand manmade eco ogical problems and the purpose for conservat on Three hours lecture 2 field trips Credit 3 hours

340 General Genetics. Sc'ence of heredity and variat on Prerequisite. BIO 102† Three hours lecture, 1 hour rec - tat on. Cred t, 4 hours

415 Biometry. Statist ca methods appl ed to b o og ca

prob ems, ncluding des gn of exper ments est mation tests of significance, analys s of variance, regression, corre ation, chi square and bioassay Does not satisfy laboratory requirements for the Liberal Arts General Stud es program Prerequ s te MAT 142† or equ va ent Two hours ecture, 6 hours laboratory Cred t, 4 hours.

424 Analysis of Ecosystems. Ecosystems emphas z ng production, respiration, and decomposit on Prerequi s tes senior or graduate standing BOT 420† and ZOL 425† or equ valents. Cred t, 2 hours.

425 Laboratory Ecosystem Analysis. Methods of analyzing energy flow and nutrient cyc ng Prerequ sites BOT 424† and ZOL 425† or equiva ents Three hours laboratory. Credit 1 hour

426 Limnology. Dynam cs of nland waters stress ng the interre ations of c matic, geological, topographica physical and chemica factors w th special reference to aquatic fe. Prerequ s tes. CHM 113 ZOL 350†. Credit 3 hours.

427 Limnology Laboratory. Three hours aboratory. Pre requisites: B O 426† or approval of nstructor Cred t, 1 hour

428 Biogeography. Developmental h story of the wor d's physical and environmental characterist cs and the r re lationsh ps and nfluences on the patterns and significance of world p ant and an ma d str but ons of the past and present. Prerequ site. four hours of bio ogy or approva of nstructor Cred t, 3 hours

429 Advanced Limnology. Recent l terature deve op ments methods and imnological theory; field and aboratory app cation to some particular top c n mno - ogy Prerequisite: B O 426† Credit 3 hours

430 Concepts in Developmental Biology. Current con cepts and experimenta methods involv ng d fferent at on and biosynthet c act v t es of cel s and organ sms with examp es from m croorgan sms plants and an ma s Prerequisite BIO 102† or equivalent Cred t, 3 hours

432 Biochemical Cytology. Cel ular functions and chem istry based on the macromolecu ar organ zat on of ce lular components emphasiz ng the use of analyt ca procedures such as ce l fract onat on u trastructura ra- dioautography, and cytochem stry Prerequ s tes. BOT 360† or ZOL 360† or equ va ent, CHM 231† or 331† or equ valent. Cred t, 3 hours.

441 Cytogenetics. Chromosoma bas s of nher tance. Prerequisite: BIO 340†. Cred t 3 hours

442 Cytogenetics Laboratory. M croscop c analys s of meios s, mitos s and aberrant ce d v s on. Prerequ s tes or concurrent y. BIO 441† and graduate status Four hours laboratory Credit 2 hours

443 Molecular Genetics. Nature and funct on of the gene. Prerequ sites: B O 340† and a course n organ c chemistry Cred t, 3 hours

445 Organic Evolution. Processes of adapt ve change and speciation n popu at ons Prerequ site B O 340† or ZOL 241. Credit 3 hours

464 Photobiology. Pr nciples underlying the effects of l ght on growth deve opment, and behav or of plants, an ma s, and micro-organ sms Prerequisites 12 hours of courses n ife sc ences, CHM 231† or 331† Cred t, 3 hours

480 Methods of Teaching Biology. Methods of nstruc t on exper mentat on organ zat on and presentation f appropr ate content in bio ogy. Prerequ s tes either SED 311† or concurrent enro ment n SED 311† and 20 hours n the b o ogica sc ences Two hours ecture 2 hours aboratory. Cred t 3 hours

512 Biological Electron Microscopy. Theory and use of transm ss on and scanning microscopy for b ological mater a s. Prerequis te. approva of instructor Materia s fee. Two hours ecture, 6 hours aboratory. Credit 4 hours.

515 Scanning Electron Microscopy. Theory and tech niques of scann ng e ectron m croscopy. ntens ve three week m ni course Prerequ s te approva of instructor Materials fee Two hours ecture 6 hours aboratory Credit, 1 hour

520 Biology of the Desert. Factors affecting p ant and anima l fe n the desert reg ons and adaptat ons of the organ sms to these factors Prerequ s te 10 hours of biological sciences or approva of nstructor Cred t 2 hours

526 Quantitative Ecology. Samp ng strateg es spat a patter . analys s species diversity, c ass f cation and and appl cat ons of mu t var ate techniques to eco ogy Pre requisites. one course n ecology B O 415† or equ va ent Two hours lecture, 3 hours aboratory Cred it, 3 hours

531 Selected Experiments in Developmental Biology. Prerequ s te BIO 430† or concurrent enrol ment 4 hours laboratory. Credit, 2 hours

Special Courses: BIO 493, 494 498 499, 590 591 592, 598, 599 (See page 31.

ENTOMOLOGY

ENT 300 General Entomology. Form act v ties and c as sif cat on of insects Prerequ s tes. BIO 102† Three hours lecture 3 hours aboratory Credit, 4 hours

400 Aquatic Insects. Systemat cs and eco ogy of aquatic insects. Prerequ site ENT 300† Credit 3 hours

411 Applied Entomology. Econom c importance fe his tory and habits of harmfu and benef c al insects Methods of sampling insect popu at ons Prerequ s te ENT 300† or approval of instructor Two hours ecture, 4 hours laboratory or f e d work Cred t 4 hours

420 Insect Ecology. nterrelations of nsects and the r env ronments. Prerequ s tes B O 320† and ENT 300† Cred t, 3 hours

424 Medical Entomology. dent f cation, eco ogy, l fe his tories, and host paras te re at onsh ps of nsects of medica and veterinary mportance Prerequisite. ENT 300† or approval of instructor Two hours lecture 3 hours laboratory Cred t, 3 hours.

425 Field Entomology. Col ect on of nsects in the r nat ura habitats, emphas z ng l fe h stor es and f e d recogn t on Prerequ s te: ENT 300† or approva of in- structor. S x hours aboratory. Cred t 2 hours

430 Insect Morphology. Morpho ogy of typ ca nsects ncluding both externa and nterna structure Prerequi site ENT 300† Two hours ecture 6 hours aboratory Credit, 4 hours

551 Systematic Entomology. C ass f cat on of nsects taxonom c categories and procedures, b b iographical methods, nomenclature museum pract ces Prerequi site· ENT 300† Two hours ecture 6 hours aboratory Cred t, 4 hours

Special Courses: ENT 590, 592 599 See page 31)

ZOOLOGY

ZOL 110 Contemporary Zoology. Top cs emphas zing soc a y relevant prob ems Cannot be used for ma or credit in the bio og cal sc'ences Three hours ecture 3 hours laboratory Cred t, 4 hours

201 Human Anatomy-Physiology. Structure and dynam ics of the human mechanism Cannot be used for major cred t n the Department of Zoo ogy Three hours ecture, 3 hours laboratory Cred t, 4 hours

202 Human Anatomy-Physiology. Continuation of ZOL 201. Cannot be used for major cred t n the Department of Zoo ogy Prerequ s te ZOL 201 or approval of nstruc tor. Three hours lecture 3 hours aboratory Cred t, 4 hours

241 Human Genetics. Human hered ty and var at on emphas zing medica and popu at on genet cs Cred t, 3 hours

270 Vertebrate Zoology. Character st cs, class f cat on evo ut on and natura history of the major groups of ver tebrate anima s. Prerequis te B O 102† Three hours lecture 3 hours laboratory. Credit, 4 hours.

280 Introductory Animal Behavior. Evo ut onary genet

ic physio og ca and ecolog cal bases of an ma behav or. Prerequis te BIO 102† or equ valent. Credit, 3 hours.

300 Biogenetics of Man. Concepts of ecology heredity and evo ut on and the r importance n human affa rs Cannot be used for major cred t n the b o og cai sc ences. Cred t, 4 hours

311 Animal Microtechnique. Zoo og'ca m crotechn que nc uding the preparation for m croscop c exam nat on of an mal structures, tissues ce ls and who e mounts Prerequ s te B O 102† Six hours laboratory Cred t 3 hours

330 Vertebrate Developmental Anatomy. Ontogenetic sequence of morpho ogy, comparative anatomy and ev o ut onary trends of organ systems of vertebrates Prerequ sites BIO 102† or equ valent Three hours ec- ture, two 3 hour aborator es Credit 5 hours

350 Comparative Invertebrate Zoology. Character st cs, life cycles adaptationa b ology and evo ut on of the major groups of nvertebrate an mals Prerequ s tes B O 102† or approva of nstructor Two hours lecture 4 hours laboratory Credit 4 hours.

360 Basic Physiology. Physio ogica mechan sms of the h gher vertebrates Prerequ s tes B O 102† and a course n organic chemistry Three hours lecture 3 hours abo ratory Credit 4 hours

411 Wildlife Management. Pr nc p es and theory of wi d l fe management Prerequ s tes ZOL 471†, 472† or approval of instructor Three hours ecture 3 hours abo- ratory or field tr p. Cred t, 4 hours

412 Wildlife Management. Pract ces and techn ques of w ld ife management Prerequ s te ZOL 411† Two hours ecture 6 hours laboratory or fie d tr p Cred t, 4 hours

413 Fisheries Management. Pr nc p es and theory of f sher es management Prerequis te 10 hours of biology Three hours ecture 3 hours aboratory or f e d tr p Credit, 4 hours

414 Fisheries Management. Pract ces and techn ques of fisheries management. Prerequ s te ZOL 413†. Two hours lecture, 6 hours aboratory or f eld trip Cred t 4 hours

420 Field Zoology. F e d techniques and exper ence in co lect on and preparat on of zoo og ca specimens Taught only in summer session, one week of preparat on and four weeks n the fie d Prerequisites 20 hours n b ological sc ences and approval of nstructor Cred t, 6 hours

424 Parasitology. Morphology physio ogy and fe histo- r es of an mal paras tes, therapeut cs control and host parasite relat onsh ps Prerequ s te B O 102† Three hours ecture, 3 hours aboratory. Cred t 4 hours

425 Animal Ecology. nterrelat ons of an mals and their env ronments Prerequisite BIO 320† Cred t 3 hours

427 Animal Ecology Laboratory. Three hours f e d and aboratory Weekend field tr ps Prerequ s tes B O 320†; ZOL 471† or 472† and concurrent enro lment n ZOL 425† or approva of nstructor. Cred t, 1 hour

432 Animal Cytology. Structure and funct on of the ce based upon ultrastructural organ zat on. Prerequ s te B O 102†. Credit 3 hours

433 Animal Histology. Microscop c study of an ma t s sues and the r identif cation. Prerequ s tes B O 102† or approval of instructor Two hours lecture 4 hours abo ratory. Cred t, 4 hours

453 Protozoology. Systematics and b o ogy of protozoa Prerequ s te BIO 102† Two hours ecture 3 hours labo- ratory. Credit 3 hours

460 Comparative Physiology. The ana ys s of funct on n nvertebrates and vertebrates emphasiz ng evo ut onary trends n physiolog ca systems Prerequ s te ZOL 360† or equiva ent Three hours ecture 3 hours aboratory Credit 4 hours

468 Advanced Physiology. Detai ed treatment of verte brate organ system funct ons emphas zing ntegrat ve mechan sms. Prerequis te ZOL 360† or equ va ent Three hours ecture, 3 hours laboratory Credit 4 hours

469 Cellular Physiology. Emphas z ng the mo ecu ar ba sis for ce l structure and funct on. Prerequ s tes ZOL 360†, organ c chemistry Three hours ecture, 3 hours laboratory Credit 4 hours

471 Ornithology. Natura h story and f e d study of birds emphas zing Arizona spec es. Prerequ s te ZOL 270† or approva of nstructor Two hours ecture, 3 hours labo ratory One weekend f e d tr p Credit 3 hours

472 Mammalogy. C ass f cat on, structure hab ts eco ogy and d str bution of mamma s emphasiz ng North Amer can forms Prerequisite. ZOL 270† or approva of instructor Three hours ecture 3 hours aboratory or field tr p. One weekend field tr p Cred t 4 hours.

473 Ichthyology. Systemat cs and b o ogy of recent and extinct f shes Prerequ s tes ZOL 270†, 425† or approva of nstructor Two hours ecture 3 hours aboratory or f e d tr p Weekend f e d trip requ red Cred t 3 hours

474 Herpetology. Systemat cs and bio ogy of recent and extinct reptiles and amphib ans. Prerequ s te ZOL 270† Two hours ecture 3 hours laboratory or field tr p Cred it 3 hours

475 Natural History of the Higher Vertebrates. Natura history of b rds and mamma s, emphas zing southwest ern species. Prerequ s tes· B O 100 or BIO 102† and approva of instructor Three hours lecture 3 hours labo ratory or field tr p Cred t 4 hours

481 Laboratory in Animal Behavior. Experimenta and f e d stud es of anima behav or, descr ption and quant fi cat on of an mal behavior nterpretat on of behavior w th n an evolutionary framework Prerequ s te approva of nstructor One hour lecture 6 hours aboratory Cred- t 3 hours

515 Populations: Evolutionary Genetics. Mathematica models in the description and analys s of the genet cs of populations Prerequ s tes BIO 320† 415†, and 445†, or approva of nstructor. Credit 3 hours

516 Populations: Evolutionary Ecology. Pr nc ples of population bio ogy and commun ty ecology w th n an evo ut onary framework Prerequ s tes MAT 142† or BIO 415†, B O 320†, ZOL 515† Two hours ecture 2 hours rec tation Credit 3 hours

532 Developmental Genetics. Exam nat on of an ndiv d ual from gametogenes s through death emphasiz ng the genetic and b ochem ca nput required. Prerequ s te. B O 443†. Cred t, 3 hours.

540 Chromosome Techniques. Prerequ s te approval of nstructor Six hours aboratory Cred t, 2 hours

562 Histo and Cytochemistry. dent f cat on and ocali zation of compounds in t ssues on a cytolog ca sca e. Prerequisites. ZOL 360† or equ valent organ c chem s try Two hours ecture 4 hours aboratory Credit, 4 hours.

565 Advanced Parasitology. H stor ca and ana yt ca approach to the treatment of se ected areas n the body of knowledge relat ng to parasites and parasitism Pre- requ s te ZOL 424† Cred t 3 hours

566 Environmental Physiology. Phys o og ca responses and adaptations of an mals to var ous aspects of the phys ca env ronment Prerequ s tes· ZOL 360† BIO 320†. Cred t, 3 hours

Special Courses: ZOL 492 493 498 499 590, 591 592, 594, 598 599 790 791 792, 799 See page 31

College of Business Administration

Glenn D. Overman, D.B.A.
Dean

Purpose

The primary objective of the College of Business Administration is to prepare students for positions of responsibility in the business community. The undergraduate and graduate degree curricula are designed to provide (1) a background of general education helpful to informed, thinking citizens in a democracy, (2) a mastery of basic business tools and skills and an understanding of business procedures, and (3) a specialized and professional knowledge of a selected field of business. To attain these objectives in the undergraduate program, the curriculum has been devised so that the student completes 45 percent of his work in general education and other nonbusiness courses and 45 percent in courses offered by the College of Business Administration, with the remaining 10 percent selected from either area by the student in consultation with his her advisor

The College is a member of the American Assembly of Collegiate Schools of Business (AACSB), the official accrediting organization in the field of business administration Both the undergraduate and graduate programs of the College of Business Administration are accredited by this organization.

The College is host to a chapter of Beta Gamma Sigma, a national society that recognizes high academic achievement in AACSB accredited schools Election to Beta Gamma Sigma is the highest scholastic honor a student in business administration can earn

In addition to the regular degree curricula, other programs of study in the College are designed to meet special needs. Preparation for the teaching of business, office and distributive education subjects in secondary schools is offered in cooperation with the College of Education Evening and extension courses are conducted for qualified persons who are regularly employed and who otherwise would be unable to enroll in college courses. Short courses and institutes on a noncredit basis are organized in cooperation with various business groups for the furtherance of in service training of employed personnel

Organization

The courses of instruction offered by the College of Business Administration are organized into groups in order that a related sequence may be established for the various subject fields.

For administrative purposes, these fields are organized into the following departments Accounting, Administrative Services, Economics, Finance, Management, Marketing, Quantitative Systems

The Center for Health Services Administration offers a master's degree program designed to prepare qualified individuals who seek careers as administrators of hospitals and other health care organizations.

The Bureau of Business and Economic Research is organized to help business meet the challenges of an increasingly complex economic and technical environment In cooperation with faculty and students, government agencies, and the business community, it conducts and sponsors research projects. By functioning as the focus of the research and dissemination process in the College of Business Administration, the Bureau provides support for faculty research, opportunities for publication by faculty and advanced graduate students, and information for use by the business community

The Center for Executive Development serves the needs of the community with continuing education programs designed for businessmen and is open to government officials and the general public.

The Dean's Advisory Council, a group of 21 distinguished Arizona business and profes

sional leaders, provides liaison between the College and the business comn un ty The Council meets regularly through ut the vear with administrators, faculty and students to make recommendations as to how the College can be of greatest assistance in meeting com munity needs.

Degrees

Bachelor's Degrees. The Co ege of Bus ness Administration awards the Bachelor of Sci ence degree upon successful con p etion of a four year curriculum of 126 semester hours as prescribed below. Students may select one of the following 13 fie ds of specia zation:

- Accounting
- Administrative Services
- Advertising
- Computer Information Systems
- Economics
- Finance
- General Business Adm nistr it on
- Insurance
- Management
- Marketing
- Quantitative Bus ness Ana ys s
- Real Estate
- Transportation

Lower division students who wish to qu lify to teach business, office and d str butive edu cation subjects at the secondary and post secondary levels should major in pre secondary business education. U pper division students should major in business education. This curriculum leads to the Bachelor of Arts in Education degree and cert ficat on for teaching business, office and distr butive edu cation subjects in Arizona schools Courses to meet University and professional education requirements for this program are l sted under the secondary curricu um sect on of the Col lege of Education Required business courses may be found on page 12

Master's Degrees. The Master f Business Administration degree, the Master of Health Services Administration degree, and the Mas ter of Science degree in the f e ds of Accounting and Economics are awarded up on successful completion of progr ms detailed n the *Graduate Catalog*

Master of Business Administration Degree: A general program designed to meet the needs of students wh c seek broad, integrated gr aduate course work in the var ous functional f elds of business. The program of study emphasizes the managerial responsibility of policy-formulation, problem solving and decision making. Students with undergraduate back grounds in general educat on or technica sciences, as well as those with bachelor's de grees in business adn inistration, will find the program well suited to their needs. Students without prior courses in bus ness administra tion must complete approximately two years of study while those with an undergraduate de gree in business administration may comp ete requirements in one calendar vear.

Master of Health Services Administration Degree: A program designed to prepare quali fied individuals for careers as administrators of hospitals and other health services org ini zations. This preparat on is carried out by providing the students se ected theories, tools and techniques the understanding, analysis, and application of which are essential for effective health services administration.

Master of Science Degree in Accounting: A specialized program emphasizing preparation for public accounting and college teaching, with sufficient flexibility to nclude courses in managerial, tax and governmenta ccounting, as well as in allied fields

Master of Science Degree in Economics: A specialized program for students who desire to teach in community co leges, to prep re for research positions in business and govern n ent, or to take additional gradu ite work n ec y nomics. The master's program n economics requires graduate work in macroeconomic analysis, microeconomic analys s and qu nt ta tive methods.

Doctoral Degrees

Doctor of Business Administration Degree. The objectives of the Doctor of Bus ness Ad ministration (D B A. program are to prepare individuals for faculty positions in university or collegiate schools of bus ness, and to pre pare individuals for positions n bus ness or government where the required educat ona background is doctoral leve study The D.B A degree program is designed to provide a bro d study of the interrelated areas of business ad ministration and a high degree of professional competence in three fields of specialization

The degree is granted upon the c mpletion of an approved program of graduate study, successful completion of comprehensive writ ten and oral examinations, and submission of an acceptable original research project pre sented in a dissertation

Doctor of Philosophy Degree in Economics. The degree is awarded upon successful com pletion of the program as described n the *Graduate Catalog* Primary objectives of this degree program are to prepare persons for re search positions in public agencies and private business organizations and for teaching and research in institutions of higher learning. The degree is granted upon the completion of an approved program of graduate study, success ful completion of comprehensive wr tten and oral examinations, and submission of an ac ceptable original research project presented in a dissertation

Curriculum

Bachelor of Science in Business Administration. Students seeking a Bachelor of Science degree in the College of Business Administration must satisfactorily complete a curriculum of 126 semester hours as indicated below

	Semester Hours
General Studies Requirements	57
Business Administration Core Curriculum	33
Field of Specialization	24
Electives	12
Total	126

General Studies Requirements. All students in the College of Business Administration are required to complete a total of 57 semester hours in General Studies courses Courses of a specialized, vocational, technical, or professional nature may not be taken for General Studies credit.

Only certain approved courses from the departmental offerings listed below may be taken to satisfy the requirements in each of these areas These specific courses are enumerated in *Policy Statement* 57 of the College of Business Administration Students, in consultation with their advisors, *must select all General Studies courses from this list* Any exceptions must be approved by the Office of Academic Advisement of the College of Business Administration *prior to enrollment in the course*

Specific courses from the following departmental offerings may be taken to obtain the designated *minimum* number of semester hours required in each of the following areas

Humanities and Fine Arts . . . . 18 semester hrs
Architecture (APH courses only), art, speech and theatre, English, foreign languages, humanities, music, philosophy

Behavioral and Social Sciences . . . 15 semester hrs
Anthropology, cultural geography, economics (ECN 201 and 202 *required*), education, engineering, technology, health education, history, home economics, mass communications, political science, psychology PGS courses only) sociology.

Science and Mathematics . . . . 6 semester hrs
Biology, microbiology, botany, chemistry engineering, agriculture, geology, mathematics MAT 141 or more advanced course *required*, physical geography, physics psychology PSY courses only), zoology

Other General Courses
Additional general courses which provide credit and cultural background must be taken to bring the student's total General Studies credits up to the 57 hour minimum See *Policy Statement* 57 All students must complete ENG 101 and 102 (First Year English, and one of the following speech courses COM 100, 130, 305, or 405 as part of the General Studies requirement

Total General Studies Courses 57 semesters

Business Administration Core Requirements. In order to obtain an understanding of fundamentals of business operation and to develop a broad business background, every student seeking a Bachelor of Science degree in the College of Business Administration must complete the following courses

			Semester Hours
ADS	101	Elements of Business Enterprise	3
ACC	101	Elementary Accounting	3
ACC	102	Elementary Accounting	
QBA	221	Statistical Analysis	3
QBA	222	Quantitative Information Systems	3
ADS	233	Business Communication	3
ADS	305	Business Law	3
FIN	300	Fundamentals of Finance	3
MGT	301	Principles of Management	3
MKT	300	Principles of Marketing	3
MGT	463	Business Policies	3
		Total	33

Field of Specialization Requirements

A field of specialization consists of a pattern of 24 semester hours in related courses falling primarily within a given subject field Fields of specialization are available in accounting, administrative services, advertising, computer information systems, economics, finance general business administration, insurance management, marketing, quantitative business analysis, real estate, and transportation.

Accounting. This field of specialization includes the essential academic training for (1) those wishing to prepare for professional careers in public accounting, (2) those seeking positions as controllers, heads of accounting divisions, cost accountants or internal auditors; (3) those wishing to serve in any of the numerous accounting positions offered in federal, state and local governments and 4 those planning to operate their own businesses

A field of specialization in accounting shall consist of a minimum of 24 semester hours The following 21 hours must be included

			Semester Hours
ACC	201	Intermediate Accounting	3
ACC	202	Intermediate Accounting	3
ACC	331	Cost Accounting	3
ACC	351	Income Tax Accounting	3
ACC	383	Advanced Accounting	3
ACC	481	Auditing Theory and Practice	3
CIS	302	Electronic Data Processing	3

To complete the field of specialization, the student, with the approval of his advisor, shall select one additional 400 level accounting course

Note. All accounting majors must complete MAT 142, Mathematical Analysis or the equivalent as part of the program

Administrative Services. The course work in this major area is designed to prepare stu-

dents for careers in one of the following: office management, records management, secretarial administration, and business education.

The field in administrative services shall consist of a minimum of 24 semester hours. The following 15 hours must be included:

			Semester Hours
OFA	351	Principles of Office Management	3
OFA	432	Records Management	3
ADS	461	Theory of Administrative Communication	3
ADS	431	Business Report Writing	3
CIS	302	Electronic Data Processing	3

To complete the field of specialization, the student, in consultation with his advisor, shall select 9 additional hours of course work from business and economics related to the areas described below.

Office Management. This area of emphasis is intended to prepare students for careers in office management and administrative services.

Records Management. This area of emphasis is intended to prepare students for careers in records management and administration.

Secretarial Administration. This area of emphasis is intended to prepare students for careers as administrative secretaries.

Business Education. This area of emphasis is intended to prepare students who wish to teach business, office, or distributive education subjects in secondary schools. (Lower division students enroll in the College of Business Administration as pre-secondary business education majors. Upper division students enroll in the College of Education.)

A major in business education must complete the Business Administration core and ECN 201 and 202. A teaching minor consists of 24 semester hours of credit in business (OFA 201 is required). The remaining courses to complete the major or minor must be selected in consultation with a Business Education advisor.

The Department of Administrative Services participates in programs leading to the degrees of Master of Arts in Education, Doctor of Education, and Doctor of Philosophy, Business Education. Consult the *Graduate Catalog* for requirements.

Special Programs

Bilingual Secretarial. (French, German, Russian, Spanish). This degree program is offered jointly by the Department of Foreign Languages and the Department of Administrative Services. Students interested in this program should consult the Chair, Department of Foreign Languages.

Non-degree Secretarial. These programs are developed for students who do not plan to graduate. Students must be regularly enrolled and must meet University entrance requirements. See an advisor in the Administrative Services Department for further information.

Paralegal. This program prepares students for careers as aides to lawyers, trust officers, escrow officers, agents, and brokers in private, governmental and industrial practice.

Advertising. Use of the mass communications media for conveying ideas and information to customers, employees, stockholders and the general public is an essential part of modern business operation. This field of specialization offers students an opportunity to prepare for careers in advertising, public relations and related activities dealing with mass communications. Employment opportunities include positions with advertising agencies, retail stores, manufacturing firms, newspapers and broadcasting stations.

A field of specialization in advertising shall consist of a minimum of 24 semester hours. The following 18 hours must be included:

			Semester Hours
ADV	301	Advertising Principles	3
ADV	311	Advertising Creative Strategy I	3
ADV	312	Advertising Creative Strategy II	3
ADV	371	Advertising Media	3
ADV	453	Advertising Campaign Problems	3
ADV	461	Advertising Management	3

To complete the field of specialization, the student, in consultation with his advisor, shall select 6 hours or more from the following group:

			Semester Hours
MKT	302	Introduction to Marketing Management	3
MKT	304	Buyer Behavior	3
MKT	310	Principles of Selling	3
MKT	321	Principles of Retailing	3
MKT	325	Public Relations in Business	3
MKT	451	Marketing Intelligence	3

Computer Information Systems. This field involves the evaluation of internal and external organizational data in order to develop and maintain computerized systems that produce information for planning and control decisions. Special emphasis is placed on the analysis, configuration, programming, and data base aspects of the design and implementation of a computer information system. The course work given below prepares the student for a career in computer information systems and also enables the student to continue in specialized areas such as systems analysis, COBOL or FORTRAN programming, business simulation, or computer science.

A field of specialization in computer information systems shall consist of a minimum of 24 hours. The following 21 hours must be included:

			Semester Hours
CIS	201	Business Programming	3
CIS	302	Electronic Data Processing	3
CIS	402	Programming Systems	3
CIS	407	Systems Simulation	3
CIS	420	Business Information Systems	3
ACC	447	Accounting Information Systems	3
MGT ADS	368 461	Management Systems or Theory of Administrative Communications	3

To complete the field of specialization, the student shall select 3 hours from upper division courses approved in advance by the student's advisor.

Note: All Computer Information Systems majors must complete MAT 142, Mathematical Analysis, or the equivalent, as part of the program.

Economics. The study of economics affords an opportunity for the student to acquire a general knowledge of the operation of business and economic systems. This knowledge provides a sound basis for successful business ownership and control. Specialized courses are included to develop ability in the use of the tools of economic theory and analysis. Such tools are essential for graduates who wish to qualify for government or business positions requiring formal training in economics.

The field of specialization in economics shall consist of a minimum of 24 semester hours. The following 6 hours must be included:

			Semester Hours
ECN	401	Intermediate Price Analysis	3
ECN	402	Economics of Income and Employment	3

To complete the field of specialization, the student, with the approval of his advisor, shall select 18 additional hours of course work from among the upper division courses offered by the Department of Economics and from selected courses offered by the College of Business Administration.

Finance. Courses in finance provide students with an introduction to financial institutions, instruments and markets, and with an opportunity for increased understanding of the management problems of acquiring, allocating and managing funds.

A field of specialization in finance shall consist of a minimum of 24 semester hours. The following 18 hours must be included:

			Semester Hours
FIN	331	Financial Institutions	3
FIN	361	Managerial Finance	3
FIN	421	Securities Investment	3
FIN	426	Investment Management	3
FIN	431	Financial Markets	3
FIN	461	Financial Management Cases	3

To complete the field of specialization, the student, in consultation with his advisor, shall select 6 additional hours of course work from among the upper division courses offered in the College of Business Administration.

General Business Administration. Offering the opportunity for a broad survey of all phases of business operation, this program is particularly suitable for (1) those students who are planning to operate their own businesses and who seek a broad business background, (2) those who are preparing for jobs in which specialization is taught after employment, and (3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

A minimum of 24 semester hours in economics and business administration is required with a maximum of 12 hours in one subject field. The 24 semester hours in economics and business administration may be selected from any 300 and 400 level courses. No more than 6 hours of course work from INS 251 Principles of Insurance, REA 251 Real Estate Principles, ACC 201 and ACC 202 Intermediate Accounting, may be included. These courses will count as lower-division credit.

Insurance. Academic preparation for professional work in insurance sales, adjustment, management and underwriting is offered through this program. A field of specialization in insurance shall consist of a minimum of 24

semester hours. The following 15 hours must be included:

			Semester Hours
INS	251	Principles of Insurance	3
INS	321	Life and Health Insurance	3
INS	331	Property Insurance Principles and Coverage	3
INS	431	Insurance Law	3
INS	451	Social Insurance	3

To complete the field of specialization, the student, in consultation with his advisor, shall select 9 additional hours of course work from among the upper division courses offered in the College of Business Administration. REA 251, Real Estate Principles, may be included.

Management. The management function includes the planning, organizing, motivating and controlling of business operations. It deals with both human elements and material or physical factors. Through selection of courses, as outlined below, the student may place his major emphasis on personnel management, production management or the broad aspects of management philosophy and practice. A field of specialization in management shall consist of a minimum of 24 semester hours. The following 15 hours must be included:

			Semester Hours
MGT	311	Personnel Management	3
MGT	331	Production and Operations Management	3
MGT	368	Management Systems	3
MGT	434	Social Responsibility of Management	3
MGT	451	Organizational Behavior Concepts	3

The remainder of the required courses shall be selected by the student in consultation with his advisor.

Those students planning careers in Personnel Management shall select at least 6 semester hours from:

			Semester Hours
MGT	413	Wage and Salary Management	3
MGT	422	Training and Development	3
MGT	423	Industrial Relations and Collective Bargaining	3

Three additional semester hours must be selected from among the courses listed above or from among other courses offered by the Department of Management or approved in advance by the Chair.

Those students planning careers in production and operations management shall select at least 6 semester hours from:

			Semester Hours
MGT	335	Methods Management	3
MGT	355	Purchasing	3
MGT	432	Materials Management	3

Three additional semester hours must be selected from among the courses listed above or from among other courses offered by the Department of Management or approved in advance by the Chair.

Students planning careers in general management must select 9 hours from among the following:

			Semester Hours
MGT	433	Managerial Decision Making	3
MGT	459	International Management	3

(either or both) and choose one course from the three specified under personnel and/or choose one course from the three specified under production. Any exceptions to the above options must be approved in advance by the Chair of the Department of Management.

Marketing. Study in the field of marketing involves analysis of the ways business firms plan, organize, administer and control their resources to achieve marketing objectives. Focus is placed on market forces, growth and survival of firms in competitive markets, and the marketing strategy and tactics of the firm. Through proper selection of courses, a student may prepare for a career in (1) general marketing administration, (2) selling and sales management, (3) promotion management, (4) retail merchandising and management, (5) market research and planning, (6) industrial marketing, or (7) international marketing.

A field of specialization in marketing shall consist of a minimum of 24 semester hours. The following 15 hours must be included:

			Semester Hours
MKT	302	Introduction to Marketing Management	3
MKT	304	Buyer Behavior	3
MKT	412	Marketing Communications	3
MKT	451	Marketing Intelligence	3
MKT	460	Marketing Decision-Making	3

To complete the field of specialization, the student, in consultation with his advisor, shall select 9 hours from courses offered in marketing, advertising, and transportation or courses approved in advance by the Department of Marketing.

Quantitative Business Analysis. Quantitative business analysis is the process of evaluating both external and internal data to produce decision guidelines for managerial action. Model development and both statistical and mathematical analysis provide the foundations for data evaluation. This field of specialization prepares students for professional opportunities in applied statistics, management science, and operations research.

The field of specialization in quantitative business analysis shall consist of a minimum of 24 semester hours. The following 18 hours must be included:

			Semester Hours
QBA	322	Managerial Statistics	3
QBA	391	Operations Research	3
QBA	422	Advanced Business and Economic Statistics	3

QBA	450	Decision Analysis Applications	3
CIS	201	Business Programming	3
CIS	407	Systems Simulation	3

To complete the field of specialization, the student shall select 6 hours from upper division courses approved in advance by the student's advisor

Note: All Quantitative Business Analysis majors must complete MAT 142 Mathematical Analysis or the equivalent, as part of the program

Real Estate. Courses in real estate are designed to acquaint students with the basic information, knowledge and practices pertaining to real property and the real estate business. This field of specialization is the academic foundation for careers in various aspects of real estate work: sales, acquisition and development, taxation, management of property, title search, negotiated work, appraisal and finance.

A field of specialization in real estate shall consist of a minimum of 24 semester hours. The following 12 hours must be included

			Semester Hours
REA	251	Real Estate Principles	3
REA	331	Real Estate Finance	3
REA	401	Real Estate Appraisal	3
REA	411	Real Estate Law	3

To complete the field of specialization the student, in consultation with his advisor, shall select an additional 12 hours of upper division business administration and/or economics courses (INS 251, Principles of Insurance may be included). These courses must have the prior approval of the student's advisor.

Transportation. The program in transportation covers all modes of transportation for passengers and freight, and the special problems associated with each mode: urban, national and international transportation. Emphasis is on management of transportation organizations, government transportation policy and regulation of carriers, and the efficient use of transportation services by business management within the framework of the physical distribution management approach. Students are prepared for employment by carriers, businesses, and government agencies.

A field of specialization in transportation shall consist of a minimum of 24 semester hours. The following 15 hours must be included

			Semester Hours
TRA	301	Principles of Transportation	3
TRA	445	Physical Distribution Management	3
TRA	460	Highway Transportation	3
TRA	461	Air Transportation	3
TRA	463	International Transportation	3

To complete the field of specialization the student, in consultation with his advisor, shall select 9 or more hours from the following

			Semester Hours
CIS	302	Electronic Data Processing	3
ECN	321	Labor Economics	3
ECN	336	International Economics	3
ECN	451	Economics of Public Utilities	3
ECN	453	Government and Business	3
MGT	355	Purchasing	3
MGT	432	Materials Management	3
MKT	331	International Business	3
MKT	434	Industrial Marketing	3
MKT	435	International Marketing	3
MKT	444	Marketing Channels	3
TRA	462	Problems in Transportation	3

Elective Courses. Sufficient elective courses are to be selected by the student to complete the total of 126 semester hours required for graduation.

Honors Program. Students with outstanding academic records may be admitted to the Honors Program by application to the Honors Council of the College of Business Administration. This program provides an opportunity for students with exceptional ability to select an academic program to meet their individual needs. Although the general curriculum requirements must be completed, considerable opportunity is given for independent study under the direction of an Honors advisor. A thesis or an equivalent creative project is required for graduation.

For further details regarding the Honors Program, see the University Honors Program description on page 54 or consult the Office of the Dean of the College of Business Administration.

Pass-Fail Courses. Students majoring in Business Administration are *not* permitted to register for pass/fail in any course at this University. Students with majors in the College of Liberal Arts may register for pass/fail in courses offered by the Department of Economics, subject to conditions imposed by the College of Liberal Arts.

General Regulations. Each student entering in the College of Business Administration will be assigned an advisor upon the basis of the subject matter field in which he/she is primarily interested. The student should follow the sequence of courses suggested in the four year curriculum outline and the recommendations of his advisor in completing the prescribed background and those courses in preparation for the subsequent profession program.

All students in the College of Business Administration must attain a minimum cumulative grade point index of 1.75 at the end of the freshman year.

The Professional Program. The third and fourth years constitute the professional pr

gram of the undergraduate curricu un .

For admission to the professic n l program, the student must h ive comp eted

1 At least 60 sen ester hours with a minimum cumulative grade point index of 2 (;
2. All Business Admin stratı n core curricu lum courses nun bered below 300 and ECN 201, 202, Principles of Ec no n es, with a minimum cumu ative grade point ir dex of 2 00;
3 At least 32 semester hours in Gener il Studies and other cu tural b ck r und courses.

Failure to meet the requ'rements for admis sion to the profess onal progr in n ıs result in the student's becoming inel gib e to enr for 300 and 400 leve courses in the College of Business Administrat on

To be accepted for credit as part f the pro fessional program in Business Administrat ı n, ı l courses transferred from ther inst tutions must carry prerequisites simil r to those of tl e courses they are repl c ng at Ar zona State University

Graduation Requirements. In ddition t completion of the pattern of courses o tlined on page 126, to be elig ble for the Bachelor of Science degree in the College of Business Administration, a student must fulfill the f s lowing requirements

1 Have completed at east 3(semester hours, including 24 in profess on l business courses (numbered 300 or above , fter admission to the professional program
2 Have attained a cumulative grade point index of 2 00 or higher,
   (a) for all bus ness co irses t ken at th s Univers ty; and
   (b) for all courses c mpr sing his r her field of speci lizat on t ken at th s University

For computation purp ses the College of Business Administration averages D and E grades received in upper division business courses taken at Arizon State U n versity nto the student's grade point ndex n the Col ege A student may, by form applic tion t the Registrar, request that a gr ade of D or F in lower division courses not be included in his or her College index after the course has been repeated n residence with a passing grade and prior to completion of the student's first bac calaureate degree.

3 Have accumulated a mini ıur of 51 se mester hours in courses designed prin ar ly for unior or senior studer ts and completed in an accredited, four-year degree-granting institution.

Any exception to the above requirements must be approved by the Standards Comm t tee of the College of Business Administrati n

Transfer Credit. Students plann ng to take their first two years of work at a community college or at another four year college should take only those courses in bus ness and eco nomics that are offered as freshn an or sopho more level courses at any of the three state supported Arizona universit es These lower division courses are numbered 1 through 99 at the University of Arizona and 1 through 299 at the Arizona State Un versity and Northern Arizona University. *A maximum of 30 hours of business and economics courses from com munity colleges will be accepted tow ard a bachelor's degree in business adm'nistrat on*

Professional business courses taught in the junior or senior year in the three State univer sities may not be completed at a two year college for transfer credit in the business core or major (field of spec al zation). The intro-ductory course in bus ness ı s w ll be accepted as an exception to this p licy, but only lower division credit w be granted Such courses may be utilized in the free c ec tive category *subject to the 30 hour limitation* Courses taught as vocation l or career classes at the comm un t colleges wh ch are not taught in the colleges of business at any one of the three State un versities will n t be accepted for credit tow ard a b chelor s degree Courses taught in the upper divis on business core at the three State universities must be completed at the degree grant ng in-stitution unless transferred from in accredited four y e r schoo

The following gener l pattern of courses is recommended for students completing their first two years' work in a community college and who pl an to transfer to Arizona State University without loss of credit·

Pre-professional Courses	27 Hours
Accounting	6
Econ mics	6
Statist cs and Quant tat ve Inf r mation Systems	6
Lower Divisi n Bus ness E ect ves	9
General Studies . .	33 37 Hours
English	
Mathematics	
Science	
Humanities	
S cial Sciences	

Suggested Four-Year Curriculum Outline

FIRST YEAR

	Seme ter H ur
ADS 101	3
QBA 221	3
ENG 101, 102	6
MAT 141 or ther appr ved mat ematics course)	4
Humanit es F ne Arts	3
Behavioral and Socia Sc ences	6
Sc ence or addit on l Mathemat cs	3
Electives	3 5
	31 35

SECOND YEAR

ACC 101, 102	6
ECN 201, 202	6
QBA 222	3
ADS 233	3
COM 100, 300 or 305	3
Science and Mathematics	3
General Studies	8
	32

THIRD YEAR

MKT 300	3
MGT 301	3
ADS 305	3
FIN 300	3
Behavioral and Social Sciences	6
Field of Specialization and Electives	14
	32

FOURTH YEAR

1,8,9MGT 463	3
Field of Specialization and Electives	28
	31

Note: Students registering in the accounting field of specialization should enroll in ACC 101 and 102 the first year, postponing science or electives until later in the program. In some other fields of specialization, students should schedule beginning courses in their field during the sophomore year, postponing one of the General Studies courses until later. The student should consult his advisor for details of the course sequence in the field of specialization.

International Business Curriculum. Students who wish to pursue an interest in international business as a supplementary part of their studies should note the extensive offerings available through the College of Business Administration. While a field of specialization is not offered, it is possible to select a wide variety of courses, either as electives or as part of the field when applicable, from the following courses.

International courses currently available are as follows:

MKT	331	International Business
MKT	435	International Marketing
MGT	459	International Management
TRA	463	International Transportation
ECN	311	Economic Development
ECN	331	Comparative Economic Systems
ECN	336	International Economics
ECN	361	Soviet and East European Economics
ECN	371	Latin American Economics
ECN	488	International Monetary Economics

Students should consult with their advisors for assistance in coordinating these international offerings with their regular program of studies in the College of Business Administration.

Mexican-American Business Administration Undergraduate Program. The objective of this program is to provide educational opportunities for Mexican-Americans and other interested students who are preparing for leadership positions in local, regional, national and international firms.

The student may enroll in any field of specialization offered by the College of Business Administration. The candidate's degree in Business Administration, combined with directed linguistic and cultural studies, will provide the student with a unique educational experience and a broad background in the liberal arts and in business. Interested students should contact the Director of Student Advisement in the College of Business Administration.

Pre-Law Curriculum. Pre-law students may pursue a program of study in the College of Business Administration. Courses in accounting, economics, finance, insurance, labor relations and statistics are recommended for any student planning to enter the legal profession.

The admission requirements of colleges of law differ considerably. The students should communicate with the dean of the law school they hope to attend and plan a program to meet the requirements of that school. Most law schools, including Arizona State University, require a baccalaureate degree for admission, although some permit admission upon completion of three years of college work.

Students who plan to take a bachelor's degree prior to entering law school may follow

any of the standard curr cula in the Co lege of Business Administration Many pre aw students find t desirable to n a or in General Business Adm nistration This g ves the student a broad backgr und for the study of law Within the College of Business Admin'stration are faculty members who are lawyers and who serve as advisors for students desiring a pre law genera business adn nstration major.

Accounting

PROFESSORS:
(BA 223A), FR TZEMEYER, HUIZ NGH, MDIEKE, W LK NSON

ASSOCIATE PROFESSORS:
BARON, DAV SON, HARIED HUNT NGTON, McKENZIE, ROWLEY, SANDERS R. E. SM TH TIDWELL

ASSISTANT PROFESSORS:
ANDREWS, BARNETT BOYD FAZZ JOHNSON, KECK, PITT, RENEAU, ROSENZWE G, WYNDELTS

ACC 101 Elementary Accounting. Theory and practice of account ng app cab e to the accumu at on externa report ng and externa uses of f nancial account ng information. Cred t 3 hours

102 Elementary Accounting. Se ect on and ana ys s of account ng information for nterna use by management. Prerequisite: ACC 101 Cred t 3 hours

201 Intermediate Accounting. Account ng theory and pract ce app cab e to determ nat on of asset va ues and related prob ems of ncome determ nat on Prerequ s te ACC 102 Cred t, 3 hours

202 Intermediate Accounting. Account ng theory and pract ce app icab e to iabi t es and owner s equity. Specia prob em areas re ated to ncome determ nat on and f nancial report ng. Prerequ s te ACC 201 Cred t 3 hours.

300 Survey of Accounting. Financ a and manager a account ng emphas z ng the uses of account ng nfor mat on Not open to students n the Co ege of Business Administration. Cred t, 3 hours

301 Management Uses of Accounting. The deve op ment purpose and mp icat ons of cost account ng systems. Uses of account ng nformat on for managena dec s on-mak ng budget ng and control Restr cted to nonaccounting majors. Prerequ site: ACC 102 Cred t 3 hours

315 Financial Statement Analysis. Analyt ca methods appl ed to f nanc a statements for the gu dance of management and nvestors Des gned pr mar y for n n account ng majors Prerequ site ACC 102 Cred t, 3 hours

331 Cost Accounting. Cost accumu ation for inventory pric ng and income determ nation Cost behav or con cepts for p anning and control Job order and process cost systems, standard costs and budget ng Prerequ site. ACC 102 Cred t 3 hours

351 Income Tax Accounting. Federa ncome taxat on of nd v dua s, partnersh ps and corporat ons Basic tax planning and research methods. Prerequ s te ACC 102 Cred t, 3 hours

383 Advanced Accounting. Account ng theory app ca ble to partnersh ps, branches bus ness combinat ons and governmental units. Prerequis te: ACC 202 Cred t 3 hours.

432 Advanced Cost Accounting. Decis on-making, p anning and contro nc ud ng cap ta budgeting and app ications of operat ons research and statist cs. Pre requ s te ACC 331. Credit 3 hours

447 Accounting Information Systems. nformat on sys tems requ rements and data sources re ative to the tota integrated system of the f rm emphasiz ng system analys s and des gn nterna controls and computer processing Prerequ s tes ACC 331 and C S 302 Cred t 3 hours

452 Income, Estate and Gift Taxation. Comp ex prob ems of ncome taxat on estate trust, f duc ary and g ft taxes: tax p ann ng Emphasis on tax research Prereq u s te ACC 351 Credit 3 hours

475 Accounting in Public-Sector Organizations. Con cepts of budgeting, account ng and performance measurement app icable to manager a p ann ng and contro in governmenta un ts and other nonprof t or ganizat ons. Prerequ s te ACC 301 or ACC 331 Cred t, 3 hours

481 Auditing Theory and Practice. Concepts stan dards and methods n aud t judgment formu at on n ternal contro eva uation and program p ann ng Aud ting procedures and samp ng techn ques Eth ca and lega respons b i ties in audit ng Prerequ s te ACC 383. Cred t, 3 hours

495 Contemporary Accounting Theory. Theory of f nanc al account ng and report ng requ rements for profit or ented enterprises. Prerequ s te ACC 383 Credit, 3 hours.

500 Accounting Survey and Analysis. Bas c account ng concepts and procedures Determ nation of per d c income Preparation and nterpretat on of f nancial statements Open on y to students w thout prev ous credit in account ng. Cred t 3 hours

501 Managerial Accounting. Use of accounting data n the manager a dec sion mak ng process and n the ana ys s and contro of bus ness operat ons Prerequ site: ACC 500 or equ valent. Cred t, 3 hours

511 Tax Planning for Management. Economic mpl ca tions of selected management dec s ons nvo v ng applicat on of federal ncome tax aws Recognit on of tax hazards and tax sav ngs Prerequisite: ACC 501 Credit 3 hours.

521 Tax Research. Tax research source mater a s and techniques. App cation to business and nvestment de c sions Prerequisite. ACC 351 Cred t, 3 hours

541 Accounting Controls. Des gn mp ementation and eva uation of account ng contro systems ncluding behavioral and quant tat ve aspects. Prerequisite ACC 331 or ACC 501 Credit 3 hours

551 Advanced Accounting Theory. Genera y accepted accounting theor es and pr ncip es Cred t, 3 hours.

582 Auditing Theory and Practice. Funct on and re spons bi ty of the auditor n modern soc ety Advanced topics n auditing theory and methods Contemporary ssues n aud t ng Prerequ s te ACC 481 Cred t 3 hours

585 Problems in Managerial Accounting. Appl cat on of account ng ana ysis and quantitat ve techn ques con cerning nternal p ann ng and contro Prerequ s te QBA 501 or equiva ent Credit 3 hours

586 Problems in Financial Accounting. Prob ems n controvers al areas Externa report ng requirements for se ected industries nf uence of government regu at on Cred t, 3 hours

587 Computerized Accounting Systems. Design, n sta ation and eva uat on of computer based account ng nformation systems. Mode s that use account ng data and quant tative techn ques to a d n ana ys s, p ann ng and contro Prerequ s te: ACC 447 Cred t 3 hours

591 Seminar in Selected Accounting Topics. Cred t 3 hours

791 Doctoral Seminar in Accounting. Cred t 3 hours

Special Courses: ACC 492 493 494 497 498, 499 590 592, 593 598, 599 690 692 7 0 790 792, 799
(See page 31

Administrative Services

PROFESSORS:
BOGGS IRSH 3D) BATY GRYDER, C. B SMITH, TATE

ASSOCIATE PROFESSORS:
BOHLMAN, FRAME NMAN JACKS OLNEY, A. SM TH, TOOTLE, W LSON

ASSISTANT PROFESSORS:
ARANDA, CH LDERS DUNDAS, FAHLGREN HENN NGTON HURSTON, HUTT LEONARD LEWIS LYNCH MEYER, NEUHE SEL NYGAARD, RADER RE SS SWA N VAN HOOK WUNSCH

LECTURER:
FULLMER

ADMINISTRATIVE SERVICES

ADS 101 Elements of Business Enterprise. Bus ness enterprise as an ntegra part of American soc ety Emphas s on soc a pol t ca , ega and eth ca con- s derat ons Cred t 3 hours

233 Business Communication. Theories of nterper sona processes and mot vationa systems as related to effect ve communication D rected pract ce on recurr ng types of organizat ona commun cat ons Cred t, 3 hours

305 Business Law. The ega environment of bus ness Jud c a procedures contracts torts and agency aw Cred t, 3 hours

306 Business Law. Lega aspects of corporat ons, part- nersh ps sa es negot ab e instruments property secured transact ons bankruptcy and nsurance Pre requisite· ADS 305. Cred t 3 hours

307 Business and the Legal Environment. The Amer can egal system Contemporary egal problems of the modern business. Cred t, 3 hours

401 Small Business Administration. App cat on of bus ness pr ncip es by the sma entrepreneur Cred t 3 hours

431 Business Report Writing. Organizat on and prepa rat on of reports used n bus ness Prerequ s te ADS 233 Credit, 3 hours

451 Business Research Methods. Nature and purpose of research. Prerequ s te QBA 222 Cred t 3 hours

461 Theory of Administrative Communication. ntra persona nterpersona and adm n strat ve communication. Cred t 3 hours

500 Legal Environment of Business. Pub ic and private aspects of the aw and contemporary egal prob ems Not open to those who have rece ved cred t n ADS 305 or equ va ent Cred t 3 hours

501 Business Research Methods. Se ection des gn and complet on of a business or ented research proje t Cred t 3 hours

591 Seminar: Professional Report Writing. Cred t 3 hours

700 Research Methods. Cred t, 3 hours

Special Courses: ADS 492, 493 494, 497 498 499 590 591, 592 593, 594 598, 599 690, 692 700, 790 792 799 (See page 31

BUSINESS EDUCATION

BUE 401 Vocational Education in American Schools. Bas c pr nc p es and ph osophies of vocationa educa tion Credit 3 hours.

480 Teaching Business, Office and Distributive Education Subjects. Organ zat on and presentat on of appropriate content for these subject areas in the sec ondary school Credit 4 hours

491 Organization and Management of Cooperative Programs. Work study programs for bus ness occupa tions in high schools and commun ty co eges Cred t 3 hours

501 Foundations of Business Education. H story ph osophy, pr nciples and objectives of bus ness education. Cred t 3 hours.

503 Tests and Measurements in Business Education. Construct on, adm nistration and eva uat on of tests in business subjects Cred t, 3 hours

505 Current Literature in Business Education. Cr t ca ana yses, genera izations and trends Cred t, 3 hours.

506 Data Processing for Teachers. E ectron c data process ng equ pment and computer programm ng Credit 3 hours

511 Improving Instruction in Secretarial Subjects. Modern methodo ogy n teach ng typewr t ng shorthand and office education courses. Cred t, 3 hours

513 Improving Instruction in Accounting and Basic Business Subjects. Modern methodo ogy n teach ng accounting and bas c bus ness courses Credit 3 hours

515 Observation and Work Experience. Observat on and/or part c pat on n bus ness Cred t, 3 hours

521 Education for Business in the Community College. Curr culum nstruct on and art culat on w th secondary schoo s and co legiate nst tut ons Credit 3 hours

591 Seminar. Cred t 3 hours Topics such as the fo low ng w l be offered·

(a) Guidance for Bus ness Educat on

b) Analys s of Research n Bus ness Educat on

c) Admin strat on and Superv s on n Bus ness Educat on

d) Ind v dua zed Progress o

(e) Consumer Education

594 Study Conference or Workshop Cred t, 1 to 6 hours.

791 Doctoral Seminar in Business Education. Cred t, 3 hours.

Special Courses: BUE 492 493 494 497, 498 499 590, 592 593, 598, 599 690 602 700, 790 792 799 See page 31)

OFFICE ADMINISTRATION

OFA 101 Basic Typewriting. Bas c typewritten commu n cations Ind v dual progress on Cred t 2 hours

113 Shorthand. Bas c shorthand pr nc ples nd v dual progress on Cred t 3 hours

201 Advanced Typewriting. Advanced typewr tten commun cations nd v dual progress on Prerequ s te OFA 101 Credit 3 hours.

214 Shorthand. Intermed ate shorthand d ctat on and transcript on. Ind v dua progress on Prerequ s te OFA 113 Cred t 3 hours

312 Transcription. Advanced shorthand d ctat on and transcript on Ind v dual progress on Prerequ s te OFA 214 Credit, 3 hours

331 Secretarial Administration. Ro e of the profes- s ona secretary in fac itating manageria funct ons Cred t, 3 hours

344 Office Services. Serv ces re ated to office systems Prerequisite. OFA 201 Credit 3 hours

351 Principles of Office Management. Relationsh p of the office funct on to the bus ness enterpr se Cred t 3 hours

432 Records Management. Organ zat n and manage ment of records systems Cred t, 3 hours

591 Seminar in Selected Office Administration Topics. Credit, 3 hours.

Special Courses: OFA 492 493 494 497 498 499 590 592, 593 594, 598 599 See page 31

Economics

PROFESSORS:
(BA 319A) BOND
J. COCHRAN, GREENWOOD, KNOX
METCALF PLANTZ

ASSOCIATE PROFESSORS:
AMACHER BURGESS, CHALMERS, COX
GOOD NG HOGAN M JACKSON KAUFMAN
KINGSTON LADMAN LARSON LOWE,
WINKELMAN

ASSISTANT PROFESSORS:
BOYES, DE SERPA, DUFFY, GERK NG
HAPPEL SCHLAGENHAUF

ECN 100 Development of the American Economic System. Ana yt ca treatment of the evo ut on of the Amer can economy ntroduct on to e onom c inst tu tions n the Un ted States Cred t, 3 hours

201 Principles of Economics. Descr ptive ana ys s of the structure and function ng of the Amer can economy Emphas zes basic econom c nst tut ons and the factors determ ning ncome and emp oyment eve s. Cred t 3 hours

202 Principles of Economics. Pr ce determ nat on and ncome d str but on n a cap ta st c economy Cred t 3 hours

301 Money and Banking. Funct ons of money Monetary systems cred t functions bank ng pract ces and centra banking po cy Prerequ s te ECN 201 Cred t 3 hours

304 Contemporary Macroeconomic Issues. Ma ro econom c princ ples app ed to current prob ems of econom c po cy e g inf at on unemp oyment gross nat ona product (GNP forecast ng Prerequis te ECN 201. Credit 3 hours

305 Contemporary Microeconomic Issues. M croeco nom c pr nc p es app ed to current problems of eco nom c po cy, e g po ut on cr me poverty Prerequ s te ECN 202. Cred t 3 hours

311 Economic Development. Theor es of econom c growth and deve opment Ro e of cap ta format on, techno og ca innovat on, popula on and resource de- ve opment n econom c growth Prerequ s te ECN 201 or ECN 202. Credit 3 hours

321 Labor Economics. H sto ca and theoret ca ana - ysis of labor prob ems and abor re at ons Labor force wage theor es and practices. Emp oyment and u em- p oyment. Government regu at ons Prerequ s te ECN 202 Credit 3 hours

322 Economics of Human Resources. Theory and a surement of human cap ta Manpower pol cy for educat on train ng and ob match ng n the context of eff cient market a ocat on Pre equ s te ECN 202 Cred t 3 hours

331 Comparative Economic Systems. Econom c t e r es and practices of cap ta sm soc a ism, commun sm and fasc sm Prerequ s te ECN 201 Cred t 3 hou s

336 International Economics. The comparat ve advantage doctr ne nc ud ng pract ces under vary ng commerc al pol cy approaches The econom c mpact of nternat ona disequ ibr um Prerequis tes. ECN 201 and 202 Cred t, 3 hours

341 Public Finance. Taxat on, pub ic expend tures budget formu at on debt management and f sca po cy w th emphas s on federa government finance Prerequ site. ECN 202 Credit 3 hours

361 Soviet and East European Economics. Econ m c deve opment dur ng the twent eth century Ana ys s of contemporary nst tut ons and prob ems Prerequ s te ECN 201. Cred t 3 hours

371 Latin American Economics. Lat n Amer can eco nomic deve opment and current ssues n the reg on Prerequisite ECN 201 or 202 Cred t 3 hours

401 Intermediate Price Analysis. Ro e of the pr ce sys tem n organ z ng econom c act v ty under vary ng degrees of compet tion Prerequisites ECN 201 and 202. Cred t, 3 hours.

402 Economics of Income and Employment. Determ nants of aggregate eve s of employment, output and ncome of an economy Prerequ s te ECN 201 and 202 Cred t, 3 hours

408 Mathematical Economics nteg ation of econom c analysis and mathemat ca methods nto a comprehen s ve body of know edge w th n contemporary econom c theory. Prerequ s te ECN 401. C ed t 3 hours

421 Economics of State and Local Government. F - nanc ng state and oca governments emphas z ng budget ng factors affecting expenditures tax struc tures and f scal capac ty and ntergover menta f nancia re at ons Prerequ site ECN 202 Cred t 3 hours.

441 History of Economic Thought. Deve opme t of econom c doctr nes theor es of mercant sm phys ocracy, c ass c sm neoc ass cism Marx sm and contemporary econom cs. Prerequ s tes. ECN 201 and 202 Cred t, 3 hours

451 Economics of Public Utilities. Econom c eg s at ve and adm n strat ve prob ems in the regu ation of pub c ut l ty rate and serv ce standards Pub c uti ty costs pric ng po ic es rates, plant ut ization, compet t on Prerequ s te ECN 201 or 202. Cred t 3 hours

453 Government and Business. Deve opment of pub c pol c es toward business Ant trust act v ty Economic effects of government po cies Prerequ s te ECN 202 Cred t, 3 hours

473 Urban Economics. Mode s of urban growth and n tra urban ocat on The demand for and supply of urban pub c goods and services Prerequ s tes ECN 201 and 202 Credit 3 hours

488 International Monetary Economics. H story theory and po cy of nternat ona monetary economics Var ous nternat ona monetary systems and the r effects on the domestic and international econom c act v ty of par t cipat ng countries Prerequis te ECN 201 Cred t 3 hours.

500 Fundamentals of Economic Analysis. M croeco nom c and macroeconom c ana ys s Pr ce and output determ nat on n var ous market structures F nctiona d str bution of income. Theory of ncome and employ- ment Open on y to students without prev ous cred t n economics Credit 3 hours

501 Managerial Economics. Management prob ems from an economic po nt of v ew ncludes the app ca t on of economic ana ys s to dec s on mak ng n var ous areas of bus ness po cy deve opment Cred t 3 ho rs

503 International Economic Theory. Econom c theory as t app es to internationa trade the ba ance of pay ments economic ntegrat on factor movements internationa mba ances and nternat ona trade po c es of the deve oped and ess deve oped countr e Credit 3 hours

505 Monetary Policy. Determ nants f the money supp y and the eve of nterest rates Federa Reserve po icy and the effect veness of centra banking po icy Cred t, 3 hours

506 Monetary Theory. Trad t ona and post Keynes an monetary theory interest rate determ nation, the de mand and supply of money Cred t 3 hours

511 Macroeconomic Analysis I. The nat on s come output emp oyment and genera pr ce eve Exam na t on of current theoret cal and empir ca research and pol cy prob ems Credit 3 hours

512 Microeconomic Analysis I. Theory of exchange product on resource use and pr c ng n cap ta st c and mixed systems. Cred t, 3 hours

513 Macroeconomic Analysis II. Advanced topics n macroeconom cs Emphas s on app ied macroecon m c mode s Prerequ s te ECN 511 Cred t 3 hours

514 Microeconomic Analysis II. Ad.a d' p cs n m croeconom cs Emphas s on genc equ b um w l fare economics and p oduct on and t' h or Prerequisite· ECN 512 Cred t 3 hour

521 Manpower Economics Human a th ory and app cations to factors such as educat or t a ng earn ngs, d scriminat on and job search Ana ys of labor markets and manpower pol cy Cred t h ur .

522 Human Resource Economics. Ana ys s of abor supp y and human resources Manpower po cy a d program evaluat on techn ques Prerequ te ECN 521 Cred t, 3 hours

531 Economic Systems and Organizations. Ph osoph cal foundat ons of major econom c systems and of properties of pr nc pa system mode s Compar s n of alternative nstitut ons and system c mponents of con temporary econom es Cred t 3 hours.

537 American Economic Growth. Growth of the Amer - can economy w thin the framework of economic theory Deve opment and nteract ons of nstitut ons and tech no ogy to meet the chang ng needs of the economy Cred t 3 hours

541 Development of Economic Analysis. H stor ca deve opment of econom theory Emphas s on the de velopment of econom c ana ysis from pre c ass a economics through Keynes Cred t 3 hours

553 Industrial Organization and Public Policy. App ca tion of market theory to contemporary ndustr a organ zat on emphas z ng ol gopoly Structure cond ct and performance n ndustr al markets Recent deve op ments n antitrust pol c es Credit 3 ho rs

555 Public Finance. Econom cs of co ect ve act on pub c spend ng and taxat on mpact of centra gove n mental act vity on resource al ocat on and come d str but on Cred t, 3 hours

570 Economics of Developing Nations. Econom c problems ssues and po cy dec s ons fac ng the esser deve oped nat ons of the world Credit 3 hours

572 Regional Economics. Introduction to export base nput output inear programm ng s mu at on and econ ometr c mode ing as too s of reg ona analys s Cred t 3 hours

573 Urban Economics. Mode s of urba growth and n tra urban ocat on the urba pub c sector and cost benef t ana ys s as a too of rban ana ys s Prerequ site· ECN 473 Credit 3 hours

580 Econometrics I. App at on of mathemat ca and statist ca techniques to prob ems of econom c theory Prob ems n the formulat on f econometr c mode s Prerequ s te 6 hours of stat st cs Cred t 3 h urs

581 Econometrics II. Advanced top cs n econometr cs Emphasis on extend ng the s mple l near mode and on s mu taneous re at onsh ps Prerequ s te ECN 580 Cred t 3 hours

591 Seminar in Selected Economics Topics. Credit 3 h urs

791 Doctoral Seminar in Economics. Credit 3 hours

Special Courses: ECN 492 493 494 497 498, 499 590 592, 593, 598 599 690 692 700 790 792 799 (See page 31)

Finance

PROFESSORS:
POE BA 267A , AP LADO DAUTEN
STEVENSON, TENNEY

ASSOCIATE PROFESSORS:
MYLER WILT

ASSISTANT PROFESSORS:
D ANDERSON, BUTLER CESTA J M DAVIS
HENDERSON, H GGINS McCULLAGH
MOREHART, O CONNELL, SEALEY
TRENNEPOHL

FINANCE

FIN 203 Personal Finance. F nanc a prob ems and n st tut ons affect ng ndiv duals borrow ng sav ng insurance and nvestment. May be taken by students n the Co lege of Bus ness Admin strat on for e ect ve cred t on y. Credit 3 hours

300 Fundamentals of Finance. Management prob ems of acquiring, a ocat ng and control ng use of fu d n the bus ness enterpr se Prerequ s tes ACC 102 and ECN 202. Cred t, 3 hours

331 Financial Institutions. Bank ng, sav ngs nsurance mortgage and other f nanc a nst tut ons Ana ys s of the r functions Prerequ s te ECN 201 Cred t 3 hours

361 Managerial Finance Cap ta budget ng everage d v dend and growth prob ems Prereq s te F N 300 Cred t 3 hours

421 Securities Investment. The env ronment a d pr cess of securities nvestment and the appra sal of security va ue Prerequ s te F N 300 Cred t 3 hours

426 Investment Management. Pr nc p es of p rtfo management. nvestment se ect on and t m ng tech n ques Prerequ s te F N 421 or appr va of nstru tor Cred t 3 hours.

431 Financial Markets. Asset iab l ty and cap ta man agement n financ al nst tut ons Influence of market factors Current problems and ssues Pre equ s tes F N 300 and 331 Credit 3 hours.

461 Financial Management Cases. Prerequ s te F N 361 Cred t 3 hours

500 Finance Fundamentals. Functions and nf uence of f nancia nst tut ons Theory and pract ce of f nanc a management Prerequ s te ACC 102 or 500 or equ va ent Not open to students w th cred t n F N 300 or equ va ent Cred t, 3 hours

521 Security Analysis. Pr nc p es and techn ques of appraising debt and equ ty secur t es Prerequ s te ACC 500 or equ valent Not open to students who have had FIN 421 Cred t 3 hours

526 Portfolio Management. Theory and techn ques of portfol o valuat on and manageme t Prerequ s te F N 421 or 521 Credit 3 hours.

531 Capital Markets and Institutions. Re ent theoret ca and operat onal deve opments n ec nom c sectors affect ng capita markets and nst tut ons Prerequ te FIN 500 or equ valent Credit 3 hour

561 Financial Management. Acqu s t n a cat on and management of funds w th n the bus ness enterpr se F nancial goa s, funds f ows, cap ta budget ng and f - nanc ng strateg es Prerequ s te F N 50 and ACC 501 Cred t, 3 hours

571 Advanced Financial Management. Recommended for doctora students Cred t 3 hours

572 Advanced Financial Institutions and Markets. Recommended for doctora students Cred t 3 hours

573 Advanced Investments. Rec mmended for doc- toral students Cred t 3 hours

591 Seminar in Selected Finance Topics. Cred t 3 hours

791 Doctoral Seminar in Finance. Cred t 3 l o rs

Special Courses: F N 492 493 494 497 498 499 59 592 593 598 599 690 692, 700 790 792 799 See page 31

INSURANCE

INS 251 Principles of Insurance Coverages ava ab e buy ng methods procedures n ett ng c a ms ns ance compan es and vocationa opp rtun t es C ed t 3 hours

321 Life and Health Insurance. Types f c ntracts functions of var ous contracts ompany organ zat o rate mak ng se ect on of risks and ther home off ce operat ons Governmenta supe v sion of ife nsurance compan es Prerequ site NS 251 Cred t 3 hours

331 Property Insurance Principles and Coverage. Po cies and pr ncip es of fire and casua ty nsurance. For students plann ng careers n agency or home off ce work or for a fundamenta know edge of nsurance for business Prerequisite. NS 251 Cred t 3 hours

425 Current Problems in Insurance. Majo prob ems and issues in the insurance ndustry Prerequisite. 9 hours of nsurance. Cred t 3 hours

431 Insurance Law. Lega concepts and doctrines ap- pl cab e to the f e d of insurance Prerequ s te 6 hours of insurance. Cred t, 3 hours

451 Social Insurance. nsurance coverages prov ded by state and federal governments· soc a secur ty unem p oyment insurance, workmen s compensat on and other socia or governmenta insurance plans Cred t 3 hours

461 Estate Planning. Use of fe nsuran e w th w s trusts and business buy sel agreements Needs ap proach to estate plann ng Cred t 3 hours

591 Seminar in Selected Insurance Topics. Cred t 3 hours

Special Courses. NS 492 493, 494 497 498 499 590 592 593, 598 599. (See page 31

REAL ESTATE

REA 251 Real Estate Principles. Regu at o s pract ces egal aspects and profess ona eth cs of the real estate bus ness. Prerequ s te ECN 202 Cred t 3 hours

302 Real Estate Management. Management of res - dences, apartments and commerc a propert es Consideration of profess ona standards methods of bus ness promot on eas ng nsur ng and ma nta n ng propert es as an agent of the ow ers Prerequ s te REA 251 Credit, 3 hours

331 Real Estate Finance. Sou ces and ava ab ty of funds Management, serv cing and repayment of loans Prerequ s te. REA 251 Cred t 3 hours

401 Real Estate Appraisal. Factors affect ng the va ue of rea estate. Theory and pract ce of appra s ng and preparat on of the appra sal report Techn ques n ap- praisa s Prerequ site REA 251 Cred t, 3 hours

411 Real Estate Law. Legal pract ces as they apply to the real estate f e d and to the f e ds of t t es mort gages, ending and trust work Cred t 3 hou

441 Real Estate Land Development. Ne ghborhood a d c ty growth Munic pa p a n ng and zon ng Deve op ment of resident a commerc a ndust a and specia purpose properties Prerequ s te. REA 251 Cred t, 3 hours

456 Real Estate Investments. nvestment potent a as affected by market condit ons and governmenta po c es Prerequ s te REA 401 Cred t, 3 hours

461 Current Real Estate Problems. Recent deve op ments in the f e ds of rea estate f nance taxat on zon ng, plann ng governmental regulations and govern- ment ass stance programs Prerequis te REA 251 Cred t 3 hours.

591 Seminar in Selected Real Estate Topics. Credit 3 hours

Special Courses: REA 492 493, 494 497 498, 499 590, 592 593 598 599 See page 31)

Health Services Administration

PROFESSOR:
EVELAND (BA 352B)
ASSISTANT PROFESSORS:
HAI, W LL AMS

HSA 501 Health Care Organization. Structure organ zat on and function of contemporary hea th care de ivery systems with emphas s on hea th serv ce com ponents their evolution, chang ng character st cs nterre at onsh ps, and mp icat ons for the future Credit 3 hours

504 Community Health Care Perspectives. Nature, language and concepts of the med ca process nc ud ng a cr t cal examinat on of commun ty hea th serv ces w th n a hea th p anning framework Prerequ s te HSA 501. Cred t 3 hours

520 Hospital Structure and Policy. Hea th care inst tu- tions w th focus on hospita manager a structure and po cy Funct onal re at onsh ps among the adm n stra t on govern ng bod es med ca staffs and related e ements Prerequ s te HSA 501 Credit 3 hours

522 Hospital Administrative Organization and Prac- tices. nternal hospita organ zat on and funct ons ana ysis of manageria and c n ca serv ces the r re a tionsh ps prob ems and pract ces Prerequ site HSA 501 Cred t, 3 hours.

532 Financial Management of Health Services. A qu s t on a ocat on and management of f nanc a re- sources w th n the hea th care enterpr se Budget adm nistrat on, cost ana ys s, f nancing strateg es and nternal contro s Prerequ s tes HSA 520 and 522 Cre d t 3 hours

542 Health Care Jurisprudence. Lega aspects of hea th care del very and the r mp cat ons for hosp ta and hea th serv ces adm n strat on Cons derations of ega sensitivity, responsib ty, and vu nerab ty for the hospital admin strator Cred t 3 hours.

591 Integrative Seminar—Contemporary Issues. Cur- rent pol cies, prob ems and controversies across the broad spectrum of hea th serv ces adm n strat on Leg slat ve deve opments, soc a and po t ca mpacts of pub ic pol cy, educat onal programs hea th manpower perspect ves Credit, 3 hours.

n add tion, top cs such as the fo ow ng wi be of fered

(a) Comparative Hea th Care Systems

(b) Hea th nformat on and Records Systems

c) Econom cs of Hea th Serv ces P ann ng

(d) Hospita Commun ty Re ations

(e) Health Care nsurance Concepts

593 Applied Project Assignment to a hosp ta or other hea th care organ zat on for an approved supervised experience n the ref nement of health re ated manage rial skil s. Emphas s on ful range of exposure to management of both adm n strat ve and cl n ca ele ments Credit 3 hours

Special Courses: HSA 590, 592 598, 599. (See page 31)

Management

PROFESSORS:
FEARON (BA 367E), K. DAVIS HE ER, INSKEEP, RE F, SCHABACKER, T NGEY WH TE
ASSOCIATE PROFESSORS:
BASSFORD D COCHRAN MENDLESON, REUTER RUCH, WERTHER
ASSISTANT PROFESSORS:
COOK, DECKER, HEID, KRE TNER, McFILLEN, MALONEY RECK, SHIPPER WE HRICH

MGT 301 Principles of Management. Plann ng organ z ing, and contro ing human and other resources for the effect ve and eff c ent accomp shment of organ zat ona object ves Cred t 3 hours

311 Personnel Management. Manpower p ann ng staff ng, tra ning and development compensat on appra sa and labor re at ons. Prerequ s te MGT 301 Cred t 3 hours

331 Production and Operations Management. Use of resources n produc ng goods and serv ces Concepts of plann ng schedul ng and control ng product ve act v it es and physica resources Prerequ s te MGT 301 Credit, 3 hours

335 Methods Management. Theory and pract ce n work design, methods mprovement and work measu e ment. Re at onship of att tudes and product v ty Prerequ s te MGT 301 Cred t 3 hours

355 Purchasing. Pract ces and prob ems confront ng the purchasing manager nc ud ng sources of supp y market nformat on mater a spec f cation and nspec t on contro records nventor es stores and purchase budgets Prerequ sites MKT 300 and MGT 301 Cred t 3 hours

368 Management Systems. Systems theory and man agement funct ons; bas c too s for systems analys s organizat onal systems des gn systems app cat on in recent bus ness pract ces systems s mulat on Prereq uisite. MGT 301 Credit 3 hours

413 Wage and Salary Management. nsta lat on and admin strat on of a comp ete wage and sa ary program nc udes objectives po cies organ zation contro ob evaluat on wage surveys and methods of obta ning acceptance of an ntegrated program Prerequ s te· MGT 311 Credit 3 hours

422 Training and Development Learn ng theory or en tation and basic eve tra n ng management deve opment, resource mater a s and methods Prerequ s te MGT 311 Credit 3 hours

423 Industrial Relations and Collective Bargaining. Processes and procedures of co ect ve barga n ng Scope and negotiat on of un on contracts Cred t 3 hours.

432 Materials Management. Ana ys s and manager a ntegration of the materia f ow process with n an organ izat on, nc uding mater als research and standards purchas ng production and nventory contro ware- hous ng and materia s movement Prerequ site MGT 331 Cred t 3 hours

433 Managerial Decision-Making. Dec s on mak ng concepts methods and approaches and the r app ca tion to business prob ems Manager a nderstand ng and uses of quant tat ve dec s on mak ng too s Part c pation n a management simu at on Prerequ s te MGT 301 Credit 3 hours

434 Social Responsibility of Management. Re at onsh p of bus ness to the so ial system and ts tota env ron ment. Cr ter a for appra s ng the soc a respons b ty of management dec s ons. Ro e of managers as agents of organ zat onal and soc a change Prerequis te· MGT 301 Cred t 3 hours

451 Organizational Behavior Concepts. Human as pects of business, as d stingu shed from economic and techn ca aspects and how they nfluence effic ency morale and management practice Prerequ site MGT 301. Credit 3 hours

452 Organizational Behavior Applications. The com plex set of behav ora forces and re at onsh ps that nf uence organ zat onal effect veness ntervention strateg es and app cat on sk l s. Prerequ s te. MGT 451 Cred t 3 hours

459 International Management. Management concepts and pract ces of mult nat ona and fore gn f rms. Objec- t ves, strateg es po ic es and o gan zat ona structures of enterprises operat ng in var ous soc a econom c po itica and cu tural env ronments Prerequ s te. MGT 301 Cred t 3 hours

483 Business Policies. Po cy formu at on and adm n s trat on of the tota organ zation inc ud ng ntegrat ve analys s and strategic p ann ng Prerequ s te Comp e t on of 90 hours inc ud ng al other Bus ness Adm n strat on core requ rements Cred t 3 hours

501 Managerial Concepts. Ana ys s of current admin s trat ve phi osophy and pract ces and the r h stor cal foundations ntegrat on of an organ zat on from the po nt of v ew of an adm n strator Prerequisite MGT 301 Credit 3 hours

503 Organizational Behavior. Deve opment of effect ve work groups n business Ana ysis of cases n rgan za- t ona re at onsh ps. Group dynam cs, effects of change and nformal organizat on Credit 3 hours

520 Problems in Personnel Management. Se ecting, deve oping, mainta ning and uti z ng a competent abor force Case stud es of personne prob ems Preparat on of a wr tten personne program Cred t, 3 hours

522 Labor Relations and Public Policy. Deve opment f state and federa legislat on Analys s of recent dec - sions of courts and abor boards The egal r ghts and dut es of employers unions and the pub c Cred t 3 hours

532 Materials and Purchasing Management. Ana ys s of the ncom ng f ow of mater a s and the econom en v ronment n which the mater a s acqu s t on and a ocat on funct ons operate Cred t 3 hours

581 Management of Production. Ana ys s of the pro- duction funct on from a manager a po nt of v ew Conceptua foundat ons ana ysis of majo prob ems and dec s on processes Cred t 3 hours

591 Seminar. Cred t, 3 hours Top cs such as the fo ow- ng w l be offered

(a) Business Po cy
(b) Manager al P a n ng and Contro
(c) Business and Soc ety
(d) The Management Aud t
(e) Research and Development Management
(f) nternationa Management
(g History of Management Thought
h) Comparative Adm n strat on
) Bus ness Simu at on

791 Doctoral Seminar in Management. Cred t 3 ho rs

Special Courses: MGT 492, 493 494 497 498 499 500 590 592, 593, 598 599 690 692 700 "90 792 799 See page 31

Marketing

PROFESSORS:
GWINNER (BA 323E), FARRIS
GROSSMAN HARR S, OVERMAN ROWE
SCHM DT, ZACHER

ASSOCIATE PROFESSORS:
BESSOM BROWN DAN EL, GOURLEY
D JACKSON OSTROM SCHLACTER, WALKER

ASSISTANT PROFESSORS:
CONEY MC NE LL PATT SHROCK
R E SM TH SWINYARD TAP A

LECTURER:
RE D

ADVERTISING

ADV 301 Advertising Principles. Advert s ng as a commun cat ons tool n market ng and bus ness man agement Creat ve methods su vey of med a measurements of effectiveness and coord nat on w th other aspects of the sa es and promot ona program Not open to students w th cred t n MKT 412 Prerequ - s te MKT 300 or MCO 110 C ed t 3 hours

311 Advertising Creative Strategy I Preparat on of advertis ng for pr nt and broadcast use Creat ve strate gy, the commun cat on process and deve opment of advertising messages. Prerequ s te. ADV 301 Two hours ecture, 2 hours aboratory Cred t, 3 hours

312 Advertising Creative Strategy II. Cont nuat on of ADV 311 Product on of f m and v deotape commerc a s for te ev s on mechan ca product on of pr nted adver- t s ng Prerequ s te ADV 311 Two hour lecture 2 hours laboratory Cred t, 3 hours

371 Advertising Media. Characterist cs and use of broadcast and pr nted med a Re at onsh p of media to markets Aud ence measurement and ana ysis Med a schedul ng Prerequ s te. ADV 301. Lecture and abora tory Cred t, 3 hours.

453 Advertising Campaign Problems. P ann ng and execut ng the advertising campaign nc ud ng research budget media and eva uat on Prerequisites ADV 311 and 371. Lecture and aboratory Credit, 3 hours.

461 Advertising Management. Adm nistrat on of the comp ete advertising program Marketing m x budget- ng med a strategy measurement of effect veness coordinat on with other promotiona act v ties Use of the advert s ng agency. Prerequis tes ADV 301 MKT 300, and ADV 371 or MKT 451 Cred t, 3 hours

Special Courses: ADV 492 493 494, 497 498, 499 (See page 31

MARKETING

MKT 300 Principles of Marketing. Role and process of market ng n the society and economy The market ng system emphasiz ng externa env ronments on market- ing management Prereqv s te ECN 202 or approva of instructor Credit 3 hours

302 Introduction to Marketing Management. Marketing concepts, functions and nst tut ons w th spec a empha- sis on product, pr cing promot on and d str but on management Prerequ s te MKT 300 Cred t 3 hours

304 Buyer Behavior. Behav ora concepts n the ana ys s of buyer behav or and n marketing strategy formu a t on Prerequ s te MKT 300 Cred t, 3 hours

310 Principles of Selling. Bas c princ p es under y ng the sales process and the r pract cal app cat on to sa es s tuations Economic, soc olog cal and psycho og ca relationships n the market p ace app ed to sa es of ndustr al and consumer goods and ntangib es Credit 3 hours

321 Principles of Retailing. Ro e f reta ing n market ng Location, buy ng promotion organ zat on personne and control n a reta enterpr se. Pr requ site MKT 300 Credit 3 hours

325 Public Relations in Business. Role of pub c re a t ons n bus ness, government and soc al nstitut ons, emphasiz ng pol cy formu at on Credit 3 hours

331 International Business. Mu t discip nary ana ysis of deolog es cu tures, po it cs econom cs soc al va ues and inst tutions as they relate to operat ons of the nter nat onal firm Prerequ s te. ECN 202 or approva of instructor Credit 3 hours

411 Sales Management. App cat on of management concepts to the adm nistration of the sa es operat on Prerequisite: MKT 300 Credit 3 hours

412 Marketing Communications. The commun cation process as it relates to the promot ona act v t es of the firm from a behavioral point of v ew Prerequisite· MKT 302. Credit, 3 hours

424 Retailing Management. Prob ems of reta ing man agement includ ng functions w th n various nst tutions and retai ing of commodit es Prerequ s te MKT 321 Cred t, 3 hours.

434 Industrial Marketing. Strategies for market ng products and serv ces to ndustr a , commerc al and governmenta markets Changing ndustry and market structures. Prerequis te· MKT 300. Cred t 3 hours

435 International Marketing. The Un ted States posi t on in wor d trade. Market ng strategy formu ation by indiv dua firms to serve foreign markets and to adapt to variat ons n factors affecting foreign market ng ef forts Prerequ site MKT 300. Cred t, 3 hours.

444 Marketing Channels. D str but on channe s used by f rms engaged in market ng and manufactur ng Strate g es for market ng channels management Re at onsh ps among marketing intermed ar es Prerequ site MKT 300 Cred t, 3 hours

451 Marketing Intelligence. ntegrated treatment of the trad t ona and dec s on theory approaches to market ing research and ana ys s of environmenta factors affect ng marketing decis ons n the f rm Prerequisite. QBA 221 or approva of nstructor Cred t, 3 hours

460 Marketing Decision-Making. Dec s on mak ng by the market ng executive. ntegrat on of a elements of the market ng program Prerequ s te MKT 302 Cred t, 3 hours.

500 Fundamentals of Marketing. Market ng systems concepts nst tut ons, and funct ons emphasiz ng the strateg c adaptat on of the f rm to chang ng env ron menta cond t ons Not open to students who have earned cred t n MKT 300 Cred t 3 hours

501 Marketing Management. Marketing problems from the management po nt of v ew. Credit 3 hours.

502 Public Relations. A system approach to manageria pub c relations emphasiz ng the relat onsh p of the or gan zation to ts environment. Cred t 3 hours

520 Marketing and the Behavioral Sciences. Concepts and theor es from the behav ora sc ences as they re ate to marketing strategy formu at on Credit 3 hours

522 Marketing Information. Market ng research mar ket ng informat on systems and modern quantitat ve techn ques in market ng decis on mak ng Prerequ s te MKT 501. Cred t 3 hours

583 Marketing Planning and Programming. Current trends and deve opments n se ected consumer and ndustr a markets Deve opment of compet tive market ng strategy responses to change n these markets Individua research and case ana ysis Prerequ s te MKT 501 Credit, 3 hours.

591 Seminar. Credit, 3 hours Top cs such as the fol ow ng wi l be offered.

(a) Product Strategy
(b) Price Strategy
(c) Channe Strategy
(d) Promotion Strategy
(e) nternationa Business
(f) Market ng n a Chang ng Env r nment
(g) Market ng in Multinat ona Operations

791 Doctoral Seminar in Marketing. Cred t 3 hours

Special Courses: MKT 492, 493 494 497 498, 499 590, 592, 593 598 599 690, 692 700 790 792 799 (See page 31)

TRANSPORTATION

TRA 301 Principles of Transportation. Business prac tices of rai motor, a r, water and p peline carr ers and ndustrial sh ppers, inc ud ng the nf uence of econom c pr nciples government regu at on and pub c pol cy Cred t 3 hours

305 Urban Transportation. Economic, soc a po t ca and bus ness aspects of passenger t ansportat on Pub ic po cy and government aid to urban transportat on development Cred t 3 hours

445 Physical Distribution Management. Management of the phys ca d str bution funct on of the business en terpr se Prerequisite· TRA 301 Cred t, 3 hours

460 Highway Transportation. H ghway systems of the U.S. Pr vate and for h re operations and management of fre ght and passenger motor carr age Pub c po cy and regulat on by federa state and oca governments Prerequ s te TRA 301 Cred t, 3 hours.

461 Air Transportation. Economic and business as pects of commerc al air transportat on rate-making, government control and assistance to a r ne opera t ons. Routes and serv ces equ pment and operat ons nterre ationships with competing modes of transporta t on Prerequ s te TRA 301 Cred t 3 hours

462 Problems in Transportation. Current problems of transportat on pol cy, phys ca d str but on and log st cs and carrier management. Prerequ s te TRA 301 Credit 3 hours

463 International Transportation. The movement of goods between foreign countries n nternat ona busi ness; routes rates costs operation, adm n strat on and regulat on of nternat onal a r and marit me transporta

tion agencies. Prerequisite: TRA 301. Credit, 3 hours.

541 National Transportation Policy. Public policy alternatives and problems in the transportation industry; interrelationships of competing transportation modes; relationships of public investment to private operation. Credit, 3 hours.

545 Business Logistics. Planning and control of the physical supply and distribution components of the firm's logistics system. Credit, 3 hours.

Special Courses: TRA 492, 493, 494, 497, 498, 499, 590, 591, 592, 593, 598, 599, 700, 790, 792, 799. (See page 31.)

Quantitative Systems

PROFESSORS:
PHILIPPAKIS (BA 297B), KAZMIER, McCREADY

ASSOCIATE PROFESSORS:
ECK, HERSHAUER, HUSTON

ASSISTANT PROFESSORS:
BACA, BALL, BURDICK, CARSON, MILLER, RUE, VERDINI, WOOD

COMPUTER INFORMATION SYSTEMS

CIS 201 Business Programming. Computer analysis of business data. Flowcharting, computer programming, and use of software for business applications. Credit, 3 hours.

302 Electronic Data Processing. Basic computer systems concepts. Introduction to data files, storage, and processing. Uses of COBOL and other suitable languages. Credit, 3 hours.

402 Programming Systems. Data structures and file processing using COBOL and other high-level languages. Overview of software concepts and recent developments. Prerequisite: CIS 302. Credit, 3 hours.

407 System Simulation. Development and analysis of systems models through computer simulation. Prerequisite: CIS 201 or equivalent. Credit, 3 hours.

420 Business Information Systems. Application of systems concepts for producing information to be used in business decision-making. Cases and projects will incorporate current digital computer data base hardware and software technology. Prerequisite: CIS 402. Credit, 3 hours.

502 Computer Information Systems. Electronic data processing systems for administrative applications. Computer hardware, software, and FORTRAN and COBOL programming languages. Credit, 3 hours.

510 Systems Models and Simulation. Design of computer-based decision systems. Simulation as a research and decision-making tool. Prerequisites: QBA 221 and FORTRAN programming. Credit, 3 hours.

591 Seminar in Selected Computer Information Topics. Credit, 3 hours.

Special Courses: CIS 492, 493, 494, 497, 498, 499, 590, 592, 593, 598, 599. (See page 31.)

QUANTITATIVE BUSINESS ANALYSIS

QBA 221 Statistical Analysis. Methods of statistical description. Application of probability theory and statistical inference in business. Prerequisite: MAT 141 or equivalent. Credit, 3 hours.

222 Quantitative Information Systems. Application of quantitative methods in business. Decision systems for production, marketing, finance and management. Use of standard computer programs. Prerequisite: QBA 221 or equivalent. Credit, 3 hours.

322 Managerial Statistics. Applications of probability and statistical inference to business decisions. Decision theory and Bayesian inference. Prerequisite: QBA 221. Credit, 3 hours.

391 Operations Research. Application of quantitative techniques in business organizations, such as the simplex method of linear programming, inventory models, games and strategies and simulation. Prerequisite: QBA 221. Credit, 3 hours.

422 Advanced Business and Economic Statistics. Application of multivariate analysis, including regression and correlation techniques, to business and economic problems. Time series analysis. Prerequisite: QBA 322 or graduate standing. Credit, 3 hours.

450 Decision Analysis Applications. Integration of quantitative techniques for the analysis and solution of managerial problems. Use of computer library programs for implementation of standard analytical techniques. Prerequisites: CIS 302, QBA 322 and 391. Credit, 3 hours.

500 Statistical Analysis. Basic statistical measures. Probability concepts. Statistical inference. Not open to students with previous background in statistics in business or other social sciences. Prerequisite: MAT 141 or equivalent. Credit, 3 hours.

501 Fundamentals of Quantitative Analysis. Basic mathematical concepts and methods underlying quantitative analysis. Emphasis on interpretation and application rather than theorems and mathematical proofs. Model building, set theory, functional relationships, matrix algebra, differentiation and integration. Credit, 3 hours.

522 Statistical Decision-Making. Role of sampling and statistical control procedures in managerial decision-making under conditions of risk and uncertainty. Fundamental probability distributions and their use in classical and Bayesian inference. Prerequisites: QBA 500 and MAT 141 or equivalents. Credit, 3 hours.

523 Quantitative Models in Decision-Making. Application of basic mathematical concepts to quantitative models, such as linear programming, nonlinear programming and stochastic processes. Prerequisite: MAT 142 or QBA 501. Credit, 3 hours.

524 Nonparametric Statistics. Nonparametric statistical tests for location, dispersion, trend, association, correlation, and goodness-of-fit. Nonmetric scaling techniques. Prerequisite: QBA 500 or equivalent. Credit, 3 hours.

525 Experimental Design. Analysis of variance and experimental design with emphasis on business research. Multiple regression and correlation. Nonparametric techniques. Prerequisites: QBA 500 and 501. Credit, 3 hours.

591 Seminar in Selected Quantitative Business Topics. Credit, 3 hours.

791 Doctoral Seminar in Quantitative Business Analysis. Credit, 3 hours.

Special Courses: QBA 492, 493, 494, 497, 498, 499, 590, 592, 593, 598, 599, 690, 692, 700, 790, 792, 799. (See page 31.)

College of Education

Delbert D. Weber, Ed.D.
Dean

Purpose

The central purpose of the College of Education is to provide initial preparation and continuing education to teachers and other professional personnel engaged in the educational programs of schools, colleges, and other public and private agencies. This is accomplished primarily through direct relationships between the teaching faculty and their students.

Other purposes corollary to this are:

1. To contribute to the body of professional knowledge in the field of education through research, the development of educational theory, and innovation and experimentation in educational method and organization.
2. To offer leadership beyond the campus through the dissemination of information and ideas and through cooperative involvement with other agencies engaged in education.
3. To provide services to other agencies engaged in education in such manner as to promote improved educational practice throughout a widening sphere of influence.

Organization

The courses of instruction offered by the College of Education are organized into departments so that a well related sequence is established for important areas of concentration or specialization. These subject fields allow better organization in selecting courses which meet requirements for the various teacher education curricula. A wide array of specialization possibilities thus exists.

For administrative purposes, these subject fields are organized into the following departments: Elementary Education, Secondary Education, Educational Administration and Supervision, Counselor Education, Educational Psychology, Special Education, Educational Technology and Library Science, and the Center for Higher and Adult Education. The subject fields which are offered follow.

Adult Education
American Indian Education
Counselor Education
Educational Administration and Supervision
Educational Foundations
Educational Psychology
Educational Technology
Elementary Education
Higher Education
Instructional Media
Library Science
Reading Education
Safety Education
Secondary Education
Social and Philosophical Foundations
Special Education

There are several bureaus, centers and special laboratories which directly assist in the work of the College of Education. These include the Psychological Assessment Laboratory, University Testing Service, Bureau of Educational Research and Services, I.D. Payne Laboratory, Center for Indian Education, Center for Multicultural Education, Reading Clinic, Counselor Training Laboratory, Office of Student Services, Office of Professional Field Experiences, Southwest Regional Center for Community Education Development, and others throughout the University. All of these facilities serve as laboratories for College of Education programs.

Degrees

Bachelor of Arts in Education Degree. Several undergraduate programs are available leading to the degree Bachelor of Arts in Edu-

cation which require a minimum of 126 semester hours of credit Each of these programs is designed to prepare the student for work in some particular educational area

Master of Arts in Education Degree. A graduate program consisting of 30-36 semester hours of properly arranged work leads to the degree of Master of Arts in Education. For specific reference to this program, see Graduate College section in this catalog

Master of Counseling Degree. A first level professional degree, Master of Counseling, is awarded upon the satisfactory completion of a two year (60 semester hours) program approved graduate studies This program provides for a core of required professional studies supported by related disciplines, and for professional specialization options in one of four occupational settings The elementary and secondary school counseling options prepare the student for school counselor certification in Arizona and other states, and require teacher certification The college counseling and student development services program and the agency counseling program are open to students without previous Education background For further information regarding admission and courses of study contact the Department of Counselor Education.

Education Specialist Degree. The degree Education Specialist is awarded for satisfactory completion of the Specialist program of graduate studies For specific reference to this degree, see Graduate College section in this catalog

Doctor of Education Degree. The degree Doctor of Education is awarded for satisfactory completion of the doctoral program of graduate studies For specific reference to this degree, see Graduate College section in this catalog

Doctor of Philosophy Degree. The degree Doctor of Philosophy is awarded for satisfactory completion of this doctoral program of graduate studies For specific reference to this degree, see Graduate College section of this catalog.

Graduation and Certification Requirements

Admission to Undergraduate Programs

Undergraduate students at Arizona State University may apply for admission to the College of Education during the second semester of their sophomore year Students transferring from outside institutions need not make separate application for admission to the College of Education inasmuch as they will be routinely admitted at the time of admission to the University, provided they meet admission criteria

Candidates for admission must meet the following minimum requirements.

1. Possess a 2.25 cumulative GPA or higher (If a candidate has completed course work at Arizona State University, the GPA is based on ASU work only, ignoring the effect of grades at another institution.
2. Have junior standing (defined here as a minimum of 56 semester hours)
3. If deemed necessary by the College, take selected physical and psychological examinations.
4. Complete those course requirements which have been established as prerequisites for entrance to the College of Education The College of Education reserves the right to deny admission to those applicants who fail to fulfil the aforementioned requirements

During the freshman and sophomore years, the student planning admission to the College of Education at the end of his second year will register as follows

1 If interested in teaching in the secondary school, he/she will enroll in the appropriate college for the first two years and will list the proposed teaching field as the major, followed in parentheses by the term "Pre Secondary." Examples are shown in the box to indicate specifically how it will be accomplished

The College in which the student is enrolled will assign an advisor from the appropriate major department in cooperation with the College of Education

2 If interested in teaching in the elementary school, the student will register in the College of Liberal Arts but will list his/her major as "Pre-Elementary Education" Such students will be assigned an advisor

College	*Teaching Field*	*Major First Two Years*
Liberal Arts	English	English Pre Secondary
Fine Arts	Instrumental Music	Instrumental Music Pre Secondary
Business Administration	Business	Business Pre Secondary
Engineering	Industrial Arts	Industrial Arts (Pre Secondary)

from the College of Education as so n as the major s l sted even th ugh they will not be admitted to the Co ege of Educa tion until they have completed the f rst two years of study.

3 Freshmen and sophom res interested n teaching in a special education setting will register in the Col ege of Liberal Arts but wil list their major as "Pre Special Educa tion " Such students will be assigned an advisor from the Co lege of Educat on is soon as the ma or is listed even though they will not be admitted to the College of Edu cation until they h ve comp ted the first two years of study

4. If interested in the Se ected Stud es n Education Program, the student will regis ter in the Col ege of Liber l Arts but wil list the major as "No Preference " Such students wil be assigned an advisor from the College of Liberal Arts unt such time as their proposed p in of studies is offi cially approved. Upon rece pt of apprc v l of their selected stud es plan, students will be assigned to a spec al adv sor n the C ol lege of Education even though they w not be admitted to the Co lege unt they h ve completed the first two years of study

Retention and Disqualification

1 A student must maintain a cun u ative grade point average of 2 00 (C) or better to remain n good st nding. Any student whose cumu ative grade av r ge s below the required index may be p ced n ac t- demic probation Once a student is n academic probat on, he she remains in th t status until the grade point index reaches the retention level, 2 0 , or he she s dis qualified fron the Un versity. Un ess the Standards Comm ttee acts otl erwise t student with a deficient grade p int ndex is placed on probation or a m n mum of one semester prior to being subject to d s qualification.

2 A student must also m intain sound pl ysi- cal and mental health. A student who appears to lack the degree of physic l and mental health necessary to function suc cessfully as a teacher may be required to take a medical examination and make the results available to the Standards Con mit tee of the College of Educat on Tl e responsibility for reviewing and determin ing the qualification of students whose behavior and or performance are in ques tion is vested in the Stand rds Comm ttee The Committee's decision may req ire the dismissal or disqu lificati n of a student from the College

3 Any student who has earned the number of semester hours requ red for gradu t n, but has not achieved the 2 00 index required for graduation, s subject to d squ lifi c t tion.

4 A disqualif ed student who des res to be reinstated may submit an app cation for reinstatement. A d squa ified student nor- mally will not be reinstated unti at east one semester has elapsed fr m the date of disqualificat on The burden of estab ish ng fitness is on the disqua ified student, who may be required to take aptitude tests and submit to other examin tions before be ng readmitted

5 While students are subject to the genera retention policy they are ev luated in the College on broader criteria th n mere ca demic average. Students re reviewed fc r evidence of competency f r teaching and are continuously evaluated as they progress in the program Prospective teacher candi dates who do not n eet the established criteria are counse ed in an effort t gu de them toward a program that s con patib e with their interests and abilities

Degree Requirements. Each candidate for graduation in a degree curriculum lead ng to Bachelor of Arts in Education degree is re quired to complete an approved program of 126 semester hours with a cumulative grade point index of 2.00 or above for (1) A courses taken while a student at the Univer sity; (2) All courses included in his ma or teaching field; (3) And a l profess ona educa tion courses.

Standards for graduation also include ( ) quality of scho arship, (2) personal and social fitness for the teaching profession, (3) menta and physical health, and (4) understand ng of and the ability to work w th students

Specific requirements in add tion to the above are available from the departments of fering the particular program

Each candidate must fi e a wr tten app ca tion for graduation acceptable to the C llege of Education Standards Committee and re ceive a recommendat on for graduation from the faculty of the College of Educat n In addition, graduat on fron the approved teacher education progra n in the C llege of Education is tantamount to full cert ficat on Only those indiv dua s who h ive met the re- quirements under "adm ssion" and "retent on" as set forth in the preceding sections and who meet all of the col ege and st te requirements for certification will be rec mmended for cer tification

General Studies. A m n mu n of 39 sen ester hours (51 semester hours n Ele nentary Edu cation) of General Stud es plus the University English requirement must be cot pleted before the student is eligib e for graduation n any cl the undergraduate curricul offered by t l e College of Education It is anticipated that heavy emphas s wil be placed on these re quirements during the first two years of study before form l admission to the College of Education. The following m nimum requ re

ments exclusive of Education courses indicate the general nature of the distribution which must be met as the student completes th s basic requirement

1. A minimum of 8 semester hours (9 semes ter hours in Elementary Education credit in the Humanities and Fine Arts (exclusive of freshman English);
2. A minimum of 8 semester hours 9 semes ter hours in Elementary Education) credit in the social and beh avioral sciences, n cluding a course in general psychology and a course in United States h story.
3. A minimum of 8 semester hours 9 semes ter hours in Elen entary Education) credit in sciences and mathemat es, including one course in science and one course in mathe matics

The student should consult with his idviser for specific recommendations or requirements within the area of Genera Stud es in order to build an acceptable pattern of courses and to be qualified for adn iss on to nd gr idu tion from the College of Educat on

Certification. The College of Education is accredited by the Nation l Council for Ac creditation of Teacher Education for the prep aration of elementary, secondary, and spec a education teachers and school serv ce personnel. Students who successfully con plete the teacher education curricul planned by the College of Education are recommended to the Director of Certificat on, Arizona State De partment of Education, f r the appropriate Arizona certificate and are eligible for cert f cation in all states particip it ng n the NCATE reciprocity practice Arizona and federal constitut ons are requirements for cer tification

Certification as a professional teacher should not be equated with a teaching po sition assignment. Both present and immediate fu ture trends in teaching opportunities suggest increased competition for ava able teaching positions.

For further information concerning certifica tion, students should contact the Office of Student Services in the College of Education

Student Teaching

Students must be admitted to th e C ollege of Education's approved teacher education pro gram and have completed the appropriate prerequisites to be e gible for admission to student teaching

Undergraduate students in the Elen entary Education and or Special Educ it on curr cula must be approved for student teach ng by their advisors and the Director of Professional f ield Experiences. Undergraduates in the Secondary Education curriculum must be approved for student teaching by the ma r depart ment coordinator of student teaching, and the Director of Profess ona Field Exper ences Graduate students must be approved by the same University d v sions as undergraduates t student teach

Application. Students who apply for Student Teaching must h ave comp eted at least ? semester hours of course work with n the last three years at Arizona State University

Application to student teach ng must be made at the Professional Field Experience Office. Applications for the appropriate se mester of Student Teaching wil be distr buted and received; for Spring semester between September 15 and October 15, for Sum ner Session between December 15 and January 15, for Fall semester between March 1 and April 1.

The stations available for sumi ner student teaching assignments are quite l mited and assignment will be made on a first come basis Only those students who have completed a l degree and certification requ rements w l be assigned summer student teaching. No student should plan to meet this requ rement during the summer. A lack of stations and refusal of some departments to allow summer student teaching mitigate against a l but a few stu dents.

Students who apply for student teaching after the deadlines named above may not be assigned to student teaching until the next spring or fall semester

Requirements. Students adm tted to student teaching must have a cumul tive index of 2 25 or better The cumulat ve index in the Te ich ing Major shall be at least 2. 0 some majors may require a higher index for entry n to stu dent teaching)

The complet on date of the last educ tion methods course must be within two years of the beginning date of student te ich ng to be accepted as meeting the prerequisites

Students in the E ementary Educ it on cur riculum, whose programs pern it, devote their full time to student teaching a l day n the cooperating schools Others teach in the co op erating schools for one half day for one semester. In either case, student teaching oc curs during the f rst or second semester of the senior year for elementary education students

Students who are preparing for secondary certification teach for one-half school day for one semester during the first or second semes ter of their senior year. Secondary students may devote all day to student teaching when their programs and major departments permit them to do so

The student's course load is limited to 16 semester hours during the sei ester n which he she is teaching. Student te achers are re quired to attend seminars cond icted by th e Co lege Supervisor. Seminar time is arr anged by each supervisor and is an integral part of the student teaching experience Student teachers are not permitted to take part n ac

tivities that interfere with their student teaching conferences, seminars or other activities related to teaching in the cooperating school.

Cooperating Schools Available. Excellent schools and school systems cooperate with the College of Education in the supervision of student teachers. Each of the schools presents its own particular type of organization and problems so that the student may receive experience in many types of work from the kindergarten through high school. Student teachers are required to adhere to the calendar, rules, regulations, and philosophy of the school in which they are accepted to student teach. Each student teacher is under direct guidance of a cooperating teacher, a college supervisor and the Director of Field Experiences.

Student Teaching Waiver. Students who have been employed and supervised by state-certified personnel in accredited private, public, parochial, or Indian schools may apply to the Director of Professional Field Experiences, College of Education, for waiver of the student teaching requirement. Substitute teaching experience is not acceptable as a replacement for student teaching. Waiver of student teaching in the required grade level may be granted by the Director of Professional Field Experiences, when the student meets all requirements for Arizona State University Institutional Endorsement for Certification. Waiver of this requirement in no way changes the total number of semester hours required for graduation or for establishing residence.

Regular teaching experience in the required grade level of two year's duration within the past five years may be considered sufficient to waive part or all of the student teaching requirement. Regular teaching experience in the required grade level of one year's duration

within the past five years may be considered sufficient to waive three semester hours of student teaching. Regular teaching experience in the required grade level prior to the past five years will be evaluated at one-half the rate established above for the waiver of the student teaching requirements. Experience further removed than 10 years will not be considered. The required grade level is described as follows: elementary level includes kindergarten through eighth grade; secondary level includes grades seven through twelve.

Forms are provided for superintendent(s) or principal(s) to verify for the Director of Professional Field Experiences the student's employment, date of employment, grades and/or subjects taught, and his/her success as a teacher. This information is evaluated to determine waiver eligibility of the applicant.

Students who have met the full student teaching requirements of another college for teacher education which is accredited by the National Council for Accreditation of Teacher Education may petition through the College of Education Standards Committee to have their student teaching experience requirements interpreted as fully met.

Honors Program. An Honors Program is available within the College of Education for the exceptional student. It is administered by the Standards Committee which serves as an Honors Council.

Pass-No Credit Grades. Students in the College of Education may participate in the Pass-No Credit program of the College of Liberal Arts described on page 53. However, no course taken for Pass-No Credit may be counted toward the student's major or minor teaching field requirements or other required academic specialization.

Bachelor of Arts in Education

Elementary Education Curriculum. The Elementary Education curriculum offers professional education courses designed to prepare students to teach all levels of the elementary school

This curriculum leads to the degree of Bachelor of Arts in Education and to certification for teaching in the kindergarten and grades one through eight

To enroll in Elementary Education, the student must have reached junior year status (defined here as a minimum of 56 hours) and must have a cumulative grade point average of at least 2.25.

Major. The major in this field is elementary education.

Specialization. All elementary education majors must complete a program of specialization consisting of 27 semester hours. Listings of courses appropriate for various specializations may be obtained from the department office. Courses in the specialization must be approved by the student's advisor

General Pattern. A program of 126 approved semester hours is required. This is divided as follows

	Semester Hours
General Studies*	51
For specific courses, see General Studies listings on page 35	
Humanities and Fine Arts	9
Behavioral and Social Sciences	9
Sciences and Mathematics	9
General Studies Electives	24
Freshman English	6
Elementary Professional Education	42
Specialization	27
Total	126

*United States and Arizona Constitution | 3 is a requirement for state teacher certification | may be included in the General Studies field of behavioral and social sciences)

Advising. Advisors in this curriculum have check sheets with recommended and required courses for each year of work. These check sheets contain appropriate patterns of course work for the age level of pupils with whom the student as a teacher will want to work. The check sheets also contain recommendations for General Studies electives and specialization. It is necessary for students to consult advisors in this curriculum in order to insure the best possible program of training. This is particularly important in as much as the advisor must sign the checkout sheet for graduation which indicates that an approved program of course work has been developed

Professional Education Options

Campus Based. Students may take all the courses required in professional education on campus, with the exception of student teaching. To provide for student interests of interest two student teaching options are provided. Option A, student teaching in one school. Option B, student teaching in two schools having differing cultural, ethnic, and socioeconomic characteristics

Field Based. Students may take most of the courses required in professional education at field based sites established in the metropolitan area. During their junior year, students at the field based sites divide their time between interning in elementary school classrooms and taking college courses. Students devote one full semester during the senior year to student teaching at the same site where they earlier interned

Secondary Education Curriculum. This curriculum prepares students for teaching in the secondary school. Majors and minors are completed in the teaching fields desired. The curriculum has considerable flexibility for those who wish to pursue specialized work in addition to the regular expectations for teaching. This curriculum leads to the degree of Bachelor of Arts in Education and to the certification for teaching in the secondary school (grades seven through twelve).

Suggested Pattern. A program of 126 approved semester hours is required. This is divided as follows

	Semester Hours
General Studies*	39
For details see page 35	
Freshman English	3 6
Major Teaching Field (required)	36 4
Minor Teaching Field (pattern)	24
Professional Education	25
Reading RDG 407, 48	6
United States and Arizona Constitution*	
United States History*	3
General Psychology*	3
Science* (1 course	
Mathematics* 1 course)	

*United States and Arizona Constitution | 3 history, general psychology science and mathematics which are required for state certification, may be included in the General Studies requirement

Advisors in this curriculum have check sheets with recommended courses for each year of work. The check sheets include recommendations for electives. Students should consult advisors in this curriculum in order to insure the best possible program. This is necessary for the following reasons: 1) An advisor signs the graduation checkout sheet for that student (2) Check sheets are revised each year on the basis of refinements which are incorporated into the program (3) Check sheets offer excellent opportunity for the student to keep a record of his progress throughout the curriculum

Teaching Fields. Students in the secondary curriculum are required to complete a program of preparation in a major teaching field. This program consists of 36 to 42 semester hours of course work determined by the academic department. The fields of music, art, physical education, industrial education, and business, office and distributive education require special certification. In these fields the program may consist of more than 42 semester hours. A minimum of 18 semester hours of work in the major teaching field should be at the upper division level. Courses approved by the advisor may be used to satisfy General Studies requirements as well as the requirements of a major teaching field. A composite social studies major consisting of 60 semester hours is available for those desiring broader preparation in social studies. It consists of at least 30 hours of one social science or history, plus 12 semester hours in each of two other related social sciences or psychology and 6 semester hours in another related field. In certain other related areas it is possible to become prepared to teach in two fields through completion of a 60 semester hour program. Information about the specific options available may be obtained at the Office of Student Services of the College of Education or the college offering the program.

Opportunity is also available for students to complete a program of preparation in a minor teaching field consisting of 24 semester hours of course work determined by the academic department.

In many instances employment opportunities require teaching in more than one field. It is strongly recommended that students add to their professional versatility by supplementing a program in a major teaching field or a program in Elementary Education leading to dual certification at both the elementary and secondary school levels. Students should at least make a substantial beginning toward preparation in a second teaching field. The North Central Association requires that a teacher have preparation consisting of not less than 24 semester hours of credit in a specific field in order to teach in that field in an accredited secondary school. Considerable attention should be given to the selection of teaching combinations. Information regarding this may be obtained from the student's advisor.

Major and minor teaching fields under the secondary curriculum approved by the College of Education, leading to the degree of Bachelor of Arts in Education are offered in the departments of the College of Liberal Arts, the College of Business Administration, the College of Engineering and Applied Sciences and the College of Fine Arts. Consult the appropriate departments for statements of these requirements.

Major Teaching Fields Available

Art
Biological Sciences
Business, Office and Distributive Education
Chemistry
Chinese
Choral Music
Communication (includes Speech Communication)
Dance
Economics
Engineering Sciences
English
French
General Science
Geography
Geology
German
Health Science
History
Home Economics
Humanities
Industrial Arts
Instrumental Music
Journalism
Mathematics
Physical Education
Physics
Political Science
Russian
Social Studies
Spanish
Theatre

Minor Teaching Fields Available. In addition to minors in the above fields, the following minors are available:

Anthropology
Athletic Coaching
Drafting
Driver Training and Safety Education
Electronics
Elementary Education
Graphic Arts
Industrial Design
Latin
Library Science
Metals
Photography
Physical Science
Portuguese
Psychology
Reading
Sociology
Special Education
Transportation and Power
Woods

Other minors can be developed for individual students with the approval of the chair of the Secondary Education Department, the chair of the department in which the minor is developed, and the College of Education Standards Committee.

Professional Education Options Available

Option A

Professional Education In addition to the courses listed under other requirements, all students registered under this option of the secondary curriculum are required to take 25 semester hours of work in Education, plus two courses in the teaching of Reading. The following must be included: SED 310 (or EDF 200), EDP 310, Education Elective, SED 311, SED 411, Methods of Teaching in the Major Teaching Field, RDG 460, RDG 480 and SED 433.

Option B.

An on site program stressing the integration of the content of professional education and participation in schools is also available to students who wish to select it. A team up

proach to instruction, involving University faculty and public school personnel is used. Students interested in this option should obtain materials and information from the Secondary Education Department.

Professional Education. In addition to the courses listed under other requirements, all students registered under this option of the secondary curriculum are required to take 25 semester hours of work in Education, plus two courses in the teaching of Reading. The following must be included: SED 400, 401, Methods of Teaching in the Major Teaching Field, RDG 467, 480, SLD 433 and 434.

It should be emphasized that this program requires courses during specific semesters of the junior and senior years and that some of them must be taken concurrently. Students should apply to the Department of Secondary Education for Option B during the semester prior to enrollment in this sequence of courses.

Special Education Curriculum. This curriculum provides professional education courses and experiences designed to prepare students to teach children with learning, social or behavior problems. This curriculum leads to the Bachelor of Arts in Education degree and to certification for teaching the mentally handicapped, emotionally handicapped, or learning disabled in grades K–12.

To enroll in Special Education, the student *must have reached junior status, defined here as a minimum of 56 hours* and must have a cumulative grade point average of at least 2.25.

Major. The major in this field is Special Education.

Supplementary Requirements. All Special Education majors must complete 2[illegible] semester hours of supplementary course requirements. Most of this course work is necessary for certification in the state of Arizona and provides a strong background in regular education.

Related Areas of Study. An additional 18 semester hours is required in related areas of study to give the students a breadth of preparation and experience beyond their major. Appropriate courses may be used to satisfy general education requirements as well as the requirements for the related area of study. However, such courses must be approved by the student's advisor.

General Pattern. A program of 126 approved semester hours is required. The credit hours are divided as follows:

	Semester Hours
Freshman English	6
General Studies*	39
Assessment Semester	3
Special Education	33
Supplementary Requirements	2
Related Areas of Study	18
Electives	36
Total	126

*United States and Arizona Constitution and U.S. History, which are requirements for state teacher certification, may be included in the General Studies field of behavioral and social sciences.

Advisors in this curriculum have check sheets with recommended and required courses for each year of work. These check sheets contain appropriate patterns of course work for the area of exceptionality in which the student as a teacher will want to work. The check sheets also contain recommendations for elective courses. It is necessary for students to consult advisors in this curriculum in order to ensure the best possible program of training. This is particularly important inasmuch as the adviser must sign the check out sheet for graduation which indicates that an approved program of course work has been developed.

Recommended Minor in Special Education. Majors in Secondary Education, in consultation with their advisors, may select the following 24 semester hour minor in Special Education.

Required: SPE 311.

Additional semester hours recommended: SPE 312, 436, 461, 488, MCL 446.

Electives: SPE 320, 321, 438, 462, 489; MCE 447, 448.

This minor does not meet Arizona certification requirements for teaching in Special Education, and does not include provisions for student teaching in Special Education.

Recommended Specialization in Special Education. Majors in Elementary Education, in consultation with their advisors, may select the following specialization in Special Education which emphasizes mental retardation, emotional disturbance, or learning disabilities.

Required: SPE 311, 401, 402, 403, 465 and MCE 446 plus SPE 312 and 32[illegible] or 436 and 438, or 461 and 462.

This specialization meets basic Arizona certification requirements for teaching in the Special Education area emphasized.

Master's Degree Program for Teachers of Exceptional Children. Graduate students in Special Education may pursue masters degrees with emphasis in mental retardation, emotional disturbance, learning disabilities, disadvantaged children and youth, early childhood education for the handicapped, physical education and recreation for the handicapped and in preparation of resource teachers and regular classroom teachers who plan to work with exceptional children in regular classrooms. Students who plan to enroll in one of these programs should complete a major or minor in Special Education as part of their undergraduate programs.

Majors are not offered in Special Education at the Education Specialist or doctoral levels. A close working relationship between the Special Education Department and other departments in the College of Education permits candidates with strong backgrounds in Special Education to combine a Special Education emphasis with doctoral majors in other areas.

Selected Studies in Education Curriculum. This program is designed for undergraduate students who are interested in the field of education but do not intend to become public school teachers. Students may wish to prepare for a variety of positions outside as well as inside educational institutions. These may be with governmental agencies, religious organizations, foundations, business and industry, or in private, early childhood, or higher education, and even in public elementary or secondary schools, although not usually in a formal classroom setting.

The program offers the opportunity for such students to develop individualized curriculum plans tailored to their particular needs and interests. It provides an alternative to the regular program of the College of Education. Any undergraduate student in the College of Education may present a Selected Studies in Education plan. The plan must be developed in close consultation with a faculty advisor in the College of Education and must have the endorsement of the Undergraduate Standards Committee of the College. To be approved, a Selected Studies in Education plan must demonstrate that it is significantly different from established programs at the University in both intent and content.

Interested students should obtain application forms and other pertinent materials from the Office of Student Services, ED B 2 (Payne Hall).

Special Programs of Teacher Preparation. Several fields of specialization are available on the undergraduate level in connection with any of the undergraduate curricula. These are available as a sequence of courses to be taken in addition to the regular requirements of the undergraduate curriculum.

Library Science. Students desiring endorsement as a school librarian (K-12) must complete the requirements for teacher certification and a program approved by the Department of Educational Technology and Library Science. Undergraduates will complete the library science minor which consists of 24 semester hours, including 15 hours of prescribed library science courses, an approved elective in Library Science or Instructional Media, and 6 hours of student teaching in the school library. Students may also select library science as a field of specialization at the graduate level.

Teaching American Indian Children. Students pursuing a major teaching field in elementary education may with the approval of their advisor, elect to take a specific sequence preparatory to the teaching of American Indian children. This is appropriate for those who will have only few Indian children in a classroom, or for those who will have a classroom composed only of Indian children. Such students shall be required to complete satisfactorily the basic elementary program.

Students pursuing a major teaching field in secondary education may also take this special training for teaching American Indian children. Such students shall be required to complete satisfactorily the basic secondary major.

			Semester Hours
IED	422	Methods of Teaching Indian Children	3
IED	424	Curriculum and Practices of Indian Education	3
IED	490	Problems of Teachers of Indian Children	3
EED	478	Directed Teaching in the Elementary School	5
or			
SED	433	Directed Teaching in the Secondary School	(3
ANT	321	Southwestern Ethnology	3
ANT	421	The North American Indian	3
		Total	8 or 20

Center for Multicultural Education

The Center is in the process of developing a variety of concentrations that will enable prospective and practicing teachers to preserve the integrity of the American cultures within a framework of diversity. The Center's first goal is to legitimize history and contributions of American ethnic groups to American society. Its second goal is to provide cooperative and effective experiences to help educators become sensitive to cultural differences and educational barriers. Its third goal is to develop effective methods and techniques of multicultural and bilingual education.

The Center aims, therefore, to provide experiences that enable prospective and practicing teachers to

1. Gain an understanding of the value and significance of multicultural education in American society.
2. Gain greater appreciation of the contributions ethnic groups have made to American society.
3. Develop the ability to analyze historical and societal factors that have affected the education of ethnic groups.
4. Understand the educational problems that concern ethnic groups.

5. Better understand how to relate effectively with children from different cultural and language backgrounds
6. Develop practical knowledge and skills that will help them in teaching culturally and linguistically different children

The Center develops and coordinates academic offerings in the following areas: (1) undergraduate studies for prospective teachers; (2) graduate studies for students seeking advanced degrees, and (3) in service education studies for practicing teachers.

The content of the academic offerings is comprised of Multicultural Education, Indian Education and Bilingual Education.

Undergraduate Studies for Prospective Teachers

One credit modules and three credit courses are offered by all departments in the College of Education. The studies are designed to develop understanding of the educational problems and issues related to cultural pluralism in American society. They are primarily directed toward advanced pre service teachers. However, they may also be taken for credit by graduate students and in service teachers who wish to develop their knowledge and skills for working with children from diverse cultural backgrounds.

These studies, grouped by disciplinary topical orientation are:

Philosophical Issues. Social and Philosophical Meanings of Cultural Pluralism, Human Values in Multiethnic Education.

Historical Perspectives. Interdisciplinary Perspectives on the Mexican American, The American Indian and Education.

General and Cross-Cultural Foundations. Culture, Ethnocentrism and Education, Language and Culture.

Cultural Studies. The Mexican American Child; Culture and Value Concepts of American Indians, Public Education and the Mexican American in the Southwest, Indian Education; Problems of Teachers of Indian Students.

Psychological Foundations. Human Relations Skills in Multicultural Education; Social Experiences and Cognitive Development, Guidance for the Indian Student.

Social Foundations. Teaching the Culturally Diverse Child, Alienation and Education, Educational Practices and Minorities, Minority Women, Educational Applications in Anthropology (Indian Education).

Curriculum, Materials, and Methods. Analysis of Textbooks and Materials for Multicultural Education; Children's Literature for Mexican American Studies; Methods of Teaching the Disadvantaged, Orientation to Bilingual Education; Reading (Teaching Bilinguals), Communication Arts (Teaching Bilinguals), Library Services and Materials for Minority Children and Adolescents, Methods of Teaching Indian Children, Curriculum and Practices for Indian Education.

Observation and Practicum. Observation and Participation in Multicultural School and Community Settings, Student Teaching in Bilingual-Multicultural School Settings, Directed Studies in Bilingual Education.

Students may enroll in as many courses as they wish and apply credit earned as electives to their respective departmental specializations.

Students seeking the State of Arizona Department of Education *Bilingual Endorsement Certificate* must obtain a teaching certificate and complete 15 semester hours in:

1. Cultural Studies; 2. Methodology, and attain proficiency in 3. Language.

(a) Proficiency in the second language must be verified by the foreign language department of a regionally or nationally accredited institution. (b) Proficiency in English as a second language must be verified by the language department of a regionally or nationally accredited institution.

Elementary Education

PROFESSORS

WALLEN (ED B-225), DOYLE, LEWIS, MALONE, MANNING, OBERNE, PODLICH, RALSTON, RAY, SILVAROLI, STROM, YAMAMOTO

ASSOCIATE PROFESSORS

M. BELL, BITTER, CHRISTINE, ENGELHART, GREATHOUSE, HARDT, JACOBS, KAMINS, KNAUPP, MOYER, SCHALL, STALEY

ASSISTANT PROFESSORS

ANDERSON, EDELSKY, ENGELBRECHT, HADDOCK, KNIEP, LOPEZ, PETERSON, SEARFOSS, STEERE

LECTURER

NGRAHAM

ELEMENTARY EDUCATION

EED 311 Social Studies in Early Childhood Education.* Development of democratic living in areas of the curriculum. Objectives, unit planning, problem solving, selection of content, scope and sequence, construction of instructional materials and resources. Experiences with children. Credit 3 hours.

312 Nursery-Kindergarten Education.* Considers all aspects of curriculum. Philosophy, principles, practices, problems and evaluation in the integrated experience program. Credit 3 hours.

313 Child Development.* Principles underlying the total development of the child during the preschool and elementary school years with observations in school settings. Enhancement and understanding of the child in the physical, intellectual, social and emotional areas.

*Laboratory and off-campus experiences may be included in courses marked with an asterisk.

of deve opment. D scussion sess ons may be schedu ed Cred t 3 hours.

320 Teaching Science to Children.* Deve ops stu dents persona ph osophies of the nature of elementary schoo sc ence why teach science and how ch dren learn sc ence Knowledge and sk l s n p ann ng nstruct on, us ng instruct ona mode s, ntegrat ng the curr cu um employing current sc ence program and materia s and eva uat ng ch ldren s learning. Prerequ s te· PSE 220 and 221 or equ valents Cred t 3 hours

322 Communication Arts in Early Childhood Education.* Factors affecting anguage deve opment Sett ng condit ons for earn ng n sten ng speak ng read ng and wr t ng Profic ency n handwr t ng and spe ng re quired Prerequisite· ENG 213 or equ va ent Cred t 3 hours.

333 Communication Arts in the Elementary School.* Factors affecting anguage growth Sett ng condit ons for earn ng to teach l sten ng speaking ar d wr t ng sk ls. Emphasis on midd e and upper grades Prof c ency n handwriting and spe ng requ red Prerequ s te ENG 213 or equ va ent Cred t 3 hours

344 Elementary Curriculum.* Program of the emerg ng e ementary schoo Pr nc p es pract ces and prob ems nterrelat onsh ps and synthes s Cred t 3 hours

355 Social Studies in the Elementary School.* The core function of soc a stud es scope and sequence, unit organ zation methods of nstruct on, materia s and resources for earning Cred t, 3 hours

366 Observation and Participation. Students observe and work d rect y w th e ementary ch dren n a c ass room s tuation. nc udes a cr t cal evaluat on of the student's exper ences Credit 3 hours. Y grade on y

380 The Teaching of Mathematics in the Elementary School.* A beg nning course n methods and mater a s used Laboratory experiences with curr cu um materia s Prerequisite· MAT 180 ts equ va ent or successfu comp et on of a mathematics prof c ency exam nat on Cred t, 3 hours

411 Early Childhood Education.* Pr nc p es exper - ments research studies and re ent trends as factors re ated to the educat on of chi dren through seven year of age Prerequ s te EED 312 Cred t 3 hours

434 Creative Communication in the Elementary School. Considers creat v ty in commun cat on at k n dergarten through the e ghth grade eve s def ning the creative process and exp or ng programs. Speak ng and wr t ng exper ences des gned to deve op prof c ency n creative commun cat on Prerequis tes EED 322 or 333 or approva of nstructor Cred t, 3 hours

478 Student Teaching in the Elementary School. Re a- t onsh p of theory and methods of teaching· the practice of teach ng practice in gu dance measurement of ex tra-curr cular act v ties and c assroom management procedures Prerequisite 21 semester hours of the core in major f e d and adm ttance to e ementary teacher education curriculum

Option A Student teaches n one schoo at a chosen grade level. Cred t 3-15 hours Y grade on y.

Option B. Mu t p e Opportun t es n Student Teach ng Program (MOST) Student teaches n two schoo s of dif fer ng cultura ethnic and soc o economic chara - ter stics Exper ence is p anned at two d fferent grade leve s Cred t 15 hours for fu semester Y grade on y

511 Elementary Curriculum Development. Approaches to curricu um change, ana ys s of typ ca curr culum prob ems strateg es and procedures in mprov ng cur rent programs Prerequ s te EED 344 or equ va ent Cred t, 3 hours

513 Child Development. Cont nu ng ana ys s of pr nc p es, theor es and research concern ng the e ementary schoo ch d and his deve opment An ntegrated ap proach to the study and fac tat on of wholesome educat onal and psycholog ca deve opment Cred t, 3 hours

522 Developmental Social Experiences in Early Childhood Education. Materia s techn ques esthet c expression, creat ve act vit es and va ues n the nte grated curricu um Prerequ s te. EED 311 or equ va ent Cred t, 3 hours

525 Communication Arts in Early Childhood Education. Prob ems and trends of current programs and oral anguage deve opment. Opportunity for se f d rected study. Prerequisite. EED 322 or equ va ent Cred t 3 hours

526 Communication Arts in the Elementary School. Prob ems and trends of current programs Research contr bution n ora anguage deve opment Opportun ty for se f directed earn ng. Prerequ s te: EED 333 or equ valent Cred t, 3 hours.

527 Mathematics in Early Childhood Education. Theory and practice in the use of man pulat ve mater a s for teaching mathemat cs to preschoo and pr mary grade chi dren Prerequ s te EED 380 or equ vale t Cred t, 3 hours

528 Social Studies in the Elementary School. Prob ems and trends of current programs Deve opment of a balanced and art culated program of social stud es Prerequ s te EED 355 or equiva ent Cred t, 3 hours

529 Science in the Elementary School. Prob ems and trends of current programs. Deve opment of a ba anced and art culated science program Prerequisite PSE 320 or equ valent Cred t 3 hours

537 Mathematics in the Elementary School. Contem porary mathemat cs programs used n e ementary schoo s Content mater a s, and approaches to nstruc t on. Prerequisite· EED 380 or equ va ent Cred t, 3 hours

544 Play Education. Confl ct ng theor es of play and the educational mp cat ons of each n a curricu um A practical app cation n the ower eve s of the e ementary schoo Cred t 3 hours

555 Modern Practices in Early Childhood Education. Trends and practices nstructiona and resource mater a s, methods and techniques n ear y ch dhood education. Prerequ s tes EED 312 or equ va ent Cred t, 3 hours

Special Courses: EED 294 298 492, 493 494 497 498 499 580 583 584, 590 591 592 593 594 598 599 680, 683 684 690, 691 692 693, 700 780 783 784, 790 791 792, 799

READING EDUCATION

RDG 314 The Teaching of Reading.* For elementary teachers n tra n ng; a med at mprov ng c assroom read ng programs and practices Required course pro v des basic teacher ski s, eva uation classroom environments and reading methods Discuss on ses- s ons may be schedu ed Prerequ site ENG 213 or equivalent. Cred t, 3 hours.

315 Decoding in Reading.* A comparat ve ana ys s of phonetic and l ngu st c nterpretat ons of the sounds and structures of Eng sh Requ red course emphasizes how sounds (grapheme-phoneme correspondences) are re ated to the decod ng process Discuss on sessions may be schedu ed Prerequisite ENG 213 or equiva ent Credit, 3 hours

433 Reading-Teaching Bilingual Students.* Sounds and structures of d fferent anguages and how anguage difference can nterfere w th a student's ab l ty to read n a second anguage Acqua nts teachers w th ora an guage and second language read ng techniques Prerequisite RDG 314 Cred t 3 hours

456 Diagnosis of Reading Problems. Acqua nts the teacher n train ng w th d agnost c procedures n read ing C in c methods and mater a s wi be presented w th mod f cat ons for ch dren w th earning d sab t es Pre requ s tes RDG 314 and 315 Cred t 3 hours.

467 Reading in the Content Areas: Secondary. Ac qua nts the teacher n tra ning w th read ng procedures n secondary subject matter fields Spec f c ski l deve opment emphas zing decod ng sk l s, and eva uat on

techn ques for the secondary eve are prov ded n th s requ red course D scuss on sessions may be sched u ed. Credit 3 hours.

480 Practicum: Secondary Reading Prov des second ary teachers- n-tra n ng on s te exper ences w th high school students and profess ona staff members Re qu red for Secondary Educat on majors. Prerequis te RDG 467. Credit 3 hours.

481 Practicum: Elementary Reading.* Teachers n tra n ng work d rect y w th students wh are d sabled n read ng Techniques emp oyed n treat g d sab t es Requ red for E ementary Educat on majors Prerequ s te. RDG 314. Credit 3 hours

505 Developmental Reading For c assroom and spe c a read ng teachers Spec f c profess ona sk i decoding comprehens on and evaluat on Recom mended for spec a read ng endorsement stamp Prerequ s te Teaching cert ficate Cred t 3 hours

507 Reading in the Secondary School. Acqua nts c assroom teachers w th techn ques for eff c ent read ng vocabu ary deve opment and readab ity procedures. Prerequ s te· Teach ng cert f cate Cred t 3 hours.

544 Resource Specialist and the Content Area Teacher. For read ng consultants teachers and ma ors nterested n the role of read g teacher as a resource person to content area tea hers Prerequ s te RDG 507 556 and 550 or RDG 5"7 Cred t, 3 hours

550 Directed Experiences in Reading. Emp oyment of c assroom test ng and treatment techn ques acqu red n prev ous reading courses Teachers work n ead ng c n c w th students hav ng correct ve read ng prob ems Recommended for spec a read ng endorsement stamp Laboratory sect ons Prerequ s tes RDG 505 or ap prova of nstructor Cred t 3 hours

556 Diagnostic and Treatment Procedures in Reading Experience in adm n ster ng and nterpret ng d agnost c tests n reading and re ated areas Treatment of spec f c read ng d sab t es and preparat on of mater a s are emphas zed Recomme ded for spec a read ng en dorsement stamp Prerequ s te RDG 505 or 507 Cred t, 3 hours

557 Reading Clinic Experience. The spe a read ng teacher uses advanced c n ca read ng programs w th d sab ed readers Use of remed a mate a s and tech n ques. Recommended for spec a read ng end rsement stamp Laboratory sections Prerequ s te RDG 556 Cred t 3 hours

580 Practicum. Supervision of Reading Instruction Develops know edge and sk ls that w enab e a read ng spec a st to become a teacher of teachers Participants w l superv se one to three exper enced teacher(s) who have been ass gned ch ldren w th correc tive read ng prob ems. Recommended for spec a read ng endorsement stamp Prerequ s te RDG 557 or approva of nstructor. Cred t, 3 hours

581 Individualizing Reading Instruction. Acqua nts experienced teachers w th nd v dua zed read ng pro grams Lectures visua a ds and demonstrat ons shou d enab e experienced teachers to conceptua ize the ra t onale and pract ce of these programs Prerequ site RDG 505 or 556 Credit 3 hours

630 Research in Reading. For advan ed graduate stu dents nterested in app ed research prob ems l terature of reading nstruct on and ma or ssues re ated to reading research Prerequ s tes RDG 505 and 556 Cred t 3 hours

Special Courses: RDG 294, 298 492 49 494 497 498 499, 580 583, 584 590 591 592 593 594 598 599 680, 683 684, 690 691 692 693, 700 780 783 784 790, 791 792, 799

Secondary Education

Including Safety Educat on, Educational Foundations and Social and Philosophical Foundations

PROFESSORS:

JOHN E. BELL (ED409 , ARMSTRONG BAUMANN JAMES W BELL, BELOK COOK EDWARDS, FRAS ER FULLERTON, GR FF TH, HAGGERSON, HOOVER K ESOW McGRATH MITCHELL, MOULTON, ROVER SHAFER SVOBODA

ASSOCIATE PROFESSORS:

BROOK, CHASEY, CUMM NGS, METHA P ERCEY, C. THOMAS, WAMACKS WURSTER

ASSISTANT PROFESSORS:

APPLETON, BOYLE MANERA PARR SH, K THOMAS

SECONDARY EDUCATION

SED 310 The Secondary School. Deve oment of se o dary educat on n Ame ca obse vat o and wo k w th secondary school pup s may be requ red Spec a discussion sess ons may be schedu ed Prerequ site· Adm ssion to a Secondary Teacher Educat on program Credit 3 hours

311 Principles and Curricula of Secondary Schools. Pr nc p es, purposes organ zat on and curr cu a of sec ondary schoo s Prerequ site EDP 310 and SED 310 Cred t, 3 hours

400 (On-Site Program) Observation and Participation. Observat on and work w th seco dary schoo pupi s classroom situat ons, part c pat on n week y sem nars Prerequis tes Adm ss on to Secondary Teacher Educa tion and on s te programs. Cred t ~ hours Y grade on y

401 (On-site Program) Methods, Curricula and Problems in Secondary Education. Meth ds of teach g and eva uat ng pr nc p es and curr cu a spec a prob lems n secondary educat on Prerequ s te SED 400 Cred t 7 hours

411 Teaching and Evaluating in Secondary Schools. Procedures methods techn ques and nstruments of teach ng and eva uat ng n secondary sch o s Prerequ s te. SED 311 Cred t 3 to 4 hours

433 Student Teaching in the Secondary Schools. The pract ce of teaching The re at onsh p of theory and pract ce n teach ng Prerequ s tes SED 411 and Spe c a Methods or SED 401 and Spec a Methods Concurrent enr ment n SED 434 requ red for stu dents n On S te Program Credit 3 to 12 h urs Y grade on y

434 (On-Site Program) Seminar Ana ys s and syn thes s of on site exper ences w th profess ona educat on team members Prerequ te SED 401 and oncurrent enro ment n SED 433 Cred t 2 hours Y grade on y.

444 The Junior High School. Purpo e organ zat on curr cu a and students of the jun r h gh s hoo May be taken in eu of SED 311 by tho e p epar ng for ju nior h gh teach ng Prerequ s tes EDP 310 and SED 310 Cred t 3 hours

480 Special Methods of Teaching Social Studies. n terd sc p nary approaches pr duct on and co ect on of mater a s Prerequ s te SED 311 C ed t 3 hours

522 Secondary School Curriculum Development So c a processes ssues pr nc p es patterns, and procedures n curr culum deve opment Prerequ s te SED 433 Cred t, 3 hours

533 Improving Instruction in Secondary Schools. Analyses of procedures methods tech ques and ex periments in teach ng n secondary scho s Prerequ s te. SED 433 Cred t 3 hours

555 Student Activities in Secondary Schools. Deve op

ment, purposes, and princ p es of student activit es n secondary schools Prerequ s te SED 433. Cred t 3 hours.

566 Evaluating Secondary School Programs. Develop ment of evaluat ve criter a for secondary school programs. Prerequ s te. SED 433 Cred t 3 hours

577 Issues and Trends in Secondary Education. Anal yses of lay and professiona reports problems and ssues n American secondary educat on Prerequis te SED 433 Credit, 3 hours

588 Human Relations in the Secondary Schools. Prob lems n human relat ons nherent n the nteraction f pupi s teachers, adm n strators, non-profess ona staff and aymen. Prerequisite SED 433. Cred t 3 hours.

711 Secondary Curriculum Development. Theor es and processes of deve op ng curr cu um, eva uation of re search. Prerequ s tes SED 433 522 or equivalent Credit, 3 hours.

722 Improvement of Instruction in the Secondary School. Eva uat on of the research ssues and theories related to the mprovement of nstruct on Prerequ sites SED 433 533 Cred t 3 hours

Special Courses: SED 294 298 492 493 494 497, 498 499, 580 583, 584 590, 591 592 593 594 598 599 680, 683 684, 690 691, 692, 693 780 783, 784 790 791, 792 799.

SAFETY EDUCATION

SAE 466 Safety Education. Safety educat on in home school and p ace of emp oyment Cred t 3 hours

477 Driver and Traffic Safety Education, I. Preparat on for teaching the classroom phase of driver educat on n the secondary school. Prerequ sites Va d operator s cense and SAE 466. COE on y Cred t 3 hours.

478 Driver and Traffic Safety Education, II. Preparat on for teach ng beh nd the whee phase of dr ver educa- tion Simulat on nc uded Prerequis te: Va d operator s license and SAE 477 COE on y Cred t 3 hours

487 Organization and Administration of Driver and Safety Education Programs. Curr culum organizat on and adm n strat on of programs n safety educat on Wi nc ude field tr ps to v s t nearby programs Prerequisite SAE 477. Cred t, 3 hours.

488 Transportation Safety Systems and Programs. Systems, prob ems ssues, and trends of transportat on systems. Prerequ site. SAE 466 Credit 3 hours

Special Courses: SAE 494, 498, 499, 580 583 584 590 591, 592 593 594, 598 599

EDUCATIONAL FOUNDATIONS

EDF 111 Exploration of Education. Educat on as an instrument n the deve opment of the ndiv dual and so- c ety its sign ficance as an Amer can nst tution. Cred t 3 hours

200 Self-Assessment for Teaching. Instruct onal and f eld exper ences to help students determ ne whether or not they want to become teachers. Credit 1 6 hours.

333 Basic Issues in Education. mportant contempo- rary soc o ph losoph cal ssues educators face, ana ys s and prob em-so v ng Cred t, 3 hours

411 General Semantics in Education. Pr nciples of genera semantics app ied n education through re search and demonstration. Credit 3 hours.

422 Group Dynamics and Education. Theory and use of group processes to faci itate human nteract on and earn ng Credit, 3 hours.

445 Education for Survival. Causes extent, and ser ousness of environmenta degradat on. Po ut on resource dep et on energy overpopu at on conserva tion Cred t, 3 hours

500 Educational Research. ntroductory course n the ana ysis, product on, and use of educat onal research n the f e d. Cred t 3 hours

Special Courses: EDF 294 298 492, 493, 494 497 498, 499 580, 583 584, 590 591 592, 593, 594 598 599, 600 690, 691 692, 780 783 784, 790, 791 792, 799.

MULTICULTURAL EDUCATION

See offer ngs under MCE l st ng on pages 150 (MCE EED) and 158 (MCE SPE) and Educat ona Foundat ons (SED)

SOCIAL AND PHILOSOPHICAL FOUNDATIONS

SPF 411 History of American Education. Soc a cond t ons deas and nstitut ons wh ch formed Amer can educat on Credit 3 hours

422 Educational Sociology. Schools as agents of so cial zation and as social systems Cred t, 3 hours

435 Education and Public Policy. nterre ationship of educational pol cy and contemporary po it ca eco nomic and cu tura condit ons and deo ogies n the United States and abroad Credit 3 hours

511 School and Society. nterre at onsh p of schoo and society and the ro e of educat on in soc a change Cre d t 3 hours

515 Education of Women. Analys s of roles and status of women; educat ona practices and a ternat ves Cre d t, 3 hours.

522 Education and Democratic Values. Educat on as a moral enterpr se wherein the schoo seeks to deve op soc al values through subject matter, methods, and programs. Cred t, 3 hours.

533 Comparative Education in the Western World. Educationa practices and traditions in the ead ng na t ons of Europe and the Sov et Un on. Cred t, 3 hours

534 Education and Change: Developing Nations. Edu cation as econom c and socio po it ca change agent in Africa, Asia, the M ddle East and Latin Amer ca Cred t 3 hours.

544 Philosophical Foundations of Education. Theor es of educat on in anc ent, medieva and modern classica and contemporary ph osoph es Cred t, 3 hours

555 Educational Classics. n depth study of selected educational c ass cs Credit 3 hours

566 History of Education. Development of educat ona institut ons and ideas n the Western Wor d, from an- c ent t mes to the 20th Century Credit, 3 hours

711 Social and Historical Foundations of Education. Prob ems of American education and their socio- h stor ca context. Credit, 3 hours

Special Courses: SPF 298, 492 493, 494 497, 498 499 580, 583 584 590 591, 592 593, 594, 598, 599 680 683, 684 690 691 692, 780 783, 784, 790, 791 792, 799.

Counselor Education

The doctoral programs of the Department of Counselor Education are approved in counseling psychology by the American Psychological Association.

PROFESSORS:
BLACKHAM BLAESSER DAANE DAV S, GUINOUARD, HAMM, HE MANN, NOBLE

ASSOCIATE PROFESSORS:
SNYDER (ED B 401A), ANDERSON, CAB ANCA, CHR STIANSEN CHURCH LL, CUMMINGS, GROSS, MAZEN M LLER, McWHIRTER, RIPLEY, SHELL

ASSISTANT PROFESSORS:
CASAUS MOSBY PARSONS

CED 512 Introduction to the Helping Relationship. In- troduction to the ski ls nvolved in he p ng and the sett ngs n wh ch they are practiced Cred t, 3 hours

522 Personality Development. Interact on of emotiona and cognit ve factors n persona ty deve opment at different age levels Various persona ty theor es examined Cred t, 3 hours

523 Psychological Tests. Standard zed tests in the study of the ndividual w th emphas s on test score interpretat on in counse ng Credit 3 hours

534 Occupations and Careers. The wor d of work va ue c mates and job classif cat on systems, educa- t ona and train ng cr ter a regard ng occupat ona entry and vert ca mobil ty Cred t, 3 hours

545 Analysis of the Individual. Theory and methods common y employed in study ng the ind v dua Obser vat ona methods diagnost c interv ew structured and semi-structured methods for study ng persona ty. Pre requ s te or corequis te CED 522 Cred t 3 hours

567 Group Procedures. Factors determ n ng interac t on effect veness and mora e in smal groups Techn ques of observat on assessment and eadersh p Cred t, 3 hours

577 Counseling. Principles and app cat on of counse ng with particu ar emphas s on the counseling process Prerequisites. CED 523 534 545 and adm ss on to a CED degree program Credit 3 hours

612, 613 Child Counseling. App cat ons of counse ng theory in working w th ch dren n c nic and elementary schoo sett ngs. Practicum required and ntegrated w th didactic instruct on. Prerequ site or corequ s te CED 680 and approval of nstructor Cred t 3 hours each semester

622 Group Counseling. Pr nc ples and app ication of group counse ng techniques Prerequ s tes CED 567 577 Cred t, 3 hours

633 Organization and Administration of Counseling Programs. Deve opment and adm n strat on of counse ng programs in schoo s, ndustry and community agenc es Prerequ s te CED 577 Credit 3 hours

634 Organizational Theory and Change. Conceptua mode s usefu to the counse or n understand ng how organizationa structures emerge, deve op and dec ne Organ zationa goa s, theor es of organ zat on, author ty subordinate ro es, communicat on w th n and betwee organizat ons. Prerequ s te CED 567 Cred t 3 hours

644 Psychology of Careers. Structura and deve op mental theor es regard ng patterns of occupat na cho ce The role of counsel ng n the career p ann ng funct on Prerequis te or corequisite· CED 577 Cred t 3 hours

655 Student Development Programs in Higher Education. H stor ca deve opment and present status of student personne work n commun ty co eges co eges and univers t es Observat on on col ege campuses Credit, 3 hours.

656 The American College Student. Needs and char acterist cs of post-secondary students Interact on of students and the educat ona env ronment student cul tures, student activism, student nf uence on nstruct onal practices and outcomes Cred t 3 hours

666 Comparative Theories of Personality. Comparat ve analys s of persona ty theor es n re at on to counse ng pract ces Prerequisites: CED 522 577 Cred t 3 hours

667 Patterns of Behavior Disorders. Common person a ty and/or emot ona disturbances n chi dren ado escents and adults Et o ogy and dynam cs of pr mary behavior d sorders, neurot c cop ng sty es, persona ity disorders and var ous types of affective d s orders Prerequis tes CED 522 545 577 Cred t 3 hours

668 Personality Assessment. Advanced study and n terpretat on of sem -structured personal ty nstruments Theoretica rationa e admin strat on and use of projec tive drawings and thematic appercept on dev ces Prerequisites EDP 560 CED 667 and approva of n structor. Credit 3 hours

670 Behavioral Counseling. Theory, procedures and app ications of behavior modif cat on n working w th chi d, parents and adu t c ents n schoo c n c and in st tut ona sett ngs D dact c nput ana ys s of nd v dua and group prob em situat ons and directed exper ences Prerequ s tes CED 680 and approva of nstructor Cre d t 3 hours

672 Marriage and Family Counseling I. Var ous thera peutic approaches and theoretical pos t ons and the r app cat on to marr age and fam y ounse ing Empha s s on the co therapy mode Pract cum requ red and ntegrated w th d dact c nstruct on Prerequ s tes CED 622 680 and approva of nstructor Credit 3 hours

673 Marriage and Family Counseling II. An integrated operat ona conceptual framework for counse ng w th couples fami es pre-d vorced couples post d vorced fami es. Focus s on the systems commun cat ons mode Pract cum opt ona and recommended Prereq u s tes. CED 672 and approva of nstructor Cred t 3 hours

677 Advanced Counseling. Counse ng systems and theories and the r pract ca app cat on n case manage ment comparat ve case ana ys s Prerequisite· CED 577 Cred t, 3 hours

681 Supervised Practice. Ass gnment n a schoo or community agency for superv sed exper ences n per sonnel work Prerequ s tes CED 680 and approva of nstructor. Credit 3-6 hours

Special Courses: CED 498 499 580, 583 584 590 591, 592, 593, 594 598, 599 600 680 683 684 690 691 693, 780 783, 784 790 791 792 799.

Educational Administration and Supervision

(Member. University Counci for Educational Administration)

PROFESSORS:
NORTON (ED 107A ASHE, DEEVER HUNN CUTT, MENKE METOS WOCHNER, WOOTTON

ASSOCIATE PROFESSORS:
DEMEKE, FARRAR, LEVAN

ASSISTANT PROFESSORS:
MILLER WALKER

EDUCATIONAL ADMINISTRATION

EDA 411 The Teacher and the Administration of Schools. ntroduct on to educat ona adm nistrat on for teachers Cons ders ega organ zat ona bases of schools. Teachers' ro es n scho adm n stration n c uded Cred t 3 hours

511 School Law. Const tut ona statutory and case aw that relates to a school personne pup s the schoo distr ct and other governmenta un ts Contracts d s missals tenure, ret rement, pup njur es, ab ty of personnel and district school d str ct b undary changes bonding Cred t 3 hours

524 Theory and Application of Educational Administration. History and deve opment f pub c schoo admin strat on n the Un ted States current organ za tional patterns for pub c educat on at oca ntermed ate state, and nat ona eve s current theoret ca pos tions in educationa adm n strat on Cred t 3 hours

525 Human Relations and Societal Factors in Educational Administration. nterre at ons between prob ems of educationa adm n strat on and nterd sc p nary so c a sc ences Communicat ons sk s mora e author ty and percept on through the case approach Educat on s re ationsh p to the economy futur st soc o ogy compar- at ve and changing va ue systems. Act vit es nc ude computer simu at on aboratory and off-campus exer-

cise Prerequ site· EDA 524 or equ va ent Credit 6 hours

526 Instructional Supervision. Adm n ster ng curr cu um mprovement n-serv ce educat on eval at ng and mprov ng teach ng competence princ pa s struc t ona respons b ities Prerequ site EDA 524 or equ va ent Cred t, 3 hours

527 Managerial Functions in School Administration Relates to the work of the centra d str ct off ce staff and the school pr nc pa Use of human resources p operty management and organ zat on and manage ment of time Prerequ s te EDA 524 or equivalent Cred t 3 hours

538 Administration of the Community School. Ph oso phy h story, organ zat on and ope at on of the commun ty centered schoo ntroduct on of the com munity educat on concept nto a schoo system and mak ng it operat ona Cred t 3 hours

544 Public School Finance. Schoo budget procedures account ng revenues state and county f nance and prob ems re at ng to financing p b ic educat on Prereq u s te Adm ss on to Educat ona Adm n strat on program Cred t 3 ho rs

548 Community Relations in Education Adm n strat ve factors of primary mportance n deve op ng commun ty nvo vement n publ c schoo s Emphas s on theory and sk l of schoo system and nd v dua commu cat on Cred t 3 hours

549 Programming and Financing Community Education. n depth nvest gat on of comp ne t programs effect ve as a veh c e for commun ty educat on n area schoo s p ans wh ch he p choo s change, mode s for fund ng commun ty educat on Prerequ s te EDA 538 or approva of nstructor Cred t 3 h urs

555 Educational Facility Planning. S ho bu d ng needs educationa p ann ng f r fac t es respons b t es of arch tects dut es of contractors, eq pp ng and furn sh ng of school bui d ngs Prerequ s te Adm ss on to Educat ona Adm n strat on program Cred t 3 hours

568 Role and Responsibility of Supervising Teacher Experiences and content for those p ann ng to become superv sors of student teaching n teacher educat on programs In serv ce train ng for those n student teach ng Prerequisite. Approva of nstruct r Cred t 3 hours

571 School Business Management. Purchas ng budg et ng, account ng payro manageme t aud t ng f nanc a report ng nsurance and adm n strat on of nonteach ng personne and serv ces Prerequ s te. EDA 544 Cred t 3 hours

573 School Personnel Administration. Organ zat on f r personne services, deve opment of po cy to govern se ection, or entat on p acement remunerat on trans-fers separat ons, and deve opment of morale among instructiona and non nstruct ona personne Prerequi-s te Adm ss on to Educat ona Adm n stration program Credit 3 hours

576 The School Principalship. Prob em and aboratory approaches used to prov de appl cat on of adm n stra tive act v ties of e ementary and secondary schools Prerequisite· Adm ss on to Educat ona Adm n strat on program Cred t, 3 hours

634 Instructional Leadership. Curr cu ar pract ces and processes used by nstruct ona eaders who p an or gan ze and coord nate the profess ona act v t es n elementary and secondary schoo s Cred t 3 hours

658 Problems and Issues in Administering Community Education. Prov des commun ty educators w th an understanding and sk l in schoo aw p ant ma age ment, personne admin strat o bus ness pract ce schoo egislat on, commun ty educat on h story re search and ut izat on of oca resources Prerequ s te EDA 548 and 549. Cred t 3 hours

673 School Personnel Administration: Issues and Problems. Conceptua framework for schoo perso e adm nistration, ro e re at onsh ps of the s ho person ne adm nistrator, staff part c pat on n po cy mak ng a ocating human resources in the schoo system P e requisite EDA 573 or approva of the nstructor C ed t 3 hours

675 Federal, State and County Education Programs. Funct on and respons b t es of schoo admin strators re at ng to federa f nanc a a d to schoo s and of state departments of educat on and county or other nterme diate distr cts n educat ona progra s Prerequ s te Adm ss on to Educat ona Admin strat on program Cred t 3 hours

676 The School Superintendency. Cr t ca exam nation of the schoo superintendency and the pr mary func t ons of th s educationa pos t on The dut es respons bi t es act v t es and prob ems of the schoo superintendent are nc uded The un que eadersh p ro e of the schoo super ntendent s exam ned Prerequ s tes Admiss on to Educat ona Adm n strat on programs tw years of adm n strat ve experience Credit 3 hour

679 Administration of Special Programs in Education. For personne adm n ster ng spec a educat ona ser v ces respons b it es of super nte dents pr nc pa s, supervisors and d rectors for spec a educat on stu dent personne aud ov sua brary sc ence and others Cred t, 3 hours

711 Administrative Leadership. Emphasis on research n leadersh p app cation of research f nd ngs to adm n strative and superv sory funct ons n educationa endeavors Prerequ s te: 30 semester hours n Educa tiona Adm nistration or approva of instructor Cred t 3 hours

722 Administration of Instructional Improvement. Recent research re at ng to adm n strat ve and superv sory respons b ities for the mprovement of the educat ona program. Effect ve processes by adm n s-trators, superv sors consultants and coord nators Prerequisite. 30 semester hours n Educat ona Adm n strat on or approval of nstructor Cred t 3 hours

733 Administrative Management. Recent research re at ng to school management School f nance aw, bu d ngs, transportat on food serv ces and supp y management Prerequis te 30 semester hours n Edu cat onal Adm n stration, or approva of nstructor. Cred t 3 hours.

Special Courses. EDA 498 499 580, 583 584, 590, 591, 592 593, 594 598 599 680 683 684 690, 691 692 693 700, 780 783 784 790, 791, 792 799. See page 31)

NOTE: *A laboratory s maintained n the Southwest Re gional Center for Community Education Development covering mater als and pract ces in the f eld of Commu nity Education. The use of the aboratory may be scheduled with the secretary n Room 104, Farmer Edu-cation Building*

Center for Higher and Adult Education

PROFESSORS:
RICHARDSON ED105F), FENSKE

ASSOCIATE PROFESSORS:
AXFORD BOGART ROSSMAN

ASSISTANT PROFESSOR:
OKUN

HIGHER EDUCATION

HED 522 Introduction to Higher Education. ntroduc t on and or entat on to the broad f e d of h gher education Credit 3 hours

533 The Community-Junior College. The un or co ege as an nstitut on n Amer can h gher educat on history functions and organ zat on The course s accepted toward profess ona cert f cation by Ar zona State Board of D rectors of Jun or Co eges Cred t, 3 hours.

611 Curriculum and Methods of Instruction in the Community-Junior College. Pr nc p es patterns and procedures inc ud ng development of the curricu um n the junior col ege Factors affect ng the organ zat on and mprovement of nstruct on w th n such nstitut ons. Focus on nstruct ona methods and m croteach ng Meets methods course requ rement for commun ty co ege cert f cat on n Ar zona Prerequis te HED 533 or approva of nstructor Cred t 3 hours

622 Curriculum and Instruction in Higher Education. Current issues and trends n curr cu um and n truct n n the f e d of h gher educat on Prerequ s te HED 522 or approva of nstructor Cred t 3 hours

644 Financing Higher Education. nc me and expend tures for h gher educat on and an ana ys s of trends in the support of the programs, part cu arly pub c h gher educat on Prerequ s te HED 522 or approva of n structor Cred t 3 hours

679 Administration of the Community Junior College. Organ zationa re at onsh ps adm n stration prob ems encountered and pract ces emp oyed n the operat on of th s type of nstitut on Pre equ s te HED 533 or ap prova of instructor Cred t 3 hours

689 Administration of Higher Education. Prob ems nvo ved n the adm n strat on of nst tut ons of h gher educat on Prerequ s te HED 522 or approva of n structor. Credit 3 hours.

Note: *Potential Higher and Adult Educat on students should be aware that sem nars cover ng current H gher and Adult Education issues and nstitutional research are offered periodica y The Center ma ntains a laboratory/l brary for graduate students in H gher and Adult Education.*

Special Courses: HED 494 498 499 580 583 584 590 591 592 593, 594, 598 599 680 683 684 690, 691, 692 780 783 784, 790 791 792 799

ADULT EDUCATION

Note: *The Adult Education program of the Center is n the process of an extensive internal re-eva uation of its philosophy, goals and objectives In order to obtain current nformation concern ng comp ete program offer ngs please contact the Center D rector.*

AED 481 Adult Basic Education. The ro e of the teach er, student and programs n Adu t Bas c Educat on Consideration s also g ven to H gh Schoo Equ va ency and other simi ar y re ated areas Cred t 3 hours

511 Principles of Adult Education. The h stor a deve - opment core content, and pr nc p e areas of app cat on of adult educat on are covered Cred t, 3 hours

512 Program Planning in Adult Education. Andragog ca approach to p anning programs for adu ts Redefin t on of the ro e of the program p anner and fa- c l tator Cred t 3 hours

522 Educating the Middle-Aged and Older Person. Educationa cons derat ons and methods ut l zed n each of the princ p e age groupings of adults Cred t 3 hours.

566 International Adult Education A rev ew and com parison of var ous adu t educat on programs and fac l t es in se ected countries Cred t 3 hours

711 Adult Education: A Synthesis. Survey of the ent re f e d of adu t educat on ts sponsors, programs prac t ces and prognosis Emphas s s on rev ew ng research n the f e d Cred t 3 hours

Special Courses: AED 498 499 580 583 584, 590 591 592, 593 594, 598 599 680 684 690 691 692 693 780 783 784, 790 791 792 799

Educational Psychology

PROFESSORS:
(ED B-301A) FRY GAFFNEY GR NDER, HELMSTADTER, KERR SATTLER, STAFFORD VAN WAGENEN

ASSOCIATE PROFESSORS:
KULHAVY NELSEN

ASSISTANT PROFESSORS:
BETZ, CARROLL HARR S, KRUS, STOCK

VISITING ASSISTANT PROFESSOR:
MEYER

EDP 310 Educational Psychology. Human behav or n educat ona s tuat ons presented through nstruct ona modu es Prerequ s te PGS 100 or approva of the n structor Students may re enro for cred t to a tota of s x hours Cred t, 1 6 hours

454 Introduction to Measurement and Descriptive Data Analysis. The nature construction and eva uat on of tests. Frequency d str but ons der ved scores, mea sures of centra tendency var ab ty corre at on and regression. Credit 3 hours

510 Essentials of Classroom Learning. Emp r ca ev dences of the deve opment of learning and mot vat on and the r relat on to educat ona processes Prerequ site EDP 310 or equ valent Cred t 3 hours.

514 Psychology of the Adolescent. Menta physical, soc a and emotiona development n ado escence and the inf uence of secondary schoo exper ences on ado- escent development Prerequis tes PGS 100 EDP 310 or equ va ents Cred t, 3 hours

530 Theoretical Issues and Contemporary Research in Child Development. Psycho og ca theor es research and methods re evant to ch d deve opment emphas z ng the relations between ear y deve opment and ater performance. Credit 3 hours

532 Psychological Approaches to Disability Problems General psycho og ca theory and exper menta re search re evant to except ona ty, emphas z ng mp cat ons for educat onal programs wh ch recogn ze un que earner characterist cs F e d work Cred t 3 hours

534 Principles of Behavior Modification. Pr nc p es of condit oning as appl ed to behav o mod f cat on; cur rent research on the exper menta ana ys s of behav or n educat ona psycho ogy Cred t 3 hours

540 Theoretical Views of Learn ng. C ass ca and cog n t ve theor es of earn ng p us recent or entat ns ustrative exper menta and rat ona foundat ons; mp cat ons for educat onal practice Prerequ s tes 12 semester hours n psycho ogy or educat onal psycho - ogy Credit 3 hours

542 Learning of Text Materials Research and Theory. Cr t ca rev ew and eva uat on of re earch on earn ng variab es re evant to acqu sit on and retent on of n- structiona mater a s Laboratory exper en e. Cred t 3 hours

544 Psychology of Reading A ternate ana yses of the read ng process des gns and procedures for nvest gat ng nstruct ona and non nstruct ona var ab es re ated to read ng ach evement Prerequ sites EDP 454 510 Cred t, 3 hours

550 Current Issues in Measurement. Th eoret ca ssues n educat onal measurement, the r mp cations for edu cat ona measurement and eva uat on, exam ned by cr t ca rev ew of research terature Prerequ site· EDP 454 Cred t, 3 hours

552 Measurement and Inferential Data Analysis Tech niques. Measurement and nferent a procedures in educationa research theoret ca frequency d str bu- tions samp ing design stat st ca nference hypothes s testing, and bas c experimenta des gn Prerequ s te. EDP 454 Cred t 3 hours

554 Multivariate Procedures in Data Analysis. Con- trasts, mu t p e classif cat on ana ys s of var ance and covar ance, mu tivar ate ana ysis of var ance d scr m

nant function, and mu t p e near regress on Prerequ s te EDP 552 Cred t, 3 hours

555 Computer Programming for Data Processing in Behavior Sciences. FORTRAN program ng, t me shar ng mass storage data and program f es and sys tems contro emphasis on use for data ana ysis Prerequisite: EDP 454 Cred t 3 hours

556 Data Processing Techniques in Measurement and Research. Development of stat st ca des gn and mea surement ski s through nterns ve use of major stat stica programm ng packages Prerequis te EDP 552 Credit 3 hours

560 Individual Intellectual Assessment. Exper ence n adm n stering and nterpret ng nd v dua tests Theoret - ca bas s for ab ity test ng eth ca cons derat ons and d agnost c use of test resu ts Prerequ s te EDP 454 510 and wr tten approva of nstru tor n t a enro ment, 3 hour m n mum Laboratory experience Cred t 1 6 hours

562 School Psychology: Theory and Practice. Deve op ment and present status of schoo psycho ogy overv ew of assessment and ntervent on strateg es and profes s ona issues Credit 3 hours

566 Diagnosis of Learning Difficulties. C n cal d agno s s of earning diff cu t es emphas z ng specif c academic prob ems Use and interpretat on of diagnost c nstru ments in pract ca schoo s tuat ons Prerequ s tes EDP 454, 510, 560 and 562 Cred t 3 hours.

636 Experimental Analysis Methods of Research on Teaching. An exper mental ana ys s a ternat ve to sta tist cs n the concept on des gn and conduct of educat onal research Emphasis on wr ting the research proposa . Approva of nstructor requ red Cred t 3 hours

710 Education Psychology. Theory and research itera ture n educationa psycho ogy and ts imp cations for educationa pract ce. Credit 3 hours

748 Recent Studies in Educational Psychology. Se- lected literature n educationa psycho ogy nvo v ng crit cal read ng and d scuss on Prerequ s te 15 semes- ter hours n educat ona psychology Cred t 3 hours

750 Research Epistemology and Technical Writing. Exam nes formal rat ona e of research wr ting and ed t ng according to *APA Publication Manual* of techn ca descr pt ons, research proposa s and reports Credit 3 hours

754 Advanced Multivariate Analysis. Mu t variate ex- per menta des gn, mu t var ate mult p e comparison procedures, conf dence nterva s covar ance structure ana ys s, and ana ysis of qua itat ve data Prerequ s te EDP 554 Cred t 3 hours

756 Advanced Quantitative Techniques. Spec a tech niques for ana yz ng educationa data ncluding mu t variate mu t p e regress on, factor analys s canon - cal corre at on, and order and h erarch ca analys s Prerequisite EDP 554 Cred t 3 hours

Special Graduate Courses: EDP 498 499, 580 583, 584 590, 591 592, 593, 594 598, 599 680, 683 684 690 691, 692 693, 700, 780 783, 784 790 791 792 799 (See page 31.

Special Education

PROFESSORS:
FAAS (ED 305 ABRAHAM, MOORE
SUNDWALL, WARREN

ASSOCIATE PROFESSORS:
D'ALONZO NELSON ROBERTS
RUTHERFORD, W SEMAN

ASSISTANT PROFESSORS:
GILL, HOWELL, McMANMAN MYERS,
O'CONNELL PR ETO, SERAPIGL A SULL VAN,
T PPECONN C VALLEJO ZUCKER

SPECIAL EDUCATION

SPE 311 Orientation to Education of Exceptional Children. ncludes g fted menta ly retarded v s on hearing, speech, emotional disturbance, d sadvantaged spec fic earn ng d sab l t es and others Cred t 3 hours

312 Mental Retardation. Causat on and character stics of mental retardat on in ch dren and adults Term no o gy, educat ona programming and therapeutic procedures are emphasized Cred t, 3 hours.

320 Participation with Exceptional Children. C n ca and aboratory exper ence with except ona chi dren n cooperating cl nics nst tut ons schoo s and agenc es Prerequ site: SPE 311 or concurrent y Cred t, 3 hours

321 Curriculum and Methods of Teaching the Mentally Handicapped. Deve op ng curr cula and methodology for trainab e and educable menta y hand - capped pup s n grades K-12. Prerequis tes SPE 311 and 312 or concurrent y. Cred t 3 hours

401 Evaluating Exceptional Children. Normat ve and cr terion-referenced diagnostic techniques ncluding formative eva uat on. Emphasis upon appl cat on A competency-based approach w be used Prerequ s tes. SPE 311 and EDP 310 Cred t 3 hours

402 Prescriptive Programming in Language, Reading and Arithmetic for Exceptional Children. Emphas zes methods, techn ques and mater a s for use n prescr p t ve teach ng A competency-based approach wi be used Prerequ s te: SPE 401. Cred t 3 hours

403 Parent, School, Community Relations and the Exceptional Child. Counsel ng parents Law and the hand capped ro e and competenc es of spec a educa t on personnel, referra procedures and work ng w th commun ty agenc es Prerequis te SPE 311 or approva of nstructor Cred t 3 hours

404 Societal Influences on Handicapping Conditions. Research on social forces that inf uence the preva ence, management, and treatment of except ona ch dren. Prerequ s tes. SPE 311 and bas c course n one excep tiona ty. Cred t 3 hours

436 Behavioral and Emotional Problems in Children Ma adapt ve behav or n chi dren and ado escents Ex p orat on of the so ated deve opmental and ma ntenance var ab es contr but ng to the behav or pat terns Credit 3 hours

437 Social Maladjustments in Children. Del nquency, drug abuse se f-destruct ve behav or and other socia maladjustments of ch dren and adolescents. Tech- niques and programs. Credit 3 hours

438 Methods of Teaching the Emotionally Disturbed. Deve opment of a therapeut c educat ona atmosphere for soc a ly maladjusted and emotiona y d sturbed ch dren Prerequis te. SPE 436 Cred t, 3 hours

455 Early Childhood and the Handicapped. Early ch ld hood education as t app es to the hand capped ch ld Methods materials and techn ques Credit 3 hours

461 Characteristics and Diagnosis of Learning Disabilities. Cred t 3 hours

462 Methods of Remediating Learning Disabilities. Prerequ s te SPE 461 Cred t 3 hours.

465 Student Teaching in Special Education. Prerequ sites· (1) Approva of Spec a Educat on Department (2) comp etion of SPE 401 and 402 and bas c methods courses in area of spec a zation and in teach ng read ng and mathemat cs n the elementary schoo Cred t 3-15 hours. 'Y grade only.

488 The Gifted Child. G fted ch dren s characteristics ident ficat on needs schoo and home env ronments, def nitions and m sunderstand ngs Research of Ter man Witty and others Credit, 3 hours

489 Methods in Teaching the Gifted. Methods n teach ng e ementary and secondary schoo g fted ch dren Newer techniques, nc ud ng programmed and com puter-ass sted nstruct on team teaching Prerequisite. SPE 488 Cred t, 3 hours

511 The Exceptional Child. Educational needs of handicapped and gifted children. (Not available to students who have completed SPE 311.) Credit, 3 hours.

512 The Mentally Retarded Child. Etiology, diagnosis and management of mentally retarded children. Current trends in prevention, programming, and teacher preparation. (Not available to students who have completed SPE 312.) Credit, 3 hours.

514 Methods of Perceptual-Motor Training. Development of the sensory-motor skills of handicapped children. Prerequisites: SPE 511 or equivalent, and basic course in one exceptionality. Credit, 3 hours.

515 Methods for the Remediation of Basic Learning Problems. Methods and materials for remediating the basic academic problems of mentally-retarded, emotionally-disturbed, learning-disabled and disadvantaged children. Prerequisites: SPE 511, or equivalent and basic course in one exceptionality. Credit, 3 hours.

531 Behavior Management Approaches with Exceptional Children. Behavior management approaches with maladaptive behavior of exceptional children. Prerequisite: SPE 511 or equivalent. Credit, 3 hours.

574 Educational Evaluation of the Handicapped. Design and statistical considerations of normative and criterion-referenced tests. Collection, recording and analysis of data from formative evaluation. Prerequisites: SPE 311 or 511 and a methods course in the teaching of reading and mathematics. Credit, 3 hours.

575 Current Issues in the Education of Exceptional Children. Mainstreaming, noncategorical, financing, legal, diagnostic, labeling, legislative and other critical and controversial issues related to the education of exceptional children. Credit, 3 hours.

578 Methods of Teaching the Mentally Retarded. Specific methods, materials of instruction and curriculum development in teaching educable and trainable children. Prerequisite: SPE 312 or 512. Credit, 3 hours.

579 Vocational Programs for the Mentally Retarded. Curriculum planning and methods of teaching in secondary school and post-school programs. Work evaluation, work-study, sheltered employment. Prerequisite: SPE 312 or 512. Credit, 3 hours.

581 Methods of Teaching the Trainable Mentally Retarded. Development of materials, procedures and programs for the trainable mentally retarded, preschool through adulthood. Prerequisite: SPE 312 or 512. Credit, 3 hours.

Special Courses: SPE 294, 298, 492, 493, 494, 497, 498, 499, 580, 583, 584, 590, 591, 592, 593, 594, 598, 599.

INDIAN EDUCATION

IED 411 Indian Education. Historical development of Indian education with present day implications. The contemporary period will be emphasized. Credit, 3 hours.

422 Methods of Teaching Indian Children. Materials and methods used in Indian education. Use of local and tribal materials in the classroom. Experimentation with new concepts. Prerequisite: IED 411. Credit, 3 hours.

424 Curriculum and Practices for Indian Education. Current and past curricula and research in Indian education. Specific techniques for curriculum improvement. Prerequisite: IED 411. Credit, 3 hours.

425 Educational Applications in Anthropology. Values and cultural assumptions with their impact on Indian education. Case study approach in understanding social and cultural factors. Prerequisite: IED 411. Credit, 3 hours.

433 Guidance for the Indian Student. Problems faced in providing guidance services to Indian students. Tribal values, cultural understanding and their relationship to effective guidance. Prerequisite: IED 411. Credit, 3 hours.

490 Problems of Teachers of Indian Children. Current issues, trends and problems encountered by teachers of Indian children. Research reviewed and evaluated. Prerequisite: IED 411. Credit, 3 hours.

511 School-Community Relations in Indian Education. Techniques and methods utilized in realizing harmonious and effective relations between the school and community in which Indian children live. Credit, 3 hours.

522 Education of Indian Adults. Methods of establishing Indian adult education, principles involved in course selection and content, ingredients of successful Indian adult education programs. Credit, 3 hours.

544 Community Development in Indian Education. Methods and techniques for community development programs in communities in which Indians live: role and responsibilities of school, community and individuals. Credit, 3 hours.

Special Courses: SPE and IED 492, 493, 494, 498, 499, 580, 583, 584, 590, 591, 592, 593, 594, 598, 599. (See page 31.)

MULTICULTURAL EDUCATION

MCE 446 Teaching the Culturally Diverse Child. Physical, social, psychological and educational needs of children from culturally and linguistically different populations. Multidisciplinary approach will be followed. Credit, 3 hours.

447 Methods of Teaching the Culturally Diverse Child. Techniques for organizing and providing special educational experiences for students from culturally and linguistically different populations. Prerequisite: MCE 446. Credit, 3 hours.

448 The Mexican American Child. Consideration of variables in teaching Mexican American children. School programming based on bilingual, cultural and related factors. Credit, 3 hours.

Special Courses: MCE 498, 499, 580, 583, 584, 590, 591, 592, 593, 594, 598.

Educational Technology and Library Science

PROFESSORS:
(ED B-146) GERLACH, H GG NS
SATTERTHWA TE SULL VAN, VERGIS

ASSISTANT PROFESSORS:
N LSEN, SCHON

INSTRUCTOR:
TYLER

EDUCATIONAL TECHNOLOGY

EDT 405 Competency-Based Instruction. Students deve op nstruct ona object ves, se ect earning act v t es, and des gn assessment procedures fo a competency based course n the r own teach ng f e d Cred t, 3 hours

501 Foundations of Educational Technology. Current pract ces and terature n nstructiona techno ogy Cred t 3 hours

502 Design and Development of Instruct on Formu a tion deve opment, f e d test ng and rev s on of instruct onal programs for c assroom use Cred t, 3 hours

503 Research Techniques for Instructional Development. Procedures for ana yz ng the effects of alternat ve nstruct onal pract ces Cred t 3 hours

504 Educational Evaluation. Techn ques for evaluat ng the effectiveness of instruct ona programs and educa tional projects Cred t, 3 hours

521 Development of Self-Instructional Programs. Con struct ng test ng and rev s ng a se f-instruct ona program App cat on of pr nc ples re ated to nd v dua ized and programmed nstruct on Cred t 3 hours

522 Computers in Education. Appl cat on of computer techno ogy to nstructiona and adm nistrat ve funct ons Cred t 3 hours

523 Computer Programming for Instruction. Author anguages and programm ng techniques for nstruc t onal purposes Students develop a computer contro led program of nstruct on Cred t 3 hours

791 Seminar. Advanced techn ques of te hn ca wr t ng Credit 1-3 hours

792 Research. Des gn and execut on of nstruct ona research on se ected top cs Cred t 1 3 hours

Special Courses: EDT 498 499 580, 583 590 591, 592, 593 594, 598 599 680, 683, 684 690, 691, 692 693, 780 783, 784, 790 791 792, 799 (See page 31)

INSTRUCTIONAL MEDIA

IME 411 Audiovisual Materials and Procedures in Education. Preparat on and ut l zat on of mater a s and equipment n nstruct ona contexts Lecture and aboratory Credit 3 hours

412 Audiovisual Production Techniques in Education. Production and use of audiotapes, sl de programs and s mple st l and projected med a for the classroom Lec ture and aboratory Credit 3 hours

421 Audiovisual Resources for the Classroom. Survey and eva uat on of commerc a y avai ab e aud ov sua materials for the c assroom and med a center Cred t 3 hours

422 Television and Radio Utilization in Education. Cred t, 3 hours

455 Cinema and Television. Structure, deve opment and behav ora effects of theatr ca mot on p ctures and commercia te ev s on Credit 3 hours

521 Design of Instructional Media. Princ p es of per cept on, ayout and des gn related to the plann ng and production of nstruct ona med a Cred t, 3 hours

524 Instructional Photography. The camera f lm expo sure compos t on and ght ng. Dark room exper ences n deve op ng and en arg ng b ack and wh te f m Lec ture and aboratory Cred t, 3 hours

525 Instructional Graphics. Pr nc ples of des gn pro duction and ut l zat on of graph c med a n nstruct ona contexts Lecture and laboratory Credit 3 hours

526 Instructional Cinematography. Pr nc p es of de s gn product on, and ut l zat on of educat ona mot on p ctures Lecture and aboratory Credit 3 hours

527 Instructional Television. Pract ca exper ence n the product on of nstruct onal video tapes Lecture and aboratory Cred t, 3 hours

528 Photographic Media Production. Des gn and pr - duct on of mu t med a nstructiona programs Prerequ s tes ME 524 or approva of nstructor Lec ture and aboratory Cred t 3 hours

533 Administration of Media Services. Pr nc p es for adm n ster ng audiov sua support systems n schoo s and univers t es Prerequis tes 6 hours n ME or ap- prova of nstructor Credit 3 hours

560 Current Issues and Problems in Audiovisual Education. Cr t ca analysis of current pract ces n nstruct ona med a. Prerequis te 6 hours ME or ap prova of nstructor Cred t 3 ho rs

Special Courses: ME 494, 498 499 500, 580 583 584 590, 591, 593 594, 598 599 See page 31)

LIBRARY SCIENCE

LIS 311 Children's Literature. Modern and c assic ter ature for preschoo and e ementary schoo ch dren Techniques for promot ng ndependent read ng Cred t, 3 hours.

411 Advanced Studies in Children's Literature. Folk and modern terature for ch dren Storyte ng book talk puppetry and creat ve drama as mot vat ona tech niques. Prerequ site. L S 311 or approva of nstructor Credit, 3 hours

440 Classification and Cataloging. Descr pt ve cata og ng and Dewey Dec ma C ass f cat on of pr nt and nonpr nt brary mater a s. Cred t 3 hours

461 Selection of Library Materials. Pr nc p es and pro cedures used n the se ect on of materia s for the schoo brary Cred t 3 hours

463 Library Materials for Children. Se ecting and using pr nt and nonpr nt mater a s to s pport the e ementary schoo curr culum Credit 3 hours.

464 Library Materials for Adolescents. Se ect ng and us ng pr nt and nonpr nt mater a s to support the sec- ondary schoo curr culum Credit 3 hours

465 Library Materials for Minority Students. Library services and materia s for chi dren from Mexican Amer can Nat ve Amer can Black and other minor ty groups Cred t 3 hours

471 Basic Reference Resources. Prov d ng reference serv ce n the school brary Content and use of bas c resources. Cred t, 3 hours

481 School Library Administration. Prerequ s tes LIS 440 and 461. Cred t 3 hours

510 Library Automation. Automated systems for brary management and operations Cred t 3 hours

533 Current Library Problems. Cr tica a a ys s of cur rent practices and prob ems n schoo l brar ansh p Prerequ sites L S 481 or approva of nstructor Cred t 3 hours

534 Evaluation of Children's Literature. App y ng standards of terary cr t c sm to ch dren's terature Prerequisite chi dren's l terature course or approva of nstructor Credit 3 hours

584 School Library Internship. Prerequ s tes L S 440 461, 463 or 464 471 481 Concurrent enro ment pe m tted n L S 481

Special Courses: LIS 494 498 580 583 584, 590, 591 592 593 594, 598 599 See page 31)

College of Engineering and Applied Sciences

Lee P. Thompson, Ph.D.
Dean

Purpose

The purpose of the College of Engineering and Applied Sciences is to provide a university education of such fundamental background and scope that a student may achieve competency in engineering, agriculture, technology, or construction. Every effort is made to carry on a well rounded, well integrated program which will not only give the student proficiency in his professional career but also will develop character, judgment, ideals, breadth of view, and cultural attitudes. Students are taught to recognize the fact that their professional efforts will cause change and that they must accept responsibility for the social consequences of those efforts.

Organization

The College of Engineering and Applied Sciences is organized to offer the following programs of study.

Division of Agriculture

- Agricultural Education
- Ag Industry
- Bio-Agricultural Sciences
- Engineering of Agricultural Systems
- Environmental Resources in Agriculture

Division of Construction

- General Building Construction
- Heavy Construction
- Construction Office Operations

School of Engineering

- Chemical and Bio Engineering
- Civil Engineering
- Electrical and Computer Engineering
- Engineering Science
- Engineering Interdisciplinary Programs
- Engineering Special Programs
- Industrial and Management Systems Engineering
- Mechanical Engineering

Division of Technology

- Aeronautics
- Electronics
- Graphic Communications
- Industrial Design
- Industrial Technical Education
- Manufacturing

Research

It is the policy of the College to encourage exceptional upper division undergraduate students, as well as graduate students, to participate with faculty members in research activity. Many faculty members are conducting research on government or industry sponsored programs. Research activities include computer applications, material science, solar energy, transportation systems, speech processing, computer design, turbine design, waste recycling, electronic devices, power systems, environmental, biomedical, arid land agriculture, and many others.

Degrees

Baccalaureate Degrees. The completion of a four-year program of study in agriculture, construction, and technology leads to the degree of Bachelor of Science (B.S.). The completion of a four year program of study in engineering or engineering based interdisciplinary programs leads to the degree of Bachelor of Science in Engineering (B.S.E.) or Bachelor of Science (B.S.).

Integrated B.S.E.-M.S.E. Program. For School of Engineering students only. To provide greater program flexibility, qualified students may undertake a program which provides an integrated fourth and fifth year

sequence of study in one of several fields of specialization in engineering. This gives the student an opportunity to meet the increasing demands of the profession for graduates who can begin their engineering careers at an advanced level.

Students admitted to this program are assigned a faculty committee to supervise a program of study in which there is a progression in the course work and in which earlier work is given application in the later engineering courses for both the bachelor's and master's degrees. Entry into the integrated program will require an application submitted to the Dean through the faculty advisor and the chair. Applications will be reviewed by a College committee which will recommend the appropriate action to the Dean. The application may be submitted in the fifth semester.

Master of Science in Engineering Degree (M.S.E.). The Master of Science in Engineering degree is awarded upon successful completion of prescribed graduate level course work, engineering projects, and research endeavor. Entry into this program normally requires a bachelor's degree from an engineering program accredited by ECPD.

The pattern of course work applicable to the degree is potentially unique for each student, although each approved pattern is required to conform to the general guidelines for subject matter content for the degree as set out in the *Graduate Catalog* and also to the criteria for advanced level accreditation of the Engineers' Council for Professional Development (ECPD). The programs for this degree in civil, electrical and computer industrial and management systems, and mechanical engineering, and engineering science (see pages 173-184) are accredited by the ECPD.

Master of Science Degree (M.S.) (Engineering). This graduate program is designed to provide an opportunity to the competent student with a baccalaureate degree in engineering or other selected fields to specialize in a particular subject area within engineering. Normally this objective may be attained through the satisfactory completion of graduate level course work, and project or research endeavor.

Master of Science Degree (M.S.) (Agriculture). This program provides competent students with opportunities to specialize in study areas designed to serve the needs of agriculture in relation to business and industry.

Master of Science Degree (M.S.) (Technology). Selection between two areas of concentration is offered through this graduate degree. One area is a technical concentration enhancing industrial employment in one of the technical specialties. The other area of concentration is Industrial Teacher Education providing both technical and professional education experience directed toward post secondary technical teaching.

Doctor of Philosophy Degree (Ph.D.) (Engineering). The degree Doctor of Philosophy is awarded in engineering upon the satisfactory completion of an approved program of graduate study, research and dissertation. For specific reference to this degree see the Graduate College section of this catalog or the *Graduate Catalog*.

General Information

Definition of Terms. The terms used in this College to describe offerings are defined below for purposes of clarity.

Program of Study. A broad term describing the complete array of courses included in the study leading to a degree. Example: engineering, industrial technology, construction, agriculture.

Field of Specialization. A specialized group of courses contained within the program of study. Example: program of study engineering; field of specialization mechanical engineering; Example: program of study agriculture, field of specialization bio-agricultural sciences.

Area of Emphasis or Pattern. A selection of courses within a field of specialization or among one or more fields of specialization. Example: field of specialization mechanical engineering; area of emphasis aerospace. Example: field of specialization aeronautical technology; pattern air transportation management.

Admission. Students who wish to be admitted to full freshman standing in the College of Engineering and Applied Sciences should present certain secondary units which are specified in the requirements of the Divisions and the School of Engineering. Students who have omissions or deficiencies in secondary school subject matter preparation may be required to complete additional university credit course work which may not be applied toward their degree. Because of the expanding international opportunities for graduates of the programs offered in this College, it is recommended that all students interested in these programs take at least two years of a foreign language in high school.

Transfer Students. Students who contemplate transferring into this College from other institutions, whether they be community colleges or four year institutions, should study carefully the pertinent sections under this College pertaining to their particular program and, if possible, should consult an advisor in this College prior to enrolling in that other institution. This will assure a smooth transition at the time of transfer.

Transfer students may also obtain a copy of the "Approved General Studies Courses" for this College by writing to the Dean. Credit is granted for transferred courses which are sub

stantially equivalent to corresponding courses in the selected program of study, subject to grade and senior residence requirements. Credits will be accepted by transfer from a junior college to meet lower division requirements only. It should be noted that some courses taken in other colleges of this University or other universities may be acceptable for general University credit but may not be acceptable toward the degree requirements of this College. Determination of those courses acceptable to a specific degree program will be made within the appropriate Division or School with the approval of the Dean.

Advisement and Counsel. For assistance and counsel in planning a program of study, each student will be assigned a faculty advisor who is familiar with his chosen field of specialization. In addition, a student advisement coordinator is available in the Dean's Office to all students for counsel and assistance.

English Proficiency Requirement. English proficiency is expected and may be satisfied by completing ENG 102, or ENG 104. Any student whose written or spoken English in any course is unsatisfactory shall be required to take additional course work by his division director or faculty chair.

Pass-Fail Grades. Students enrolled in the College of Engineering and Applied Sciences must take all courses on a graded basis in fulfillment of degree requirements. In addition, no courses in this College are offered for pass-fail credit.

Entry into Upper Division Courses. Prior to enrolling in courses at the 300-level and above, all students in good academic standing must secure the approval of their advisor. Students who are not in good academic standing must secure the approval of their advisor *and* division director or faculty chair. Students whose grades in 300-level courses are unsatisfactory may be required to retake one or more courses for which credit has previously been granted.

Academic Honors. Students who maintain a 3.5 or above cumulative index are awarded, at the College Honors Convocation, a Certificate of Scholastic Excellence, and/or are listed in the Honors Convocation program. Students completing baccalaureate degree requirements will receive the appropriate Honors designations on their diplomas consistent with the requirements specified by the University.

General Studies

Higher education should provide the student not only with competency in his/her chosen subject field, but also with experiences which facilitate the student's growth in ability to perceive significant relationships, to make intelligent value judgments, to express ideas with ease, clarity and good taste, and to develop the qualities of character and personality requisite for a successful career. The development of moral, ethical and social concepts, along with a sound professional attitude, is required. It is expected that the attainment of an interest and pleasure in the above pursuits will be an inspiration to continued study. Courses are selected with the aid of an advisor to provide planned sequences and to place emphasis on the interrelationships that exist among fields of knowledge.

The College requires a total of 16 hours in behavioral and social sciences, and humanities and fine arts; with a minimum of 6 hours in each of these areas; 8 hours of science and mathematics; and 12 hours of General Studies electives to fulfill the General Studies requirement. These requirements are more specifically described below:

General Studies—Agriculture, Construction and Technology

(See University General Studies Requirements, page 35.)

Students in the Divisions of Agriculture, Construction and Technology shall consult their advisors for the approved list from which courses may be selected.

General Studies—School of Engineering

The humanities and fine arts and the behavioral and social sciences requirements for students pursuing a baccalaureate program in Engineering are more closely structured than for other degree programs as follows. (Students shall consult their advisor for the approved list from which courses may be selected.)

1. It is recommended that at least 6 of the 16 semester hours total be 300- or 400 level courses.
2. It is recommended that the students select two courses from the same subject area
3. ECN 201 Principles of Economics is a required selection in the social sciences category.
4. General Studies courses must be selected from the following.

Humanities and Fine Arts Selected courses in architectural philosophy, English literature, foreign language literature, humanities; philosophy; music appreciation; drama appreciation, art history or appreciation

Behavioral and Social Sciences Selected courses in anthropology; criminal justice, cultural geography; economics, engineering (not more than 3 hours); history, political science; psychology, sociology

Science and Mathematics The General Studies requirement for sciences and mathematics and the General Studies elective requirements are met by the Engineering Core.

General Studies and Elective Courses Offered for Students in Other Colleges.

This College offers a number of courses in agriculture, construction, engineering and technology which may be acceptable for General Studies or elective credit in other colleges upon approval of an advisor. Students in other colleges should consult with their advisor if they wish to take such courses.

Division of Agriculture

R. R. Chalquest, D.V.M., Ph.D., Director

Purpose

The Division of Agriculture provides the foundation for professional development in four fields of specialization. ag industry, bio agricultural sciences, engineering of agricultural systems, and environmental resources in agriculture

Bio agricultural sciences and environmental resources in agriculture have a scientific orientation, whereas ag industry and engineering of agricultural systems are functional, industry oriented fields. The more traditional study of the life cycle of animals and plants is expanded to include analysis of the effects of environment, either to enhance or inhibit desired production of a particular agricultural organism. The ag-industry field focuses on the operational functions and management of the broad spectrum of agricultually related industries (from the supply of resources and services needed by producers of agricultural commodities, to the processing and marketing of raw agricultural products, to the management of food and fiber processing plants)

The multi disciplinary curricula integrate the fundamentals of physical, biological and social sciences with mathematics, engineering and business, and broaden the student's scope within either: (a) modern, agricultural science and environmental resources, or (b) relevant ag industry. Unique opportunities are available to study the relationship of agriculture to warm, arid climatic conditions and to the rural urban interface

The Division also provides relevant agricultural courses for those already in ag industry positions but who have had little or no college level work in agriculture, as well as for those enrolled in other colleges and departments who are planning to go into ag industry positions.

Organization

The Division of Agriculture is composed of students, faculty, administrators, staff and physical facilities including the ASU Field Laboratory. Subject matter is organized in the following manner: ag industry, bio agricultural sciences, engineering of agricultural systems, and environmental resources in agriculture. Some of these fields of specialization involve areas of emphasis from which a student can make a selection

Degrees

Bachelor of Science (B.S.). A minimum of 126 semester hours of credit, including University General Studies, the Division and field cores, and area of emphasis courses lead to the Bachelor of Science degree. Forty percent of the semester hours required for graduation must be upper division

Master of Science (M.S.). Curricula leading to the Master of Science degree are offered Requirements for this degree are given in the *Graduate Catalog.*

Curricula in Agriculture

Curricula in Agriculture include the General Studies requirement, the Division of Agricul ture core requirement, the field of specialization core requirement, together w th the area of emphasis courses and elective courses to complete the graduation require- ment of 126 credit hours. Prior to entering the 'unior year, each student, with the aid of an advisor, is expected to se ect a field of special zation and an area of emphasis.

Agriculture Core

All students pursuing a Bache or of Science degree in the Division will complete tl e fol owing general core courses:

			Seme ter H ur
BAS	130	Plant Sc ence . .	3
BAS	150	An m al Science	3
ERA	32	Soils . . .	3
ERA	346	Conserv ti n of Re e vab e Res urces	3
AGI	380	Government Regul t s n Agriculture	3
		T tal	5

Fields of Specialization with Areas of Emphasis

Four fields of spec alization are provided within which several areas of emphas s re permitted Each fie d includes a specified core of courses Further, each area of emphasis will require specialized agricultural courses, a selection of additional hours fro n a l st of supporting courses, and enough elect ves to complete the program All of these are to be selected in consultation with an advisor.

Ag-Industry (Agr bus ness Management, In ternational Agricu ture)

Bio-Agricultural Sciences (Nutrit ona Sci- ences, Physiological Sc ences, Pre-V eter nary Medicine)

Engineering of Agricultural Systems

Environmental Resources in Agriculture (Environment Horticulture, Natural Resource Management)

Ag-Industry. The ag industry field of specia ization covers the management and operational functions of the broad spectrum of agricultural industries. These include the supplying of resources and services needed by producers of agricultural commodities, the management of crop and livestock production enterprises, the processing and marketing of raw agricultural products and the manage- ment of food and fiber processing plants It is designed to give the student scientific knowl edge regarding food and fiber production and marketing in a form that can be applied to the business and operational aspects of agricul tural industries Included in this field of specialization are courses to prepare graduates to take jobs in agricultural producti n, with companies provid ng supplies to the farm and with those who process the products of the farm It also embodies prepar ation for govern ment regu atory agenc es, quality contro specialties and many technica positions re lated to agricultural product on, d stribut on and food manufacturing

Students se ect ng ag industry are required to take the following courses

Ag-Industry Core:

			Sem ster H ur
ECN	201	Principles of Econ r cs . . .	3
CHM	101	Introductory Che stry	4
AGI	312	Agricultural Market ng .	3
BAS	350	Nutrit ona Science	3
AGI	364	Food Techn l gy	3
AGI	402	Agricu tura C operatives	3
AGI	443	Agribusiness Manage ent . . .	3
AGI	453	World Agricu tur Resources	3
		Total .	25

Areas of emphasis in this field are:

Agribusiness Management combines busi ness and agriculture training It focuses on management techniques applicab e to produc tion and operations positions in agricultural industry. It combines business principles with agricultural resource man agement, thus pro viding foundations for functional leadership in any agricultural enterprise Graduates from this area are qualified to enter a broad range of agricultural enterprises and eventua y to obtain management status Further specializa tion is possible in the following areas: business management, crop production, food industry and livestock production

International Agriculture relates world w de agricultural resources to the food and fiber requirements and product on potentials of the various nations Particu ar emphas s s g ven to agricultural production in arid countries and to internation al trade organ zations This area is specifically designed to tra n either the U.S or foreign student to work in the develo pent of agricultural potentia in the wor d It provides a basic knowledge f U S agricul tural techn ques and extends to the global aspects of agriculture. Gr duates n this area shou d be particularly quali ed to aid in the development of the world s agricultural poten tial to provide food to meet the world's food needs Jobs exist in the commerc a agricul tural industry sector, U .S government agencies and foreign governn ent agencies

Bio-Agricultural Sciences. The bio agricultural sciences field of speci alization is concerned with the study of the scientific as pects of agriculture It focuses on the biological functions of domestic animals and plants. These functions nc ude the study f birth or germ nation, growth, deve opment, nutrition, reproduction, and adapt ation t the various environmental factors

Students selecting bio agricultural sciences as a field of specialization are required to take the following courses.

Bio-Agricultural Sciences Core:

			Semester Hours
MAT	115	College Algebra and Trigonometry	4
CHM	113	General Chemistry	4
BIO	101	Biological Principles and Processes	4
CHM	231 or	Elementary Organic Chemistry CHM 331 and 335 General Organic Chemistry	4
CHM	361	and 367 Elementary Biochemistry	4
BAS	350	Nutritional Science	3
		Total	23

Areas of emphasis in this field are:

Nutritional Sciences concerns the study of nutrients, their requirements, metabolism and uses for animals, plants and man. This area also permits the student to select greater depth of learning in animal nutrition, plant nutrition, or foods for man. It is a broad based nutritional area designed to prepare students for future graduate work or to accept jobs in the agricultural industry, government, or very importantly, in solving the food crisis of the world.

Physiological Sciences concentrates on the study of the biological functions and their control in animals and plants. These functions are studied under normal conditions as well as their adaptation to environmental changes and adverse conditions, such as stress and disease. This area of emphasis is based on the physiological functions of both animals and plants but does permit selection by the student for greater depth in either. It is intended to prepare students for graduate work in plant and animal science or to accept scientifically related jobs in the agricultural industry, medicine, government or colleges.

Pre Veterinary Medicine is primarily designed to meet the entrance requirements of professional veterinary medical schools in the United States and Canada. Selection of this area will permit students to complete the pre veterinary requirements for entrance to professional veterinary school. It is also designed to provide the completion of all requirements for a Bachelor of Science degree in Agriculture at Arizona State University by completing additional credits, if desired. A pre veterinary medicine student who elects to earn a Bachelor of Science degree in the Division of Agriculture may do so by taking three years at ASU, completing 94 semester hours of credit, with a minimum of 60 semester hours at ASU, and by completing the agriculture and General Studies requirements. The student may then receive a written statement from the Dean of the College of Engineering and Applied Sciences giving senior in-absentia privileges. The student will be eligible to receive the B.S. degree after the Registrar's Office receives a recommendation from the dean of the professional school and a transcript of credit indicating the student has completed a total of 126 semester hours with a cumulative index of 2.00 or better.

Although this area of emphasis is primarily intended for the student preparing to enter professional veterinary medicine as a career, it is also an excellent basis for future degree programs or many of the scientifically related jobs in the agriculture industry and government.

Engineering of Agricultural Systems. The engineering of agricultural systems is a field of specialization that combines the engineering sciences with agriculture. Agriculture has become highly automated, particularly under the intensified management systems currently practiced. Engineering knowledge is vital to design and maintain the automated equipment from the planting of the seed to the packaging of processed foods. Graduates can enter a challenging field of engineering with ample opportunities in the agricultural industry or governmental agencies.

Students selecting engineering of agricultural systems as a field of specialization are required to take the following courses.

Engineering of Agricultural Systems Core:

			Semester Hours
CHM	113 or	General Chemistry CHM 114 General Chemistry for Engineers or ECE 118 Chemical Foundations of Engineering (4	4
MAT	120	and 121 Calculus I and II	10
MAT	2 2	Calculus III	5
FCE	102	Introduction to Engineering	2
ECE	104	Engineering Graphics and Design	2
ECE	122	Computer Programming	2
ECE	201	Mechanics and Heat	3
ECE	202	Electrical Science	4
AGI	364	Food Technology	3
ERA	326	Soils Laboratory	
ERA	333	Water Resources	3
		Total	39

Environmental Resources in Agriculture. Agricultural success depends largely on the available environmental resources, such as air, water, soil and others related to plant and animal life. Variations in these resources, both natural and man-made, are considered. Four different environments are identified. These include the rangelands, cultivated croplands, urban landscapes and controlled environments. Students in this field should acquire a fundamental understanding of the functions of air,

water, soil and other resources in their relation to plant and animal life. This field is designed for students interested in the management of our resources and their role in the environmental crisis

Students selecting environmental resources in agriculture as a field of specialization are required to take the following courses

Environmental Resources in Agriculture Core:

			Semester Hours
BIO	101	and 102 Biological Principles and Processes	8
MAT	141	Mathematics for the Social, Life and Management Sciences	4
CHM	113	General Chemistry	4
ERA	326	Soils Laboratory	1
BAS	360	Crop Physiology	4
ERA	333	Water Resources	3
		Total	24

Areas of emphasis in this field are

Environmental Horticulture is designed to help beautify the areas around homes, gardens, industry and the general landscape Increased urbanization results in a very different plant population than existed on farms The lawns, shrubs, trees, flowers and home gardens involve specific requirements for plants, seeds fertilizers pesticides and machinery. Specialized plant knowledge by the homeowner as well as for trained nurserymen and individuals skilled in plant maintenance and landscaping is required Public areas, particularly parks and golf courses, require skilled management by superintendents. Production of crops in climate controlled greenhouses is emphasized as an important agricultural enterprise in arid and urban areas Skilled production on small areas, be it for food, beauty or recreation, is the focal point. Graduates of this area are particularly qualified for employment in nurseries, parks, and green house enterprises.

Natural Resource Management emphasizes a unified approach to the study of ecosystem characteristics as they relate to man's use of renewable resources A major challenge in resource management is to achieve proper use within the constraints imposed by the complex interdependence which exists within ecosystems. The systems approach is developed as a basis for the study of this complexity Applications of the systems approach to resource management are considered using examples drawn from Arizona's forest, range, and agricultural ecosystems Students majoring in the natural resource management program may emphasize either range ecology or soil resources Employment opportunities in environmental resource management, range management, and soil conservation exist with private firms and government resource management agencies in both the U S. and abroad

Agriculture

PROFESSORS:
CHALQUEST AG 221, BARRETT MILLER MONTY, MOODY, RICHARDSON ROBINSON STILES, TAYSOM

ASSOCIATE PROFESSORS:
COLE, COX, LYTLE, RASMUSSEN WEEMS

ASSISTANT PROFESSORS:
BRADY, GIPP SEPERICH WHYSONG

AG-INDUSTRY

AGI 236 Agricultural Practices. Supervised experience in agricultural projects Especially intended for students wishing to acquire or improve agricultural techniques One lecture, 6 hours laboratory Credit 3 hours

240 Dairy and Poultry Production. Production techniques of modern dairy and poultry operations Credit, 2 hours

261 Beginning Western Equitation. Care selection, handling and riding of horses Western style. One lecture 3 hours laboratory. May not be taken for audit Credit, 2 hours.

262 Beginning English Equitation. Care selection, handling and riding of horses English style. One lecture 3 hours laboratory May not be taken for audit Credit, 2 hours.

263 Intermediate Western Equitation. Training, handling and riding of horses Western style One lecture, 3 hours laboratory May not be taken for audit Credit 2 hours.

264 Intermediate English Equitation. Training handling and riding of horses English style One lecture 3 hours laboratory May not be taken for audit Credit, 2 hours

300 Livestock Production and Management. Methods of production, livestock enterprises economics, prevention and marketing. Prerequisite BAS 150 Credit, 3 hours

310 Crop Production and Management. Crop production factors and their application to farm management Crop plans are prepared for crop production enterprises Credit, 3 hours

312 Agricultural Marketing. Marketing arrangements for agricultural products Credit 3 hours

325 Farm Power and Mechanization. Mechanical solutions to agricultural production problems in the U S and abroad together with selection, evaluation, feed operation and servicing of production harvesting and pest control equipment Two lectures 3 hours laboratory Credit, 3 hours

333 Agribusiness Purchasing. Working with suppliers for agribusiness including standards inventories and records Credit 2 hours.

343 Fruit and Vegetable Crops. Production of crops in fields orchards, vineyards and greenhouses Emphasis on subtropical fruits and winter vegetables Prerequisite BAS 130. Two lectures 3 hours laboratory Credit 3 hours.

350 Livestock Marketing. Livestock marketing functions including commodities trading and hedging Credit, 3 hours

351 Livestock and Carcass Evaluation. Evaluation of the physical appearance of livestock and carcasses Two lectures 3 hours laboratory Credit, 3 hours

363 Veterinary Practices. Observation of and participation in veterinary medicine and surgery supervised by local veterinarians. Four hours per week with veterinary practitioner plus one hour per week seminar. Open to advanced pre veterinary students only Credit 2 hours

364 Food Technology. Processing and preservat on of food products. Two lectures, 3 hours laboratory. Credit 3 hours.

366 Meats. Meat purchasing, reta l cut dent f cat on meat preparation and preservat on for the customer Prerequ site· BAS 150 or FON 142 Two lectures, 3 hours laboratory Credit 3 hours

370 Advanced Equitation. Techn ques of dressage hunter and jumper tra ning and r d ng Open to advanced equ tation students on y Six hours laboratory May not be taken for aud t. Cred t, 2 hours

372 Horse Production. Management of horses as a business operat on Prerequ site BAS 150 Cred t 2 hours.

375 Horse Breeding and Management. Cons ders cur rent methods of mprovng genet c tra ts and reproductive performance of horses. Two ectures 3 hours aboratory Cred t, 3 hours

376 Horse Feeding and Nutrition. Ration formu at on to meet nutr ent requirements for growth reproduction and performance of horses Cred t 2 hours

380 Government Regulations in Agriculture. Govern ment agencies, their formation and adm nistration of regulations affecting agr culture. Cred t 3 hours

402 Agricultural Cooperatives. Organ zat on operation and management of agr cu tural cooperatives Cred t 3 hours

403 Agribusiness Public Relations. The mage of agr culture nc ud ng cons derat on of the agr cultural press Prerequisite: AG 312 Cred t 3 hours

430 Range Livestock Management. Operation and management of beef catt e and sheep emphas z'ng range cond tions Prerequisites· ERA 360 AG 300 Credit 3 hours

431 Intensified Livestock Management. Prnc p es operat ons and management techn ques n h gh density an ma growing un ts Prerequ s te AGI 300 Three ectures, 3 hours aboratory Cred t, 4 hours.

432 Feedlot Management. Management aspects of feed ot operation Case stud es and management prob- em ana ysis wi be inc uded Credit, 3 hours.

440 Food Marketing. Food packaging, d str bution and retail ng Prerequisite: AG 364 Two ectures 3 hours laboratory Credit, 3 hours

441 Meat Technology. Process ng and uti zation of meat products. Prerequis te. BAS 370 Two ectures 3 hours aboratory Cred t, 3 hours.

443 Agribusiness Management. Appl cat on of man agement pr nciples to agricultura y oriented bus nesses Cred t, 3 hours

444 Agribusiness Analysis. Ident f es the s ze, scope and organizat on of the var ous agr cultural y oriented ndustr es. Cred t, 3 hours

445 Advanced Crop Management. Latest techniques n producing, harvest ng and ut liz ng the major f eld crops with emphas s on those grown under irr gated environ ments Prerequ sites BAS 130, AGI 310 Two ectures, 3 hours laboratory. Credit 3 hours

452 World Food Dynamics. Trans t on and development of raw agr cultura commod ties nto nutr t ona food products. Emphasis given to food expans on n deve op ing countr es. Cred t 3 hours

453 World Agricultural Resources. Wor d product on and consumption of agricu tura products nternat onal relat onships and agenc es concerned w th wor d agr - cultural deve opment prob ems. Cred t 3 hours

454 International Agricultural Trade. D mens ons loca tions, m x methods and changes of internationa trade n agr cu tura products. Credit 3 hours.

490 Recent Advances in Agribusiness. Reports and d scuss ons of current topics and prob ems assoc ated w th agribusiness May be repeated for cred t Credit, 1 hour.

491 Recent Advances in International Agriculture. Reports and discuss ons of current topics and prob ems assoc ated w th internat ona agr culture May be re peated for cred t. Cred t, 1 hour.

508 Advanced Agricultural Marketing. Theory and ana ys s of market ng farm commod t es, r sks and effect of future trad ng on cash pr ces. Credit 3 hours.

512 Food Industry Management. Operat ons and man agement of food processing factor es, food d str bution centers and retai food hand ng f rms Credit 3 hours

516 International Agricultural Techniques. Coordina t on of product on and marketing techn ques to consumption object ves with agr cultural products n foreign countries Credit, 3 hours.

518 World Agricultural Development. Factors that n f uence product on process ng and market ng of agr cu tural products n deve oping countries Credit 3 hours

519 Animal Production in Arid Regions of the World. Se ection, nutrition, marketing and ut izat on of anima s in ar d countries Prerequ site. AGI 300 Cred t, 3 hours

520 Crop Production in Arid Regions of the World. Major field crops n ar d cl mates and the r potentia for supplying the future need for food and f ber Prerequisite: AGI 310 Credit, 3 hours

521 Soil Management in Arid Regions of the World. So l sc ence and so l management pract ces for maintenance of the ferti ity reservo r, physical condition and productivity as related to t llage, rrigat on and conservat on in arid reg ons Prerequ s te ERA 325 Credit 3 hours.

Special Courses: AG 494 498, 499 500, 580 584, 590 591, 592, 594 598, 599 (See page 31.)

BIO-AGRICULTURAL SCIENCES

BAS 130 Plant Science. P ant growth and deve opment n the rural and urban environment Two ectures 3 hours aboratory. Credit 3 hours

150 Animal Science. Comparat ve growth, development and propagation of farm animals Two ectures 3 hours aboratory. Cred t, 3 hours

320 Anatomy of Agricultural Animals. Gross and m croscopic structural anatomy of organ systems of agr cultura an mals concepts of phys olog ca pro cesses discussed Prerequisite. BAS 150 or B O 101 102. Two lectures, 3 hours aboratory Credit 3 hours

350 Nutritional Science. Energy and nutr ents in v ng systems. Cred t, 3 hours.

351 Nutritional Science Laboratory. Experimental tria s involv ng the pr nciples of nutr tion and the physio ogica roles of nutr ents in metabo sm. Corequ s te BAS 350. Three hours aboratory Cred t, 1 hour

353 Applied Animal Nutrition. Feedstuffs feed ng standards and the r app ication n meet ng nutr tiona needs of an mals producing food and fiber Prerequ s te: BAS 350. Cred t, 3 hours

360 Crop Physiology. Phys o ogy of crop p ants with emphasis on p ant nutr tion and env ronmental factors. Prerequisite· BAS 130. Three ectures, 3 hours abora tory Cred t, 4 hours

370 Meat Science. Basic science of muscle and meat in anima production, processing, and ut izat on Prerequ s te BAS 150 or FON 142. Credit 3 hours

450 Experimental Feeding. Nutr tional app cations re lated to maximum production n l vestock Prerequis te. BAS 353. Two ectures, 3 hours laboratory Credit 3 hours.

452 Comparative Non-Ruminant Nutrition. Nutr ent requirements and uti ization for simple-stomached ani ma s Prerequ s tes· BAS 350, CHM 231 Credit 3 hours.

453 Ruminant Nutrition. Rum nant digestive system, rat ons, fermentat on products, and their metabo ism. Prerequisites BAS 350 CHM 231 Credit 3 hours

454 Physiology of Nutrition. Metabol sm of nutr ents n the ife processes. Prerequisites BAS 353 or FON 142 CHM 231 Credit, 3 hours.

456 Animal Breeding. Genet cs app ied to an mal

breeding. Prerequisites: ZOL 100; BIO 340 or ZOL 341. Credit, 3 hours.

457 Advanced Animal Nutrition I. Nutritional energetics, the utilization and metabolism of carbohydrates and lipids in animal systems. Prerequisites: nine hours in nutrition. Credit, 3 hours.

460 Animal Physiology I. Control and function of the nervous, muscular, cardiovascular, respiratory, and renal systems of domestic animals. Prerequisites: CHM 113, BIO 101. Three lectures, 3 hours laboratory. Credit, 4 hours.

461 Animal Physiology II. Control and function of the endocrine, digestive, and reproductive systems of domestic animals. Principles of adaptation of animals to their environment. Prerequisite: BAS 460 or ZOL 360. Credit, 3 hours.

462 Animal Physiology Laboratory. Selected physiological experiments to accompany BAS 461. Three hours laboratory. Credit, 1 hour.

463 Physiology of Animal Reproduction. Development, function and control of the reproductive system of domestic animals. Prerequisite: BAS 150. Three lectures, 3 hours laboratory. Credit, 4 hours.

471 Diseases of Domestic Animals. Control and prevention of infectious and noninfectious diseases of domestic animals. Credit, 3 hours.

472 Diseases of Wild Animals. Identification and control of infectious diseases of wild animals. Prerequisite: MIC 201. Credit, 3 hours.

475 Endocrinology. Functions of the endocrine glands in the regulation of animal physiological processes. Prerequisite: BAS 460 or ZOL 360. Credit, 3 hours.

478 Adaptation of Agricultural Animals. Physiological, morphological, genetic, and behavioral adaptation of ruminant and nonruminant agricultural animals to various environmental conditions. Prerequisites: BAS 460 and 461 or ZOL 360. Credit, 3 hours.

490 Recent Advances in Nutritional Sciences. Discussion and critical evaluation of current topics in nutrition and metabolism research. May be repeated for credit. Credit, 1 hour.

491 Recent Advances in Physiological Sciences. Discussion and critical evaluation of current topics in physiological research. May be repeated for credit. Credit, 1 hour.

Special Courses: BAS 494, 498, 499, 500, 580, 584, 590, 591, 592, 594, 598, 599. (See page 31.)

ENVIRONMENTAL RESOURCES IN AGRICULTURE

ERA 325 Soils. Fundamental properties of soils, their relation to plant growth and the nutrition of man and animals. Relation of soils to environmental quality. Prerequisite: CHM 101 or 113, or equivalent. Credit, 3 hours.

326 Soils Laboratory. Selected exercises to broaden the background and understanding of basic soil principles. Corequisite: ERA 325. Three hours laboratory. Credit, 1 hour.

330 Soil Fertility. Use of fertilizers, crop rotations and water in the management of soils. Prerequisite: ERA 325. Two lectures, 3 hours laboratory. Credit, 3 hours.

332 Agricultural Chemicals. Composition, properties and use of agricultural commercial fertilizers and pesticides and their effects on soil, air and water quality. Credit, 3 hours.

333 Water Resources. Sources, their development and conservation in arid regions for agricultural and urban uses. Credit, 3 hours.

346 Conservation of Renewable Resources. The conservation of forest, range, watershed and cropland resources emphasizing interdependence in ecological systems. Credit, 3 hours.

350 Applied Quantitative Methods. Statistical methods with applications in natural resource management and the agricultural sciences. Use of digital computer. Prerequisite: MAT 141 or equivalent. Credit, 3 hours.

360 Range Ecosystem Management. Management of range ecosystems, emphasizing interrelations of grazing animals, vegetation and soil. Prerequisite: six hours in biology or agriculture. Credit, 3 hours.

361 Range Evaluation Field Laboratory. Measurement of rangeland resources and field identification of plants. Corequisite: ERA 360. Three hours laboratory, three two-day weekend field trips. Credit, 1 hour.

370 Forest Ecosystem Management. Management of forest ecosystems, emphasizing their establishment, growth and interrelations of timber, watershed and grazing values. Prerequisite: six hours in biology or agriculture. Three lectures, one two-day weekend field trip. Credit, 3 hours.

380 Environmental Horticulture. Plant culture and use in urban agriculture. Prerequisite: BAS 130. Credit, 3 hours.

381 Plant Propagation. Principles and skills in propagation of plants using seeds, cuttings, and grafting. Prerequisite: BAS 130. Two lectures, 3 hours laboratory. Credit, 3 hours.

382 Lawns and Greens. Selection, establishment and maintenance of turf grasses for lawn, park and sports areas. Two lectures, 3 hours laboratory. Credit, 3 hours.

383 The Science of Home Gardening. Use of natural systems in food production. Two lectures, 3 hours laboratory. Credit, 3 hours.

400 Range Ecosystems. Structure, function and environment of Western range ecosystems. Vegetation change resulting from man's use of resources. Habitat manipulation practices. Prerequisite: ERA 360 (ERA 370 recommended). Credit, 3 hours.

402 Range Measurements. Techniques of vegetation sampling, mapping and inventory evaluation as related to animal habitat relations. Prerequisites: ERA 350 and 360. Two lectures, 3 hours laboratory, two weekend field trips. Credit, 3 hours.

410 Natural Resource Populations. Interactions among animal populations and their habitat. Systems simulation of population dynamics as influenced by competition and management strategies. Prerequisite: ERA 360. Three lectures, one weekend field trip. Credit, 3 hours.

425 Soil Classification. Fundamental principles of soil genesis, morphology and classification, including properties of significance in mapping and interpreting soil survey information. Prerequisite: ERA 325. Two lectures, 3 hours laboratory. Credit, 3 hours.

430 Landscaping Principles. Planning and planting for maximum beauty and utility, including energy conservation. Prerequisite: ERA 380 or equivalent. Credit, 3 hours.

438 Nursery Management. Plant d splay and care n sales areas, nc uding greenhouses Customer relat ons and education n plant se ection and care Prerequ s'te· ERA 380 or equivalent. Two lectures, 3 hours labora tory. Credit, 3 hours.

440 Crop Ecology. Env ronmental factors affecting the adaptat on and distr bution of crops. Prerequ s te BAS 130. Cred t, 3 hours

446 Soil Conservation. So conservat on and ts re a-tionship to renewab e resources. Prerequisite· ERA 325 Credit, 3 hours

452 Irrigation. Water measurement conveyance and conservation w th emphasis on crop production and soi -plant water relations Prerequis te. ERA 325 Cred t 3 hours

460 Applied Systems Ecology. The systems approach applied to analysis and management of natura re-source ecosystems. Use of simulation mode s. Prerequisites. ERA 350 or equ valent; one course n ecology. Cred t 3 hours

463 Hydroponics and Greenhouse Management. Prin cip es and techniques of grow ng p ants in nutrient culture under contro led env ronmenta cond t ons Pre requisite: ERA 325. Two lectures 3 hours laboratory Credit, 3 hours.

480 Forest and Range Planning. Pr nciples and tech niques of p anning for management and conservat on of natura ecosystems Use of opt m zat on models and dec sion theory Preparation of management plan Pre requisite: ERA 370, 402 and sen or stand ng Three lectures, one weekend f eld tr p Cred t, 3 hours

490 Recent Advances in Environmental Resources. Current iterature and s gnificant developments invo v ing environmenta resources May be repeated for credit Cred t, 1 hour.

548 Plants, Soils and Environmental Quality. Effects of air qua ity on plants and soils, and their ro e n remov ing contam nants from the atmosphere. Prerequ s te ERA 325 Cred t, 3 hours.

560 Systems Ecology. Quant tative descript on and mathematical mode ing of ecosystem structure and function. Techniques for mode construction and simu lation. Prerequisites s x hours n eco og cal studies computer programming ERA 350 or equ va ent Two lectures, 3 hours aboratory Credit, 3 hours

Special Courses: ERA 494 498, 499 500 580, 584 590, 591 592, 594 598, 599 See page 31.)

Division of Construction

Vernon L. Hastings, M.S I.E., Director

Purpose

The central purpose of the Construction Divi sion at Arizona State University remains, as it has since 1957, to provide students the oppor tunity to obtain a quality education in construction and qu alify them directly for po-sitions of leadership and responsibility in the construction industry. Each of the curricula include course requirements in the physical sciences, mathematics, architecture, business, engineering sciences, and construction. To ensure a balanced understanding of the techni-cal, professional and philosophic standards which distinguish modern day constructors, advisory groups representing leading associa-tions of contractors and builders provide counsel in curriculum development

General Information

Admission. Students who w sh to be admit ted to full freshman standing in the construction program should present certain secondary school units n addition to the mini mum University entrance requirements. A total of 3 2 units is required in mathematics, including advanced algebra, geometry and trigonometry. The laboratory sciences chosen must include at least one unit in physics

Students who have omissions or deficiencies in subject matter preparation may be required to complete additional university credit course work which may not be applied toward a con-struction degree. Courses usually taken to satisfy omissions or deficiencies include one or more of the following. MAT 115 College Al gebra and Trigonometry, MAT 117 College Algebra, MAT 118 Trigonometry and PHY 111 and 113 General Physics.

Transfer Students. The freshman and sopho more program of study is designed to facilitate transfer for junior and community college stu dents or A.A. graduates Prospective Arizona community college transfer students should consult their advisor and refer to the annual *Arizona Higher Education Course Equiva-lency Guide* for a listing of the acceptable courses transferable to the ASU construction program. It may be possible with proper ad vance planning for many transfer students with an A.A. degree to complete the four-year B.S. program in four semesters at ASU Fur ther information may be obtained from the: Division of Construction, College of Engineer-ing and Applied Sciences, Arizona State University, Tempe, Arizona 85281

The Division includes a chapter of Sigma Lambda Chi, national honorary construction fraternity, and a student chapter of the Asso-ciated General Contractors of America

Scholarships. Apart from those given by the University generally, a number of scholarships are awarded from the construction industry on the basis of academic progress and work done in the construction program

Bachelor of Science Degree in Construction

Students seeking a Bachelor of Science Degree in Construction must satisfactorily complete a curriculum of not less than 128 credit hours. Construction careers are so broadly diversified that no single curriculum will fit the student for universal entry into all fields. As an exam ple, engineering contractors usually place more emphasis on technical and engineering science skills than do residential constructors, who usually prefer a greater depth of knowl-edge in management and urban science Nevertheless, construction has a common core of management, engineering science and be havioral courses on which students may build

defined fields of specialization to suit individual backgrounds, aptitudes and objectives. These fields of specialization are not absolute but generally match major divisions of the construction industry.

Fields of Specialization

General Building Construction

Heavy Construction

Construction Office Operations

The lower division courses are the same for both general building and heavy construction. Therefore, should the student be undecided as to his career pattern, no decision need be made concerning the field of specialization until the junior year. Each field of specialization is arranged to accent requisite technical skills and develop management, leadership and competitive qualities in the student. Prescribed are a combination of General Studies, a broad range of theoretical and applied management science subjects fundamental to the business side of contracting, and technical courses basic to engineering and architectural construction work. Not only must the student be educated to survive heavy demands for explicit technical performance during his initial career years, but he should also understand the functions of his employers and the industry whose agency he serves. The student should acquire the motivation for continuing his education which, when combined with experience, will qualify him for top positions of leadership and authority in the construction industry.

Students in all fields of specialization except office operations shall be required to complete a core of science based engineering, construction and management courses. Since the credit hours vary for some alternative courses in the core, any differences will be made up in the required courses in the selected option to achieve a minimum of 128 credit hours.

Construction Core

(For Heavy and General Construction Options)

			Semester Hours
APH	100	Introdution to Architecture	2
or			
APH	101	Introduction to Architecture II	
ACC	101	Elementary Accounting	3
GLG	101	Geology	
or			
GLG	301	Engineering Geology	
or			
CHM	113	General Chemistry	4
MAT	120	Analytic Geometry and Calculus	5
ECE	104	Engineering Graphics	
or			
TST	111	Technical Graphics	2
ECE	122	Computer Programming	
or			
ASE	226	Digital CPT Programming	2
ECE	201	Mechanics and Heat	3
PHY	112	and 114 General Physics (Electricity, Light and Magnetism	
or			
ECE	202	Electrical Science	4
QBA	221	Quantitative Analysis and Statistics	3
ECN	201	and 202 Principles of Economics	6
ADS	305	Business Law	3
CEE	341	Surveying	3
EEE	273	Electrical Construction	4
CEE	310	Materials for Construction	2
CON	221	Static Mechanics or ECE 211 Engineering Mechanics	3
CON	243	and 244 Construction Materials and Specifications	
or			
CHE	311	Material and Energy Balances	3
CON	252	Construction Equipment	2
CON	323	Strength of Materials	
or			
ECE	313	Mechanics of Materials	3
CON	331	Construction Safety Engineering	2
CON	345	Mechanical Systems	3
CON	366	Construction Methods	3
CON	374	Construction Systems Management	2
CON	383	Construction Estimating	3
CON	389	Construction Finance	3
CON	395	Construction Scheduling	2
CON	424	Structural Design	3
CON	453	Construction Labor Management	3
CON	463	Construction Foundations and Forms	3
CON	496	Construction Contract Administration	3
CEE	380	Hydraulics and Hydrology	3
CEE	450	Soil Mechanics in Construction	3
ECE	400	Engineering Communication	3
MKT	498	Marketing	3
		Core Minimum Hours	98

Construction Fields of Specialization

One field is to be elected by the student.

General Building Construction. The general building specialization provides a foundation for students who wish to follow careers as managers or owners of firms engaged in the construction of residential, commercial and institutional structures. While conventional building is still a major factor in this field, modern educational focus is on industrialized building systems required for the mass development and production of large scale projects. General construction is treated as a complete process from initial conception through delivery of completed facilities to users.

Required Courses: CON 354, CON 472; REA 251, 411, and approved electives to total a minimum of 128 credit hours.

Heavy Construction. The heavy construct on specialization prepares students for c areers with constructors and contracting organiza tions constructing large civil, mechanic al and electrical systems Typical pr ojects are space systems, highw ays, railroads, a rports, power plants, rapid transit systems, process plants harbor and waterfront facilities, pipelines, dams, tunnels, br dges, canals, sewerage and water works, mass earthwork, and other heavy public works.

Required C ourses ADS 306, CEE 344; CON 484; and approv ed elect ves to total a minimum of 128 cred t hours

Construction Office Operations. This field of specialization is designed to prov ide graduates the capability of organizing, operating and manag ng the unique and demanding systen s, procedures and serv ces in both the construc tion field office and the genera office operations in any size construct on org· niza-tion Included are courses in accounting, procurement, finance, records labor relations, personnel, st·tistics, dat· process ng and office methods.

Required C ourses ACC 101, 102, 201, PHY 101; PHI 101; PGS 100, APH 100, COM 100 or 300, ECE 104, QBA 221, MAT 141, 142; ECN 201 202, ADS 233, 305, 306, 431, CON 243, 252, 331, 366, 374, 383, 389, 453, 455, 496, CIS 302, OFA 351, MGT 355, 434, 451, 463, MKT 495, ECE 400, and elec tives to total 128 credit h urs

Construction

PROFESSOR:
HAST NGS (ECA 302)
ASSOCIATE PROFESSORS:
BURTON, MICHELS, PETERMAN SELLECK, WARD, WOOD NG

CON 221 Static Mechanics. Force systems act ng on structura members Forces, moments equi br um cen tro ds trusses, beams, cab es frames machines friction, sect on properties, masses Both US and S un ts of measurement Prerequ s tes· MAT 120, ECE 201 Cred t, 3 hours.

243 Introduction to Construction Materials and Specifications. Construct on bui d ng materia s and components Emphas z ng materia descr pt ons usages and incorporation nto the structure F e d tr ps. Prereq u s te: ECE 104 or equ valent. Credit, 2 hours

244 Construction Graphics. Sketch ng and arch tectura drafting of bu ld ng mater a s and systems F e d tr ps. Three hours aboratory Prerequ s te ECE 104 or equ va ent. Corequ s te CON 243 Cred t 1 hour

252 Construction Equipment. Character st cs, capabi t es limitations and employment of genera bui ding and heavy construct on equ pment F eet operat ons ma n-tenance programs F eld tr ps Credit 2 hours

323 Strength of Materials. Analyses of strength and r g-d ty of structural members n resist ng app ied forces Stress, stra n, shear moment deflect ons, combined stresses, connections moment distr but on Both US and S un ts of measurement F e d trips. Prerequis te CON 221 or equ valent. Cred t, 3 hours

331 Construction Safety Engineering. Econom cs of accident prevent on Des gn for safe field practice Haz ard analys s Protective equ pment and devices Worker educat on Occupat ona d sease. Occupat onal Safety and Hea th Act Field tr ps Cred t, 2 hours.

345 Mechanical Systems. Heating and c imatic systems for bu d ngs San tary and water pip ng layout and sim-p e des gn F e d trips Four hours lecture and abora-tory Prerequisites: CON 243, EEE 273 Cred t, 3 hours.

366 Construction Methods. Ana ys s of construction projects for the determ nat on of the most appropriate and econom c methods Job organizat on pre-planning and s te layout Field tr ps. Prerequisites CON 243, 252 or approva of nstructor Four hours lecture and abora-tory. Credit 3 hours

374 Construction Systems Management. Organ zation and systems theory for construct on. Conceptua foun-dat ons. Elements of eadersh p and human d rect on ndustry management, funct ons and processes Pre requ s te. junior stand ng or approval of nstructor Credit, 2 hours

383 Construction Estimating. Theories and systems of building est mating Quant ty survey techn ques, stan-dard formats classification and ana ysis of work, organ izat on of detai , unit cost determinations s mulated bids Field tr ps. Four hours lecture and aboratory Pre-requis tes. ECE 122 or equ va ent CON 243 construc tion majors only or approval of nstructor Cred t 3 hours.

384 Advanced Building Estimating. Methods ana ys s and cost est mat ng for construct on of genera bu lding projects Cont'nuat on of CON 383 F e d tr ps Four hours lecture and aboratory Cred t, 3 hours

387 Building Construction Estimating. Commercial and residential bui d'ng estimat ng Types of estimates Quantity surveys. Analys s and organization of a l bui d-ing estimating deta ls Un t and total cost determinat on. Prerequisite. ADE 422, or approva of nstructor Four hours ecture and laboratory. Cred t, 3 hours.

389 Construction Cost Accounting and Control. Nature of construction cost Investment mode s, depre-c ation and tax theory var ab e equipment costs. Cash f ow theory, prof tabi ity and ana ys s Funding sources and arrangements. Builder's insurance Prerequ sites· A know edge of FORTRAN; ECE 122 or equ valent, ACC 101 CON 383. Cred t, 3 hours.

395 Construction Planning and Scheduling Techniques. Ana ysis and preparation of graphic charts and network schedules as used on the var ous types of con-struction projects Project p anning and contro Computer app cations F eld tr ps. Prerequ sites: CON 243, 252 383. Cred t, 2 hours.

401 Construction Firm Management and Control. Ap pl cat on of construction management princ p es by the smal or specia ty contractor. Directed exper ence in the ana ysis and evaluat on of sma l contractor problems. Prerequisites· OON 374 383, 389, 395 Cred t 3 hours.

411 Construction Operations Analysis. Project infor-mat on systems and the r use in the dec s on making process L near programming and optim zat on theory. Prerequ s tes CON 383, 389 Corequ sites: CON 366 453 Cred t, 3 hours

424 Structural Design. Econom c use of stee rein-forced concrete, and wood n bu d ng and eng neered structures. Design of beams, columns and connect ons Elast c and u t mate strength des gn Student des gn projects. Field tr ps. Prerequis te. CON 323 Credit 3 hours.

453 Construction Labor Management. Un on structure history, and pract ce emphas zing bui ding and construction trades Work customs and project environments Applicable laws and government regulations. Area productivity d fferent als Labor goa s, economic power, jur sdict ona d sputes gr evance pro cedures Three hours ecture and laboratory. Prerequisite. ECN 202 Credit, 2 hours

455 Construction Office Methods. Adm nistrative sys tems and procedures for the construction company office including methods mprovement and work s mpl f cation, office layout bus ness forms and design office manuals. Prerequ s tes: ACC 102, OFA 351 Credit 3 hours.

462 Project Planning and Control. CPM PERT and line of balance schedu ing. Resource a locat on. Contro of t me and cost. Prerequ s te CON 411. Credit 3 hours

483 Foundations and Concrete Structures. Subsurface construction theory and practice for foundat ons of bui d ngs and eng neered faci it es. Concrete form de- s gn for foundations and structura frames. Underp nning, pil ng dry and wet excavating, dewater- ng, cofferdams caissons F e d tr ps. Prerequisite: CON 323. Cred t, 3 hours

472 Land Development Feasibility. Econom c ocat on theory. Analys s of the prof tab l ty of land develop ments. Prerequisites· CON 383 389. F eld tr ps. Credit 2 hours.

482 Cost Engineering. The time va ue of money Com parison of a ternat ves, depreciat on methods and impact on taxes, replacement and break-even analysis Construct on financ ng and analys s Prerequis te· CON 389 Cred t, 2 hours

484 Heavy Construction Estimating. Methods ana ysis and cost est mation for construct on of highways, br dges, tunnels, dams and other engineer ng works Prerequisites· CON 383 CEE 344 or approva of in- structor. Field trips Credit 3 hours

485 Mechanical Construction. Est mating and con- struct on methods for process piping and p umbing, p pefitt ng heat ng and a r condit oning n bu ld ng con struction. Prerequis te CON 383 Credit 3 hours

488 Electrical Construction. Pract ce for res dent a commerc a and industr a projects Codes, methods and estimating. Prerequ site CON 383 Cred t 2 hours.

496 Construction Contract Administration. Case studies. Ethical practice, soc al respons b ity, icens ng, codes and publ c regulat on of contracting Qua ty con trol requ rements Claims payments and changes. Bonding, nsurance idemn fication procedures. Techn cal and fiscal fai ure. Formulation of management contracts, prime contracts subcontracts, joint venture and consortium agreements. Arbitration, l t gation and spec fical on analysis Term paper Prerequisite· sen or standing. Pre- or co-requisite· ECE 400. Credit 3 hours

531 Economics of the Construction Industries. The economic env ronment of construct on with emphas s on un que aspects, critical rev ew of econom c l terature dealing with the construct on industr es Prerequisites. ECN 201, 202 and CON 496 or approval of instructor Cred t, 3 hours.

532 Economic Models of the Construction Industries. Forecasting the demand for structures Models of the ndustry s capacity. Measures of product v ty Prerequ - site· CON 531 Credit, 3 hours

551 Facilities Operation and Maintenance. Analys s of maintenance work. Structure of the ma ntenance work and organizat on. Contract maintenance and force ac- count economics. Ma ntenance contro and supervision of operat ons. Field trips. Credit 3 hours.

577 Construction Systems Engineering. Systems theory as appl ed to the construction process A ter- nates for structuring nformat on flows and the contro of projects. Prerequ s te CON 462 or equivalent Cred t 3 hours

Special Courses. 294, 494, 498 499. See page 31)

School of Engineering

Lee P. Thompson, Ph.D , Director

Purpose

The Engineering program of study seeks the attainment by each graduate of certain broad objectives. It is designed to make effective a philosophy of education for careers of leader ship in applied science, engineering and industry. Society's needs in the decades ahead call for engineering talent on a scale not previously seen Engineering education should, therefore, provide an opportunity for the de velopment of a wide variety of activities, aptitudes and interests, including mora , ethi cal and professional concepts. Students are expected to acquire a thorough understanding of the fundamentals of mathematics and the sciences and their applications to the various engineering fields The program is designed to develop a balance between science and system orientation in the subject matter of engineer ing education and an understanding of the economic and social consequences of engineer ing activity. The goals include the promotion of the general welfare of the engineering profession.

The courses offered are designed to meet the needs of the following students. (1) those who wish to obtain a degree in engineering and who plan careers in which science, mathematics, and analytical methods are of special value; (2) those who wish to do graduate work in engineering; (3) those who wish one or two years of training in mathematics, applied sci ence, and engineering in preparation for a technical career; (4) those who desire pre engineering for the purpose of deciding which program to undertake or those who desire to transfer to another college or university, (5) those who wish to take certain electives in engineering while pursuing another program in the University

General Information

Admission. Students who wish to be admitted to full freshman standing in Engineering should present certain secondary school units in addition to the minimum University requirements. A total of 3 units is required in mathematics. Included must be· advanced al gebra, geometry and trigonometry. Calculus is recommended. The laboratory sciences chosen must include at least one unit in physics and one unit in chemistry. One unit of biology is strongly recommended.

Students who have omissions or deficiencies in subject matter preparation may be required to complete additional university credit course work which may not be applied toward an en gineering degree One or more of the courses MAT 115 College Algebra and Trig

onometry, PHY 111 and 113 General Physics, ENG 101 First Year English, CHM 113 General Chemistry are often taken to satisfy omissions or deficiencies

Program of Study. The program of study in engineering is based on the engineering core which consists of a highly correlated group of courses of fundamental importance and basic concern to engineers The core provides a broad base of science, mathematics, and engineering upon which the various programs are founded.

A number of fields of specialization which are extensions beyond the engineering core, are offered to provide variety in the program of study, and each student is allowed considerable latitude in developing an area of emphasis to fit his particular interests In each of the several fields of specialization, the scientific knowledge and techniques are applied and further developed through analysis, synthesis, systemization, and design as related to a specific engineering discipline For convenience, the traditional fields of specialization offered are designated as CEE, CHE, EEE, ESE, IEE and MEE.

In addition, the Interdisciplinary and Special Programs in Engineering accommodate those students (1) who desire an undergraduate specialization in industrial engineering or engineering science, and (2) those whose educational objectives require more flexibility than is possible in the other fields.

Well prepared students usually can complete the program of study leading to an undergraduate degree in engineering in four years, or fewer than four by attending Summer Sessions. Many students, however, may find it advantageous or necessary to devote more than four years to the undergraduate program by pursuing, in any semester, fewer studies than are regularly prescribed. In cases of inadequate secondary preparation, poor health, or financial necessity requiring much time for outside work, the undergraduate program should be extended to five years or longer

All the undergraduate fields of specialization—chemical, civil, electrical, mechanical, and the interdisciplinary and special programs in engineering are accredited by the Engineers' Council for Professional Development Master of Science in Engineering programs are accredited by ECPD in the fields of electrical, civil, industrial, and mechanical engineering, and in engineering science.

Degrees

The School of Engineering offers two baccalaureate degrees, the Bachelor of Science in Engineering and the Bachelor of Science. The programs of study leading to these degrees are carefully structured to meet the requirements of the University and of the accrediting agency, the Engineers' Council for Professional Development. The General Studies requirements of the University and the Engineering Core courses required for all students total approximately 100 semester hours Completion of this work satisfies the humanities, social sciences, basic sciences, mathematics, engineering sciences, and design requirements of the ECPD. In addition, each student selects a field of specialization, such as Mechanical Engineering or Civil Engineering, which has its structured course arrangement and an area of emphasis or pattern which, together, provide the student with the program of study desired.

Where omissions or deficiencies exist, *i.e.*, in chemistry, English, physics, or mathematics, the student must complete more than the minimum of 128 semester hours

The programs of study in engineering are devoted to the basic sciences, mathematics, the fundamentals of the engineering sciences, and their application to the solution of engineering problems. The courses are not training courses for any of the mechanical or manipulative skills, but rather a plan to provide preparation for development, design, practice, research, graduate work, operation, production testing, maintenance, and management

Integrated B.S.E.—M.S.E. Program

(This program is described on page 179

Engineering Core

In the United States, well over half of all engineering degree holders are found in management positions in a broad variety of institutional settings. In this era of rapid technological change and for the foreseeable future, an engineering education must be a truly liberal education The degree programs in engineering at Arizona State University are intended to develop habits of quantitative thought having equal utility for both the practice of engineering and other professional fields. It is the intent of the faculty that all students be prepared in (1) *fundamental studies* in mathematics, the basic sciences, engineering sciences, and engineering methods and design; (2) *humanities and social studies* so selected as to give the engineer an increased awareness of his or her social responsibilities, and to provide an understanding of related factors in the decision making process; and (3) *field of specialization studies* in a more definitive engineering option appropriate to a particular aspect of societal concern The *fundamental studies* and *humanities and social studies* are embodied in the General Studies degree requirements (page 162) and in the requirements of the Engineering Core, while the *field of specialization studies* are embodied in the additional degree requirements of the several engineering options

The Engineering Core is that systematized