

UNIVERSITY OF ARIZONA RECORD

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Announcement

for the

Summer

Session

1956



FIRST TERM
June 11 — July 14

SECOND TERM
July 16 — August 18

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April 1, 1956

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University of Arizona Record

ANNOUNCEMENT FOR THE SUMMER SESSION 1956

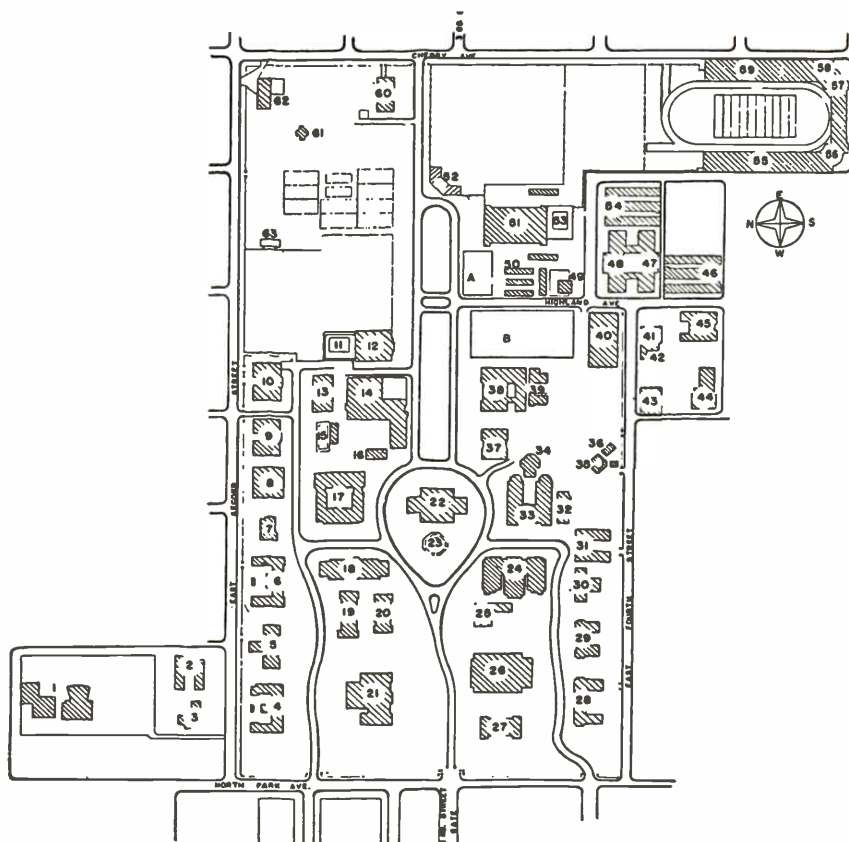
First Term

June 11 - July 14

Second Term

July 16 - August 18

PUBLISHED BY
University of Arizona
TUCSON, ARIZONA



KEY TO BUILDINGS

- | | | |
|---|--|---|
| 1. Fine Arts Building
(under construction) | 22. Old Main | 45. Physical Plant Shop
& Office |
| 2. Coconino Hall | 23. Memorial Fountain | 46. Papago Lodge |
| 3. Pima Hall | 24. Library Arts | 47. Men's Dormitory
(under construction) |
| 4. Gila Hall | 25. Law | 48. Men's Dormitory
(under construction) |
| 5. Maricopa Hall | 26. Auditorium | 49. Bee Culture |
| 6. Yuma Hall | 27. Museum | 50. Institute of Atmos-
pheric Physics |
| 7. North Hall | 28. Cochise Hall | 51. Gymnasium &
Military |
| 8. Mines & Metallurgy | 29. Arizona Hall | 52. Baseball Stadium |
| 9. Mechanical Arts | 30. Fine Arts | 53. Men's Swimming
Pool |
| 10. Engineering
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| 11. Women's Swimming
Pool | 32. Herring Hall | 55. West Stadium &
Mailing Bureau |
| 12. Women's Building | 33. Agriculture &
Home Ec. | 56. Pinal Hall |
| 13. Aeronautical | 34. Agriculture Hall | 57. Navajo Hall |
| 14. Student Union and
offices of Arizona
Alumni Association | 35. Green House | 58. Athletic Ticket Office |
| 15. Reservoir | 36. Lath House | 59. East Stadium |
| 16. Bookstore | 37. Administration | 60. Infirmary |
| 17. Engineering | 38. Chemistry-Physics-
Pharmacy | 61. Steward Observatory |
| 18. Business and Public
Administration | 39. Greenhouse | 62. Nursery School &
Home Management |
| 19. Humanities | 40. Biological Sciences
Bldg. (under constr.) | 63. Outdoor Theater |
| 20. Education | 41. Physical Plant Whse. | |
| 21. Library | 42. Power Plant Office | |
| | 43. Power House | |
| | 44. Garage, Gen'l. Stores,
Purchasing | |

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UNIVERSITY OF ARIZONA

SUMMER SESSION, 1956

LOCATION

The University of Arizona conducts its Summer Session on the University Campus at Tucson.

Tucson has an altitude of 2,400 feet. It lies in a broad valley surrounded by rugged mountains that constitute a setting of unsurpassed beauty. The campus itself with its masses of common and exotic trees, shrubs, and cacti is a veritable park of unique character.

CALENDAR OF THE SUMMER SESSION

The Summer Session is made up of two terms of 5 weeks each. Unless otherwise specified classes will meet 5 days a week, a 2-unit lecture course requiring 5 clock hours per week per term. Laboratory periods are 3 hours. Registration will be held on the first day of each term. A late registration fee of \$2 will be charged in connection with registration after that day. Registration for credit will not be granted after Monday, June 18, for the First Term, or after Monday, July 23, for the Second Term.

The calendar follows:

June 10, Sunday, 8 a.m.	Residence halls open
June 11, Monday	Registration for First Term
June 12, Tuesday	Classwork begins
July 4, Wednesday	Independence Day; no classes
July 13, Friday	Examinations for the First Term begin
July 14, Saturday	First Terms ends
July 16, Monday	Registration for the Second Term
July 17, Tuesday	Classwork begins
Aug. 17, Friday	Examinations for the Second Term begin
Aug. 18, Saturday	Second Term ends

SUMMER-SESSION COURSES

The courses of the Summer Session are designed to meet the needs of the following classes of students:

1. Entering Freshmen who may wish to accelerate their college work.
2. Regular students of this or other institutions.
3. Graduate students who are unable to attend during the regular academic year or those who wish to continue their courses or research.
4. School administrators and teachers who desire advanced instruction in academic or professional work looking toward advanced degrees or renewal of certificates or who wish to satisfy requirements of the various states and accrediting associations.
5. Prospective teachers desiring to meet certification requirements for all grades above the kindergarten.
6. Students who desire to avail themselves of cultural or professional courses.



The summer-session courses will be offered through the following departments and fields:

Agricultural	English	Physical Education
Education	French	Physics
Anthropology	Geology	Piano
Art	German	Political Science
Botany	Health Education	Psychology
Business	History	Secretarial Studies
Administration	Home Economics	Sociology
Chemistry	Humanities	Spanish
Civil Engineering	Library Science	Speech
Dramatic Arts	Mathematics	Voice
Economics	Music Education	Zoology
Education	Music Theory	
Electrical	Pharmacy	
Engineering	Philosophy	

ARIZONA STATE MUSEUM

The Arizona State Museum, established by law as an integral part of the state University, is maintained as an educational factor in the institution and the state. The exhibits illustrate the story of Man in the Southwest over a period of some 10,000 years. The geological displays show examples of outstanding minerals and fossils of extinct animals; the natural history collections show the bird life of the state and present other forms of animal existence. The Museum is open to the public.

LIVING ACCOMMODATIONS

Dormitory accommodations for men and women are provided on the campus. Coconino Hall will be used for women and Cochise Hall for men. Additional halls will be opened as the need arises. Rooms are uniformly furnished with tables, dressers, chairs and study lamps. Beds, mattresses, pillows, and bed linens are provided, but students must provide their own blankets, towels, laundry bags, and other necessities. The laundering of all bed linens is cared for by the University. Students are advised to provide a warm blanket for the cooler nights.

Women students.—Coconino Hall is the newest of the six women's dormitories. The walls of each sleeping room are painted in a pastel color. The chairs and built-in desks in the room are furnished in a darker, contrasting shade. Refrigerated air conditioning, an elevator, and laundry facilities are modern conveniences provided for the comfort and needs of the students. A spacious, well-appointed lounge and an enclosed patio add much to the pleasure of group life.

During the Summer Session the dormitories are open to both graduate and undergraduate students. All unmarried undergraduate women not living at home are required to live in the dormitory unless exception is made by the Dean of Women before or at registration. All dormitory arrangements for women must be approved by the Dean of Women at the time of registration and may not be changed without her permission.

Men students.—Cochise Hall is one of the oldest, but the most comfortable in the summer, of the seven men's dormitories. A porch between each two rooms permits open-air sleeping and this is a desirable feature. The two lower floors, which are utilized for the Summer Session, were renovated recently and provide comfortable accommodations.

Off-Campus housing.—Information concerning housing facilities off the campus may be secured from the Department of Student

Housing. The Department will render every assistance possible. Students should, however, inspect accommodations before making definite agreements with householders.

Dormitory reservations.—Accompanying the Registrar's notification that admission has been granted is an application form for reservation of dormitory space. This should be filled out immediately and mailed to the Manager of Student Housing with a deposit of \$10. Checks should be made payable to the University of Arizona. This deposit is security against damage to or loss of University property. It will be returned if there are no charges against the student. **Applications for room reservation should not be made until notice of admission is received from the Registrar.**

Only registered students may use the dormitories.

Board.—The University Cafeteria, located in the Student Union Memorial Building, is operated on a self-sustaining basis for the convenience of the students.

AIR-COOLED BUILDINGS

The University Library, the Liberal Arts Building, and the new Business Administration Building are completely air-cooled, making study and class conditions ideal. The air-cooled, attractive Student Union Memorial Building offers excellent facilities for dining and for recreation.

ADMISSION TO THE SUMMER SESSION

The general rules and regulations of the University relating to admission to the University for credit apply to the Summer Session.

Regular students of the University of Arizona in good standing are admitted as at any other time.

Prospective freshmen should file with the Director of Admissions a complete, official transcript of high-school credits, with a statement of graduation.

Students coming from other universities and colleges must present to the Director of Admissions evidence that they are in good standing. Those who propose to become candidates for a degree at the University of Arizona, or who wish to continue in the fall semester must file official transcripts of record from each institution previously attended.

Graduate students seeking graduate credit must file a transcript of the complete academic record, including evidence of having been graduated from an approved university or college. Preliminary inquiry should be made to the Dean of the Graduate College.

Other students eligible to enter the University will be permitted to pursue such courses as they are qualified to carry.

Note: All new students except those of graduate standing should apply to the Director of Admissions for appropriate admission blanks. Admission to the Summer Session does not necessarily imply admission in the regular year.

ACADEMIC CREDIT

The Summer Session is an integral part of the regular University organization, with similar standards of academic accomplishment. The courses are of the same character as those offered during the regular academic year. Credit obtained is fully recognized toward the various degrees which the University confers. All Summer-Ses-

sion work is work in residence. The maximum number of units for which students may register regularly for credit is 12 semester hours for the 10-week session or 6 semester hours for either 5-week term. This necessitates the intensive study of a few subjects at a time. Registration may not be changed after the first week of each term except by approval of the instructor, the major professor, and the dean concerned.

Freshmen who receive failing grades in 50 per cent of the total number of units for which they were registered in the Summer Session, and students other than freshmen who receive failing grades in 40 per cent of the total number of units for which they were registered, are automatically placed on scholarship probation and are subject to denial of registration in the first semester of the next academic year.

EXPENSES & FEES

All fees and tuition for the term are due and payable at the time of registration for a five-week period. Since the University is not permitted to extend credit nor to accept installment payments, it is essential that all students have sufficient funds on entering to pay their immediate expenses.

SUMMARY OF FEES AND DEPOSITS FOR A FIVE-WEEK PERIOD

Dormitory Room (in advance)	\$22.50 or \$30.00
Dormitory Room Deposit	10.00
Tuition, per unit	7.50
Student Union Fee (on 3 or more units)	2.50
Library Fee	1.00
Recreation Fee50
Tuition, Auditors only	10.00
Tuition for courses audited in addition to credit courses, per unit	3.75
Thesis (See below)	
Late Registration Fee	2.00
Change of Program Fee	1.00
Credit by examination, per unit	2.00
Physical Education courses (except Theory)	2.00
Physical Education courses deposit	1.00
Other fees (See below)	

All students should add to applicable fees above, additional funds necessary for personal needs including board.

Dormitories.—Men may obtain rooms in Cochise Hall for \$22.50 each per five-week term, two in a room. Depending upon available rooms, single occupancy will cost \$36.00 per term.

Women may obtain rooms in Coconino Hall (air-conditioned) for \$30 each per five-week term, two in a room. When available single occupancy will cost \$48.00 per term. All students occupy separate single beds.

A room deposit of \$10.00 must accompany each application for a dormitory room. Do not send cash, since the University will not be responsible for cash deposits sent through the mail. The deposit applies as security against damage to and/or loss of University property and does not apply on the rent. Room reservation deposits will not be returned when a reservation is cancelled unless notice of such cancellation is received by the Department of Student Housing on or before the Saturday preceeding registration for the related term.

Tuition.—The tuition fee is \$7.50 per semester hour of credit for either 5-week term. The NON-RESIDENT fee applicable in regular sessions does not apply to Summer Session students.

Student Union Fee.—A fee of \$2.50 per term is payable on the day of registration by each student registering for 3 or more units of credit.

Library Fee.—A fee of \$1.00 per term is payable by each student registering for credit.

Recreation Fee.—To provide funds for recreational and social activities during the term, a fee of .50 cents is payable by each student registering for credit.

Auditor's Fee.—Students registering only as auditors and not for credit pay a registration fee of \$10.00 for the term, but other fees do not apply. Students combining audited courses with courses for credit will pay \$3.75 per unit for audited courses in addition to the tuition fee for credit courses. However, the maximum tuition fee for such combined courses may not exceed \$45.00 per term unless the units for credit exceed six. Units for audited courses are considered as part of the total study load.

Thesis.—Students registering for thesis in residence will pay the regular tuition rate per unit of credit. Registration fee for thesis in absentia is \$5.00 only and other fees do not apply. A student's second or subsequent registration for thesis in residence will cost \$5.00 only, plus other applicable fees.

Late Registration.—Each student completing registration after the formal date for same will pay an additional fee of \$2.00.

Change of Program.—The fee for each approved change of program will be \$1.00.

Credit by Examination.—A fee of \$2.00 per unit is payable before the examination may be given.

Physical Education.—Students registering for courses in Physical Education (except theory) pay a locker and towel fee of \$2.00 and a deposit of \$1.00.

Music.—For individual instruction in voice or instrumental music a fee is charged in addition to the regular tuition. The fee for two half-hour lessons a week for five weeks is \$20.00, with one unit of credit. The rental fee for practice instruments is: for 1 hour per day, 5 weeks, \$1.50; for 2 hours per day, 5 weeks, \$2.00.

Laboratory and Materials.—In certain laboratory courses fees and deposits are required to cover the cost of materials and of breakage. Statements of the amounts of such fees and deposits are found in the descriptions of the courses.

Trips.—For all field trips required in connection with courses additional fees will be charged as stated in the descriptions of the courses.

Refunds.—Students withdrawing during the period June 11 to June 18 inclusive in the first term and during July 16 to July 23 inclusive in the second term will be refunded upon application all tuition, course, and other fees paid for the related term, less a withdrawal charge of \$5.00 and the late registration fee of \$2.00 if applicable. No refunds of fees or tuition will be made after the stated dates.

All deposits are refundable upon application at the end of each term or upon withdrawal, less any charges assessed for damage to and/or loss of University property (for exception see room reservation deposits under Dormitories heading).

Students moving from a dormitory before the end of a term but not withdrawing from the University will forfeit the unused portion

of the term rental. Students withdrawing before the end of a term will be refunded upon application a pro-rated share of the prepaid dormitory rental.

GRADUATE STUDY AND ADVANCED DEGREES

The University of Arizona Summer Session offers opportunity for graduate study. Several of the departments of the University have specifically provided for individual research in their respective fields. Individual research may be carried on in any department authorized to offer such work, by eligible students who secure the approval of the head of the department and the instructor.

In certain departments provision is made for teachers in service and others who are unable to attend the University during the regular year to complete the requirements for the master's degree by attendance at Summer Sessions only. Residence during one Summer Session of 10 weeks is equivalent to a semester of residence.

Requirements for Admission.—Admission to the Graduate College is open to persons who hold the bachelor's degree from the University of Arizona or from a college or university approved by the University of Arizona. Admission in any case is granted only after approval of the candidate's previous academic record by the Director of Admissions, the Dean of the Graduate College, and the heads of the two departments in which the candidate proposes to do the greater portion of his work. An additional number of undergraduate courses may be required when previous work has not approximated the general requirements for the corresponding bachelor's degree at the University of Arizona or the special requirements for the field in which the candidate proposes to specialize; and prospective graduate students are urged to determine from the Dean of the Graduate College their status in this regard.

Procedure:

1. Application forms should be submitted to Director of Admissions. Blank forms will be sent by the Dean of the Graduate College upon your request.

2. Transcripts from all colleges and universities attended should be ordered from the Registrar at these institutions and sent to the Director of Admissions. (Note: Applicants who do not propose to work for advanced degrees may be admitted on transcript showing Bachelor's degree.)

3. When the applicant's previous academic record is approved, the applicant will receive an official certificate of admission from the Director of Admissions. Inquiries concerning admission applications should be directed to the Dean of the Graduate College.

4. Although students are urged to secure admission prior to the date of registration, provision is made for temporary unclassified admission pending completion of credentials.

5. All students qualified to receive graduate credit should register in the Graduate College.

General prerequisites for major and minor graduate credit.—The undergraduate major, or its equivalent, in any field of study is prerequisite to major graduate work in that field. In some cases a field of concentration in the undergraduate work different from but suitably related to the graduate major may be acceptable. The minimum requirement in education is 15 units, of which 3 may be in general psychology.

Supporting or minor courses have as a prerequisite for graduate credit a minimum of 12 units basic to the subject, including all course prerequisites stated in the description of the course.

Deficiencies in undergraduate preparation must be satisfied by the completion of prescribed courses for undergraduate credit.

Graduate credit for seniors and unclassified students.—A student of senior standing who is within 16 units of completing all requirements for graduation may register for graduate work if recommended by the head of the department and approved by the Dean of the Graduate College. For such registration a petition for graduate credit in excess of senior requirements must be filed with the Dean at the time of registration, or within 10 days thereafter, for the action of the Committee on Graduate Study. This petition must be endorsed by the professor in charge of the course and the student's major professor. The Committee will not approve a petition unless the senior has a grade average of 2.5 or better on all work already completed in the University; is proceeding toward graduation as directly as possible; and does not propose a total load to exceed 6 units per term.

A student who holds the bachelor's degree but who is not registered in the Graduate College may petition for permission to take courses for graduate credit. His petition must be filed within 10 days following registration, be recommended by the instructor of the course and the head of the department concerned, and be approved by the Committee on Graduate Study.

Graduate credit courses.—All courses numbered from 300 to 420 are definitely organized as graduate courses and carry graduate credit. Certain courses numbered from 200 to 299, with the approval of the instructor, head of the department and Dean of the Graduate College, may be taken for graduate credit.

Scholarship requirement.—No student will be recommended for the award of an advanced degree unless he has achieved a grade average of 2.0000 or higher on all course work taken for graduate credit. The grade average will be computed on all work for which the student has enrolled for graduate credit, whether or not it is offered in satisfaction of requirements for an advanced degree. The grade of 4 does not carry graduate credit but is computed with the general average.

Residence requirement.—Two semesters of residence, involving completion of not less than 23 semester hours of graduate credit are required, except as thesis work in absentia may be approved; the remaining 7 units may be units either transferred from another accredited graduate school or earned in extension courses offered by the University of Arizona.

Completion of degree requirement.—Students registering with the expectation of completing requirements for advanced degrees during the Summer Session should petition for admission to final examinations. Blank forms may be obtained from the Secretary of the Graduate College. The petition must be filed in duplicate at the office of the Graduate College ten days in advance of the examination date. Usually such a petition will not be approved unless the applicant has been admitted to candidacy, has filed a satisfactory program of study, and has a grade average of 2.0 or better on course work completed. However, in cases where there is a reasonable expectation that a deficiency in the grade average can be met through completion of courses for which the applicant is currently enrolled, the Dean of the Graduate College may approve a petition for admission to the final written examination. Final written examinations for the Master of Education degree will be given on June 25 and July 30. Final oral examinations will be scheduled before the end of the term for all candidates who pass the written examinations. A candidate who

fails to pass either the written or oral examination may take his examination for a second time not earlier than the next semester or next Summer Session. The result of the second examination is final.

Theses or dissertations submitted in partial fulfillment of the requirements for advanced degrees must be filed with the Dean of the Graduate College not later than one week before the final oral examination in the case of the Master's degree and not later than four weeks before the final oral examination in the case of the Doctor's degree.

Following completion of the oral examination, students should obtain a statement of graduation fees from the Registrar.

THE DEGREE OF MASTER OF EDUCATION

The University has instituted the degree of Master of Education, which will be conferred upon professional students in the field of Education who have met the admission requirements of the Graduate College and who have completed the stipulated graduate studies and met all other requirements for the degree. All general regulations for graduate work and all requirements of the M.A. and M.S. degrees apply to this degree, except as they may be modified by the following requirements. (A thesis is not a part of the requirements for this degree.)

Course requirements.—Course work required shall be not less than 32 units, including 17 to 20 units in the major subject and 12 to 15 units in the minor subject.

Major and Minor.—Either the major or minor must be Education. In either case the remaining choice may be in a different field of Education or any of the subjects, such as History, English, Mathematics, which are teaching fields in the public schools. Subjects not taught in the public schools may be chosen as the major or minor when, in the opinion of the education and graduate deans, that would strengthen the student's preparation as a teacher.

Research project.—All candidates for the degree, whether the major or the minor is in Education, are required to complete a research project of a kind to warrant 2 units of credit. Students will register for Education 390 to receive credit for this project.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION

The Department of Education of the Graduate College accepts prospective candidates for the degree of Doctor of Education. The degree is granted only to those who demonstrate a high degree of proficiency in Education and who present a dissertation of a professional nature.

Residence and credit requirements.—Not less than six semesters of full-time graduate study are required. At least one regular semester in residence, not including work offered in meeting requirements for the Master's degree, is required. During this semester the student must be registered for twelve or more semester hours of credit. The minimum hour requirement is seventy semester hours at the graduate level. Research for the dissertation, for which no credit is given, usually requires the equivalent of one academic year of full-time work, exclusive of any work accomplished in connection with a master's thesis. All requirements for the degree must be met within a period of six calendar years after the qualifying examination.

Qualifying examination.—For the purpose of demonstrating fitness to undertake work leading to candidacy for the doctorate, each

applicant must pass a qualifying examination. It is expected that this examination will be taken after thirty hours and before forty-five hours of graduate work have been completed. The examination will be either oral or written, or both, at the discretion of the department. In addition, a personal interview, a review of the applicant's college record, and evidence of the applicant's ability to write in a scholarly manner are required. Applicants may offer the master's thesis or an equivalent paper to the examining committee for its use in evaluating the student's ability to write in acceptable fashion.

Teaching experience.—Candidates for the degree of Doctor of Education are required to furnish evidence of having successfully completed at least three years of teaching or administrative experience in the public schools.

Program of study.—A program of study, recommended by the Dean of the College of Education, must be submitted for the approval of the Graduate Committee at the beginning of the second year of graduate study. The student will major in Education but must have a minor in a department other than Education. Not less than forty-six units of work must be in Education. An outline of the proposed dissertation, approved by the Dean of the College of Education, must be submitted for the approval of the Committee on Graduate Study not later than October 1 of the last year of study. The appropriate forms are available in the office of the Dean of the Graduate College.

Foreign language requirement.—A reading knowledge of a foreign language will be required when such knowledge is necessary for the successful completion of the dissertation.

Preliminary examination.—Before admission to candidacy for the degree, a comprehensive examination must be passed. This examination shall be both written and oral and will cover work which the applicant has taken in Education and in minor fields. The examination will be held toward the end of the second year of graduate work or not later than November 1 of the last year.

Advisory committee.—When the student has successfully passed the qualifying examination and has outlined a tentative dissertation problem, the Dean of the Graduate College, after consultation with the Dean of the College of Education, will appoint an advisory committee. Two members from the student's major field of study and one from his minor field of study will constitute the committee. The chairman will be the student's major professor and thesis director. The duties of this committee are to review the proposed dissertation problem, to evaluate the student's program of study, to make recommendations to the Dean of the College of Education concerning the adequacy of the dissertation problem and the program of study, and to be available to the student when guidance is necessary.

Advancement to candidacy.—When the preliminary examination has been passed and evidence shown of ability to carry on professional studies of a high grade, the student will be recommended to the Committee on Graduate Study for acceptance as a candidate for the doctorate. These regulations must be met on or before November 1 of the academic year in which the degree is to be conferred.

Final examination.—When the required standards of scholarship have been met and the required ability in research has been shown, the candidate shall submit to an oral examination in defense of his dissertation, as well as any general questioning related to the field of study which may develop therefrom. This examination shall be conducted before a committee appointed by the Dean of the Gradu-

ate College upon consultation with the Dean of the College of Education, the exact time and place to be announced at least one week in advance, and shall be open to the public.

Dissertation.—Two weeks prior to the final examination, one copy of the dissertation must be submitted to the Committee on Graduate Study. Two copies of the completed dissertation, approved and accepted by the major department, must be filed with the dean, following the final examination, and a library binding fee of \$5 must be paid to the University Comptroller. At the same time, there must be filed two copies of an abstract of the dissertation approved by the Dean of the College of Education and the Dean of the Graduate College.

Publication of dissertation.—Dissertations are published by University Microfilms, Ann Arbor, Michigan, and a fee of \$25 is charged to cover this expense. Upon certification by the student's major professor, members of the committee for his final examination, and the Dean of the Graduate College, the typed first copy and an abstract of 700 words or less are forwarded to the University Microfilms. The manuscript is microfilmed, the negative inspected, and put in vault storage. The manuscript is catalogued and this information is sent to the Library of Congress, for printing and distribution of cards to depository catalogues and libraries. The abstract is printed in the forthcoming issue of Microfilm Abstracts and distributed to leading libraries here and abroad, and to a selected list of journals and abstracting services. The first copy with one positive microfilm is then returned to the University Library.

Publication by microfilm does not preclude publication by other methods later, and successful candidates are urged to submit dissertation material for publication in a journal of its field. Suitable acknowledgement must always indicate the publication to be a dissertation, or portion of a dissertation, submitted in partial fulfillment of the requirements for the degree of Doctor of Education at the University of Arizona.

CANDIDATES FOR DEGREES

All candidates for degrees who expect to complete their work for a degree at the end of either term must file an application during the first week of the term. Blanks are available at the Registrar's office.

TEACHERS' CERTIFICATES

One of the important functions of the University is the preparation of teachers. All the resources of the University are available for this work.

Secondary certificates are granted to the holders of the bachelor's degree from an accredited university or college authorized to prepare secondary-school teachers who present, in addition, evidence of the satisfactory completion of not less than 30 semester hours of graduate work at the University of Arizona or at other accredited institutions.

Pre-secondary certificates entitle the holders to qualify for the regular secondary certificate by in-service preparation while they are teaching. Such certificates have a preliminary requirement of 6 semester hours of graduate work.

Elementary certificates are granted to holders of the bachelor's degree from an accredited university or other teacher-preparation institution authorized to prepare elementary teachers.

Elementary and secondary certificates are valid for 4 years. They are renewable any number of times for periods of 6 years, upon presentation of evidence that the holder has, during the life of the certificate, completed 4 years of successful teaching and has carried to completion satisfactorily 5 semester hours of approved professional work at an accredited school or 10 semester hours when the teaching experience has been deficient. For the initial renewal 2 year's teaching and 5 semester hours are required.

ADMINISTRATIVE CERTIFICATE

The administrative certificate is granted upon evidence of at least three years of successful teaching experience in the public schools, eligibility for an elementary or a secondary certificate, and a Master's Degree with a minimum of 15 semester hours in Education taken subsequent to the Bachelor's Degree, including the courses listed below:

- School Administration
- Supervision of Instruction
- Statistical Methods in Education
- Curriculum Determination and Construction
- Arizona School System, Laws and Records
- School Finance
- School House Planning and Maintenance
- History or Philosophy of Education

The certificate is required of any administrator in charge of a school or school system with five or more teachers, or of a supervisor of non-special instruction.

APPLICATION FOR CERTIFICATES

All persons applying for certificates authorizing them to become superintendents (or principals) or teachers in the public schools and junior colleges in this state must, in addition to existing requirements, take a course in the provisions and principles of the Constitution of the United States and of this state. Candidates for certificates may satisfy this requirement by taking the course, Political Science 100, or the courses Political Science 51a and 51b (or 100-C).

Certificates for teachers and school administrators are not granted automatically; formal application must be made. As considerable time is sometimes required to secure the necessary data, candidates should file the application early in the term in which they expect to qualify. Necessary blanks and detailed information relating to teaching and administrative certificates may be secured at the office of the Dean of the College of Education.

WORKSHOPS AND CLINICS

An outstanding service which the University offers to teachers and other school officials is the opportunity to work in small homogeneous groups on problems common to the respective groups. This is carried on through the following workshops under the direction of specialists in the fields:

- Reading (Education 224)
- Language Arts (Education 225)
- Arithmetic (Education 226)
- Social Studies and Science (Education 227)
- Conservation of Natural Resources (Education 292s)

Another valuable professional opportunity is offered through participation in the following clinics:

Art (Education 206s)
 General Remedial Techniques (Education 321s)
 Music Education (Music 270s)
 Speech Correction (Speech 174s)

In these clinics the students not only study the techniques but, under the direction of the instructors, actually apply them in the diagnosis and treatment of the difficulties of pupils selected for the purpose.

Teachers interested in the workshops and clinics should register for the courses indicated in parentheses.

SPECIAL EDUCATION FOR EXCEPTIONAL CHILDREN

Pioneering in Arizona in the field of Special Education, the University has offered a major in that field since 1952. This summer we are happy to announce a full program in that field with both resident staff and outstanding visiting specialists.

In addition to Education 251, 257, and either 224, 225, 226, 227, or 231 and 234, the major consists of a minimum of 17 units selected from the following:

The Exceptional Child in the Regular Classroom
 (Education 203s)
 Abnormal Psychology (Psychology 218)
 Remedial Techniques in Teaching (Education 321s)
 Mental Hygiene (Education 250)
 Development of Human Behavior (Psychology 213
 or 214)
 Guidance for the Handicapped
 Problems in the Teaching of the Mentally Retarded
 (Education 255)
 Arts and Crafts for Exceptional Children
 Observation and Study of Exception Children
 (Education 328s)
 The Gifted Child in the Public Schools (256s)

ARCHAEOLOGICAL FIELD SCHOOL

An opportunity for field work in archaeology which has seldom been equalled elsewhere in the United States is provided for both undergraduate and graduate students at the field school at Point of Pines, on the San Carlos Indian Reservation, Arizona. Interested students should register for Anthropology 180s or 320s. For detailed information write to Dr. Emil W. Haury, Department of Anthropology.

GEOLOGY SUMMER CAMP

A geology field course in the Defiance Uplift portion of the Colorado Plateau offers field training for graduate and undergraduate students in a variety of problems. Detailed mapping involving simple to complex structures in igneous, sedimentary and metamorphic rocks ranging in age from Precambrian to cenozoic is coordinated with the regional geologic history. Interested students should register for Geology 212s or 213s. For detailed information write to Dr. Frederic W. Galbraith, Department of Geology.

LECTURE TOUR OF MEXICO

Again this summer, the University is offering an opportunity for first-hand study of the history and culture of Old Mexico. The course, known as "History of Mexico—231s," consists of two weeks study at the University of Arizona and three weeks lecture tour of Mexico.

For further information write to Dr. Russell C. Ewing, Department of History and Political Science, College of Liberal Arts, University of Arizona.

FINE ARTS SUMMER SESSION FOR HIGH-SCHOOL STUDENTS

The University of Arizona offers an unusual opportunity for high school students to participate in the Fifth Annual High School Fine Arts Summer Session to be held on the campus June 10 to June 22. Applications are accepted from all high school students including those who are eligible to enter the ninth grade in September, 1956, and those who have graduated from high school in May-June, 1956. An outstanding faculty has been selected to provide leadership in areas of the fine arts including art (drawing, watercolor and oil painting), dance, drama, journalism, music (band, orchestra, chorus, dance band, opera workshop, voice, piano, and listening class), speech, and photography.

A supervised recreational program, including sports, picnics, dancing, recitals, swimming, games, movies, and plays will be provided. Housing will be arranged in special dormitories under capable adult direction.

A tuition fee of \$17.00 will be charged for the two-week session. Cost of room and board for the session is \$32.50.

High school graduates of 1956 who wish to begin college work this summer, although regularly registered for the first five-week term of the University Summer Session, may enroll for activities in the High School Fine Arts Summer Session for a special fee of \$8.50. These college students normally will not participate in the social and recreational program of the High School Summer Session.

STAFF

University Instructors

John H. Bloom, chorus, voice
Robert C. Burroughs, drama
Edna E. Church, piano
Eugene T. Conley, opera workshop, voice
Henry P. Johnson, orchestra
Jack K. Lee, band
Klonda Lynn, speech
Peter R. Marroney, drama
Henk Moonen, photography
James Officer, journalism
James G. Souden, art

Guest Instructors

Virginia Robinson, dance, Tucson High School
John Martin, band, instrumental, Eastern Arizona Jr. College, Thatcher, Arizona
Charles Coulter, band, Phoenix Camelback High School, Phoenix, Arizona
Beryl Folks, orchestra, West Phoenix High School, Phoenix, Arizona
Paul Grimes, instrumental music, Tucson High School
Tom Burgess, instrumental music, Catalina Junior High School

For further information and for application blanks, please write to Dr. Wilbur J. Peterson, College of Fine Arts, University of Arizona, Tucson, Arizona.

ACCELERATED PROGRAMS

Entering Freshmen may speed up their college work by starting in the summer. There will be a broad choice of required and elective courses. **Sophomores, Juniors, and Seniors** will find many courses available to enable them to accelerate their programs.

INFORMATION FOR VETERANS

Veterans with educational entitlement under Public Laws 16 or 894 (the Rehabilitation Laws) or under Public Laws 346 or 550 (the G.I. Bills) are invited to use the Summer-Session facilities. The University Veterans' Coordinator, a member of the Registrar's staff, assists the student veteran in his relationship with the institution.

INDIVIDUAL STUDIES

Individual study is work done independently by the student under the guidance of an instructor. In the summer it consists of three types of work with course numbers as follows:

Special Problems (199, for undergraduates)

Research (400, for graduate students)

Thesis (410)

With the approval of the head of the department concerned and of the Dean of the Summer Session, any department may offer such work whether or not it is listed in the departmental offerings.

CREDIT BY EXAMINATION

Credit by examination is available to all Summer-Session students under the provisions described on Page 78 of the current Biennial Catalogue. The fee is \$2 per unit.

ENTERTAINMENT AND RECREATION

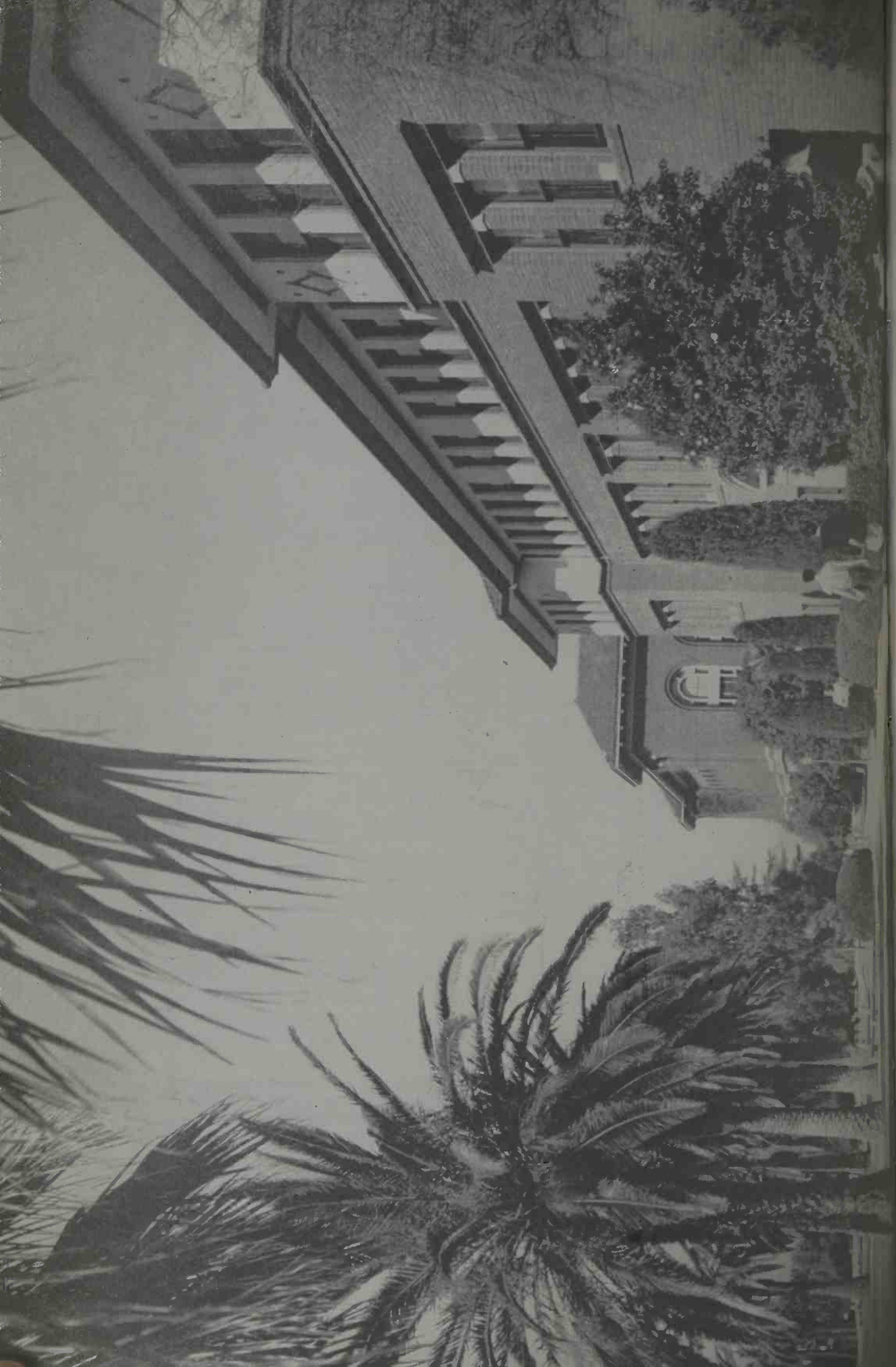
Opportunities for diversion and recreation are numerous. Sabino Canyon, Bear Canyon, Fort Lowell, Picture Rocks, San Xavier Mission, and other places of interest near Tucson make possible many trips or picnic parties which students of the Summer Session may enjoy. For somewhat longer trips, Colossal Cave, White House Canyon in the Santa Rita Mountains, the Casa Grande Monument, the Tumacacori Mission, and the resort of Soldiers' Camp and Summerhaven on Mount Lemmon in the Santa Catalina Mountains afford excellent opportunities for week-end excursions. In the Santa Catalina Mountains, among the great pine trees there are many ideal camp sites where the atmosphere is invigorating and the surroundings stimulating to both student and the lover of nature. The border city of Nogales, Sonora, within two hours' drive from Tucson, presents a very colorful Old World atmosphere to the visitor. The University will endeavor to arrange trips and excursions to these points for those who wish to avail themselves of the service. A trip fee sufficient to cover costs of transportation will be charged.

The excellent recreational facilities of the beautiful Student Union Memorial Building will be available for Summer-Session students. Students may enjoy ping-pong, billiards, cards and checkers in the game rooms, hear recordings of their choice in the listening rooms, or examine the new publications in the browsing room. A series of motion pictures of outstanding merit will be presented weekly, without charge.

There are excellent tennis courts and a large outdoor swimming pool on the campus. Swimming tags are obtained from the Cashier. All students, except those who were registered students here during the immediately preceding academic year, must present a health certificate from a physician prior to receiving a tag. A municipal golf course within easy reach of the University is available to the devotees of this popular form of sport. Bowling and dancing are always easily available.

STUDENT UNION POST OFFICE

For the convenience of the students, the Student Union Post Office will be open during the Summer Session.



*COURSES OFFERED

IN THE

SUMMER SESSION, 1956

AGRICULTURAL AND HOME ECONOMICS EDUCATION

Professor Cline (Head of the Department)

Assistant Professors Williams, Wall

AGRICULTURAL EDUCATION

- 121s. Introduction to the Teaching of
Agriculture (3) II Cline, Williams
Observation and participation in the activities of a teacher of agriculture under the direction of a supervising teacher for a period of four weeks. Readings, conferences, and written reports. P, Education 109. Hours to be arranged.
211. Visual Materials for Teaching
Agriculture (2) I Williams
Sources, selections, preparation, and use of pictures, films, charts, specimens, models, and real material for teaching vocational agriculture in the classroom, shop, and field. P, 199. Fee \$3 (1 hour lecture, 3 hours lab. Hours to be arranged. June 28 to July 14).
- 291s. Teaching Agricultural Practices
(1) I Cline, Williams
New developments and practices on selected farm and ranch enterprises for use in the teaching of vocational agriculture. Study, discussions, demonstrations and field classes on the organization and use of subject matter. P, 189, fee \$3. (June 28 to July 11. Hours to be arranged).
310. Investigations and Studies in Agricultural
Education (2) I Cline
A study of research procedure and a review of the findings of studies. Selecting a problem, planning and completing study. P, 6 units of graduate study in student's major field including 2 units in agricultural education. (Identical with Home Economics Education 310.) 7:00-8:00.

HOME ECONOMICS EDUCATION

290. Human Relationships in Teaching Home
Economics (2) I Wall
Analysis of the teacher's job in furthering desirable human relationships. Study of methods used by groups and individuals in relating themselves to others. The effectiveness of various methods in the development of personality. P, Education 187g. 8:10-9:10.
- 296s. Materials for Teaching Home Economics
(2) I Wall
Selection, preparation, and use of charts, posters, pictures, specimens, kits, and reading materials in teaching the ten areas of content in Home Economics for grades seven through twelve. P, Education 139h. Fee \$3. 9:20-10:20.

*All classes meet daily from Monday to Friday, inclusive, unless otherwise specified.

The Arabic numerals in parentheses indicate the number of units of credit. The Roman numerals indicate the term in which the course is offered: First Term (I) Second Term (II), either term (I, II), continued courses (I-II). "P", indicates "prerequisite." Where prerequisites are given in terms of numbered courses, equivalents of these courses are acceptable.

The University reserves the right to withdraw any course for which there is an insufficient registration.

310s. Investigations and Studies in Home Economics
Education (2) I

Cline, Wall

Selecting a problem, developing procedures, and completing a study. P, 399 and 6 additional units of graduate study in student's major field, including 2 units of home economics education. (Identical with Agricultural Education 310). 7:00-8:00.

AGRICULTURAL ENGINEERING

Assistant Professor Frost

212s. Problems in Farm Power (3) I

Frost

Efficient use of farm machinery with special reference to selection of proper equipment, efficient operation, and maintenance. Principles and trends in design of farm tractors and field machinery with special emphasis on use or substitute materials, fuels, compression ratios, ignition, and traction units. Fee \$3. (June 11 to June 27. Lab. hours to be arranged.) 8:10-9:10.

ANTHROPOLOGY

Professor Haury (Head of the Department)

Associate Professor Getty

Assistant Professors Danson, Tanner

Instructor Hackenberg

1a-1b Introduction to Anthropology (3-3) I-II Tanner-Hackenberg

Survey of physical anthropology, archaeology, ethnology, linguistics, and cultural anthropology; major theories, problems, and results. 1a is not prerequisite to 1b. 7:00-8:30.

180s. Field Course in Archaeology (6) I, II

Haury, Danson

Open to undergraduates who have had introductory courses in anthropology. June 15 to August 10. Enrollment limited. For detailed information write to Dr. Emil W. Haury, Department of Anthropology.

210. Introduction to Southeast Asia
(3) II

Hackenberg

Discussion of the sequence and culture of the region, formation of native kingdoms and the colonial period, analysis of revolutionary movements and contemporary social economic problems of the new nations of the region. 10:30-12:00.

220. Minority Peoples of the United States
(3) II

Getty

History, present status, and problems of racial and cultural minorities in the United States; American Indian, Negro, Oriental, Spanish-American, and Jewish groups. P, 1a-1b or Sociology 81. (Identical with Sociology 220.) 7:00-8:30.

234as-234bs. Indians of the Southwest (3-3) I-II Tanner-Getty

A consideration of the history, arts and crafts, economic and social institutions, religion, and mythology of the present-day Indians of the Southwest. This course may not be substituted for any required course in the major in Anthropology. Credit will not be allowed for both 234as-234bs and 230a-230b P, upper-division standing and consent of the instructor. Prerequisite for graduate credit, 12 units in Anthropology or Education. 10:30-12:00.

320s. Advanced Field Courses in Archaeology
(6) I-II

Haury, Danson

Advanced problems in field techniques and interpretation. Students will be expected to undertake independent research. Open to students of graduate standing who have had 180s or an equivalent field course. June 15 to August 10. Enrollment limited. For detailed information write to Dr. Emil W. Haury, Department of Anthropology.

ART

Professor Scott

Assistant Professors Quinn, Grossman

Visiting Lecturer Peck

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- 6a-6b. Drawing (2-2) I, II Scott-Quinn
 Elementary course in representational drawing and expressive pictorial design. 6L. P, 4a-4b. Fee \$1 each semester. 7:00-10:00.
- 55a-55b. Painting I. (2-2) I, II Scott-Quinn
 Elementary course in pictorial organization and in methods and techniques of oil painting. 6L. P, 54a-54b. Fee \$1 each semester. 7:00-10:00.
- 102a-102b. Art in the Elementary School (3-3) I-II Grossman
 (Identical with Education 102a-102b) 8:50-10:20.
199. Special Problems (1 to 4) I, II Staff
 Hours to be arranged.
- 210b. History of Modern Art (3) I Scott
 Analytic study of the modern schools of art in Europe and America. 9:10-10:30.
219. History of Medieval Art (3) II Quinn
 The architecture, sculpture and pictorial arts in western Europe from the beginning of the Christian era through the Gothic. P, 7a-7b, and 6 units of history or art history. 10:30-12:00.
- 232as-232bs. Book Illustration (3) I Peck
 This course is designed for artists and art students interested in graphic arts for reproduction as used in books, brochures, etc. and who wish to enter the field of book illustration. It includes study and practice of the various techniques and mediums used in illustration, the designing of picture books and book jackets, and study of the various processes of reproduction. P, 12 units in art practice. 7:00-9:10.
- 240a,b. Crafts (2-2) I, II Grossman
 A practical acquaintance with the design and technical essentials of the various craft media. 6L. P, 50b. Fee \$5 each semester. 10:30-11:30.
- 255a,b,c,d. Painting II. (2) I, II Scott-Quinn
 Study of materials and composition in relation to the modern painter's problems. Exploration and specialization in water color, gouache, tempera, casein, encaustic, mixed techniques, and mural painting. 6L. P, 6b. Fee. \$3 each semester. 7:00-10:00.
- 280a,b,c,d. Painting III (2-4) I, II Scott-Quinn
 Advanced problems in painting. 6L to 12L. P, 55b or 155b. Fee. \$6 each semester. 7:00-10:00.
340. Problems in Applied Art (2-4) I, II Staff
 Hours to be arranged.
400. Research (1-4) I, II Staff
 Hours to be arranged.
410. Thesis (3-6) I, II Staff
 Hours to be arranged.

BOTANY

Assistant Professor Hoshaw

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1. General Botany (4) I Hoshaw
 An introduction to the structure, function, and development of the flowering seed plant. 3R, 3L. Fee, \$4. Lect. 8:10-9:10; Lab. 9:20-10:20.
2. Survey of the Plant Kingdom. (4) I, II Hoshaw
 A study of plant groups with emphasis upon life history and relationships. 3R, 3L. Fee, \$4. Lect. 8:10-9:10 Lab. 9:20-12:20.

- 214s. Plants of the Desert (2) II Hoshaw
A course designed to fill the needs of public school teachers and others who wish to become familiar with the common native and cultivated plants of the desert region. Techniques for the naming and identification of plants will be considered. Open for graduate credit to teachers who have as a prerequisite 8 semester hours of science. P, for graduate credit, 8 units of science and 12 units of education. Field trip fee, \$5. 7:00-8:00. Field trips to be arranged.

- 236s. Plants Useful to Man (2) I Hoshaw
A lecture-demonstration course for teachers and others desiring information on various plants and their uses. Subjects discussed will include: foods and food plants, medicinal plants, plants and industry, plants used in textiles and other manufactures. P, 8 units of science. P, for graduate credit, 8 units of science and 12 units of education. 7:00-8:00.

BUSINESS ADMINISTRATION

Dean Brown

Professors Howard (Head of the Department), Herrick, Strickler, Hudson, Call

Associate Professor Denton

Assistant Professors Bogart, Myers, Roos

Instructors McCoy, Wilson

Lecturer Parnell

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6. Introduction to Business (3) II Wilson
A survey of the fundamental characteristics, functions, and problems of modern business. Not open to those with credit in 271a-271b. 10:30-12:00.
11. Economic Geography (3) I Herrick
Geographic fundamentals; distribution and use of the world's raw materials; the relationship between changes in world geography and current economic problems. Fee \$1. 10:30-12:00.
14. Geography for Teachers. (2) II Wilson
A survey of geographic principles and basic descriptive materials of use to elementary school teachers. May not be substituted for B.A. II. (For non-BPA students only). 8:10-9:10.
- 31a-31b. Principles of Accounting (4-4) I-II Myers
Accounting for sole proprietorship, partnership, and corporations. 31a and 31b are offered each semester. 3R, 3L. Fee 50 cents each semester. 8:50-10:20; Lab. 1:40-4:30 M.W.F.
32. Introduction to Accounting (3) I Bogart
Background and mechanism of accounting; emphasis on industrial and cost accounting. Primarily for student in engineering; may not be taken by student for whom BA 21a is required. 8:50-10:20.
80. Fundamentals of Real Estate (3) I Denton
Basic principles of real estate with elementary discussion of title and transfer, value, liens, financing, taxes and zoning or real estate. Not open to freshmen. 10:30-12:00.
- 131a-131b. Intermediate Accounting (3-3) I-II Howard-Bogart
Fundamental processes of accounting; form and content of balance sheets and income statements; valuation theory and practices; problems of accounting for liabilities, capital stock, surplus, and reserves of corporate enterprises; income determination, analysis and interpretation of financial statements. P, 31b. 8:50-10:20.
151. General Insurance (3) II Roos
Principles and practices of various kinds of insurance, including life, property, casualty, and suretyship. Intended for those seeking a general knowledge of insurance. 10:30-12:00.
- 220a-220b. Business Law (3-3) I-II Parnell-Strickler
22a: Introduction to sources of commercial law, with emphasis on contracts, property rights, and remedies. 220b: Negotiable instruments, credit instruments, and sales; law of the business unit, agency, partnership, and corporation. P, 31b, Economics 1b or 2b. Not open to students who have completed 6 or more units of law. 220a. and 220b are offered both semesters. 7:00-8:30.

- 252a. Personal Insurance (2) II Roos
 Primary consideration is given to individual life insurance but accident and health, total permanent disability, hospital and medical expense and various employee benefit plans, such as group life and retirement annuities are also treated. P, 31b, Econ. 1b or 2b. 7:00-8:00.
255. Statistical Methods in Business (4) I Hudson
 A non-mathematical approach to methods of statistical synthesis and analysis; interpretation of results secured by use of such methods. 3R, 3L. P, Mathematics 11, 20 or 69a. Fee, \$1. 10:30-12:00, Lab. 1:40-4:30 M.W.F.
261. Marketing Principles and Problems (3) II McCoy
 Marketing methods, institutions, functions and policies; markets, planning marketing activities. P, 31b, Econ. 1b or 2b. 10:30-12:00.
263. Principles and Methods of Retailing. (3) II Call
 Organization, management, and operation of retail enterprises. P, 261. 10:30-12:00.
- 271a-271b. Business Organization and Management (3-3) I-II Call-Brown
 Analysis of underlying principles of sound organization and management with applicability to business; mechanisms and methods required for administrative and managerial control. P, 31b Economics 1b or 2b. 8:50-10:20.
- 314a. Area Surveys (2) I Herrick
 The physical, economic, political and cultural aspects of the geography of the following region: The Far East. 7:00-8:00.

CHEMISTRY

Professors Roberts (Head of the Department), Rhodes
 Associate Professor Seeley
 Instructor Kelley

- 2a-2b. General Chemistry (4-4) I-II Roberts-Rhodes
 For students with one credit of high school chemistry (see also Chemistry 5). Students with credit for 2 years of high school math and 1 year of high school physics may be admitted to this course. 2a and 2b are offered each semester. 3R, 3L. Fee, \$7 each semester. Lect. 7:40-9:10; Lab. 9:20-12:20 M.W.F.
- 140a-140b. General Organic Chemistry (4-4) I-II Seeley-Kelley
 General principles of organic chemistry, accompanied by laboratory preparation of organic compounds. 3R, 3L. P, 1b, 2b, or 5. Fee \$1 each semester. Lect. 7:40-9:10, Lab. 9:20-12:20 M.W.F.

CIVIL ENGINEERING

Associate Professor Neff

- 112a. Analytical Mechanics-Statics (3) I Neff
 For College of Mines students. P, Mathematics 79a, 95a, and Physics 10a. 7:00-8:30 M.F., 7:00-8:00 S.
- 112b. Analytical Mechanical-Dynamics (3) II Neff
 P, 112a, Mathematics 95b or 79b. 8:50-10:20 M-F, 8:10-9:10.
114. Mechanics of Materials. (3) I Staff
 Analysis and computation of stresses and strains in bodies subjected to tension, compression, and shear; equation of elastic curve; deflections in beams, column formulas and design. P, 112a or 113, Physics 10a, Mathematics 79b or 95b. 7:00-8:30 M-F; 7:00-8:00 S.

DRAMATIC ARTS

Professor Marroney (Head of Department)

227as-227bs. Problems of Stage Production Procedures:

The School Play (3-3) I-II

Marroney

Procedures in handling the visual elements of play production, the theory of scene design, scene construction, scene painting, stage lighting, costumes, make-up, properties, and stage effects. Open to teachers. 8:50-10:20.

235as-235bs. Problems of Dramatic Arts in Public Schools (2-2) I-II

Marroney

Problems of elementary and high school teachers in planning and producing dramatic programs, assemblies and holiday events for special occasions. P, senior or graduate standing with 12 units of education, including 129 or 139; or senior or graduate standing in the Department of Dramatic Arts. 10:30-11:30.

ECONOMICS

Professors Gray (Head of the Department), Hudson

Instructor Boland

Visiting Lecturer Palmer

1a-1b. Introduction to Economics (3-3) I-II

Boland-Palmer

1a: A study of economic principles. 1b: The application of methods of reasoning and principles to the actual problems of economic life. 1a and 1b are offered each semester. 7:00-8:30.

205. Labor Problems and Trade Unionism (3) I

Gray

The labor movement; problems and risks of wage-earners in modern economic society; structural and functional types of unions; union policies and practices; unions and the law. P, 1b or 2b. 10:30-12:00.

245. Public Finance (3) II

Hudson

Public expenditures; taxation; public debt. P, 1b or 2b. 8:50-10:20.

248. Money and Banking (3) I

Boland

A comparison of various standards of value; the nature of money and credit, the essential functions of commercial banks and the federal reserve system; foreign exchange and the Monetary Fund and International Bank. P, 1b or 2b. 8:50-10:20.

291. Intermediate Economic Theory (3) II

Palmer

Value and distribution. P, 1b or 2b. 8:50-10:20.

292. Economic Investigation and Reports (2) I, II

Gray-Hudson

Methods of locating, classifying, and evaluating data, and writing a report on the findings. P, 1b or 2b, senior standing. Hours to be arranged.

EDUCATION

Professors Kelley, Larson, Muir

Associate Professors Crowell, Merritt

Assistant Professors Grossman, Shafer, Smith, Syverson, Rucker, Danielson, Slothower, Lowe, Johnston

Instructor Logan

Visiting Lecturers Ganoung, Shelley

102a-102b. Art in the Elementary School (3-3) I-II

Grossman

(Identical with Art 102a-102b) Fee \$1. 8:50-10:20.

151. Educational Psychology. (3) I

Shafer

The study of the learning process with attention given to motivation, guidance, and control of children of school age. P, Psychology 1a. 1:00-2:30.

- 203s. The Exceptional Child in the Regular Classroom (3) II Smith
The fundamentals of special education for the classroom teacher. How to discover the exceptional child. The causes, prevention, and treatment of physical and mental handicaps in children. Handling the mentally gifted children and those who are behavior problems. 7:00-8:30.
- 206s. The Arts in the Classroom (2-4) I Logan
Consideration of the ways in which the teaching of the Fine Arts enriches the living of elementary-school children. Direct classroom experiences and teaching techniques for teachers to observe through close contact with children in demonstration class. An analysis of methods used in developing original expression is an important aspect of this workshop. P. 102 or Art 176. 9:00-1:00. June 11-30.
211. History of Education (3) I Kelley
A general survey of the educational system of the leading foreign nations and an evaluation of modern tendencies. 1:00-2:30.
212. History of Education in the United States (3) II Kelley
The development of our educational system from colonial foundations to the present. 8:50-10:20.
217. Visual and Auditory Aids in Teaching (3) I Shelley
Use and management of motion pictures, stereoscopes, slides, charts, radio programs, blackboard techniques; actual instruction in the use of equipment. P. 151, 224, 225, 226, 227 or 234 recommended. 7:00-8:30.
224. The Teaching of Reading (3) II Syverson
A basic course in elementary curriculum and methods involving the functions, organization of materials, and methods of teaching reading and literature, P. 151 or CR. 8:50-10:20.
225. The Teaching of Language Arts (3) I Syverson
A basic course in elementary curriculum and methods involving the functions, organization of materials, and methods of teaching the language arts of spelling, handwriting, speaking, and written communication. P. 151 or CR. 7:00-8:30.
226. The Teaching of Arithmetic (3) I Rucker
A basic course in elementary curriculum and methods involving the functions, organization of materials, and methods of teaching arithmetic. P. 151 or CR. 10:30-12:00.
227. The Teaching of Social Studies and Science. (3) II Rucker
A basic course in elementary curriculum and methods involving the functions, organization of materials, and methods of teaching the social studies and the elementary sciences. P. 151 or CR. 1:00-2:30.
231. The High School as an Institution. (3) I Crowell
Historical development of the high school; aims, functions, and outcomes; the curriculum: relation to other divisions of the school system. P. 3 units in education. 7:00-8:30.
234. General High School Methods. (3) II Crowell
Teaching techniques based on principles of educational psychology. P. 151, 231 or CR. 1:00-2:30.
240. Principles and Techniques of Guidance (3) I Shafer
Introductory course for those who expect to specialize in student guidance or for the teacher to whom some functions of guidance are assigned. P. 231, Psychology 1a. 8:50-10:20.
241. Counseling Techniques. (3) II Danielson
The functions and techniques of educational and vocational counseling. P. 240. 7:00-8:30.
243. Testing Instruments for School Counselors. (3) I Danielson
Study, analysis and evaluation of standardized tests used in counseling; quantitative aspects of the guidance program; use of results of specific tests. P. 257, Psychology 250 recommended. Fee, \$2. 1:00-2:30.

250. Mental Hygiene (3) I Slothower
The principles of mental hygiene and their application to personal and social needs. P, 151. 1:00-2:30.
252. Psychology of Elementary Education (2) II Merritt
Application of the principles of psychology and of the laws of learning to the several subjects of the curriculum. P, 151, Psychology 1a. 1:00-2:00.
254. Statistical Methods in Education (3) I Merritt
Elementary methods of dealing quantitatively with school data and data resulting from experimental investigations. P, 9 units in education or psychology. 7:00-8:30.
- 255s. Problems in the Teaching of the Mentally Retarded (3) II Ganoung
Problems created by the limitations and potentialities of the mentally retarded and the development of a curriculum to meet their specific needs will be discussed and demonstrated. Methods and techniques of determining subject matter for the mentally handicapped will be explored. Designed to train teachers and prospective teachers of mentally retarded children. 7:00-8:30.
- 256s. The Gifted Child in the Classroom (3) I Smith
The relationship of the problem presented by the gifted child to the total program of the classroom and of the school. Basic theories and techniques of teaching the gifted child will be discussed, evaluated, and applied. 1:00 to 2:30.
257. Educational Tests and Measurements (3) I, II Smith, Shafer
The principles underlying the making and using of informal objective examinations; practice in making and scoring such examinations; surveys of standard tests in the respective fields. P, 151. Fee \$1.50. 1st term: 8:50-10:20; 2nd term: 10:30-12:00.
- 260s. Methods and Materials in Nature Study (4) I Lowe
Identification, habits, and habitats of the common harmless and poisonous animals, and plants in the Southwest, primarily Arizona. Methods of collecting, maintaining, and studying native plants and animals for the classroom, with interpretation of plants and animal environmental relationships. Fee, \$1.50. 10:30-11:30; demonstration period to be arranged.
- 261s. Public Relations for Teachers and Administrators (3) II Johnston
The purposes, necessary organization, agencies, and criteria of good public relations; designed to develop the knowledge and techniques necessary for an effective program of public relations. P, 6 units in education. 1:00-2:30.
276. The Teaching of Reading and Language Arts in the Kindergarten-Primary Grades (3) I Syverson
A basic course in Kindergarten and early elementary curriculum and methods involving techniques and materials for the introduction of reading, spelling, handwriting, speaking, and written communication at the kindergarten-primary level. P, 151. 10:30-12:00.
277. Theories and Methods of Play Education (3) II Syverson
This course will present a child-oriented philosophy of play education. It will include concrete suggestions for play experiences, together with new materials for teacher and child use. Its scope will include a developmental program through the early elementary grades. P, 151. Satisfies requirement for Play Education of the Kindergarten-Primary Certificate. 1:00-2:30.
- 292s. Conservation Workshop (4) II Lowe
The Conservation Workshop is designed to help teachers, supervisors, and administrators gain an understanding and appreciation of Arizona's natural resources, and the necessity of their conservation to meet social and economic needs. Fee, \$5. 8:10-9:10. Lab to be arranged.
301. Current Problems in Education (2) I Larson
A systematic study of the problems found in current educational literature, research studies, school reports, and similar material. For seniors and graduate students. Prerequisite for seniors, 6 units in education as a major or minor. 1:00-2:00.

306. Comparative Education (3) II Kelley
A study of national systems of education and the development of underlying philosophies and practices. Contemporary movements in the educational systems of western European countries with special reference to similar movements in the United States and certain Latin American countries. 10:30-12:00.
310. Philosophy of Education (3) II Slothower
A critical study of the data which recent scientific research has furnished with reference to the nature of the learning process; determination of the leading objectives in teaching. Open to seniors. P, for seniors, 6 units in education. 7:00-8:30.
314. Arizona State School System and School Law (3) II Johnston
Public education in Arizona; the code relating to schools and a comparison of this code with other state codes and ideal codes. Open to seniors P, for seniors, 6 units in education. 10:30-12:00.
- 316s. Administration and Supervision of Audio-Visual Aids (2) I Shelley
Supervision and administration of the audio-visual program in the individual school and in city and district systems. Content includes budgeting, selection and evaluation, distribution and housing of materials, qualifications and duties of staff, school plant requirements, and measures for appraising adequacy and effectiveness of program. Prerequisite, 12 units in education. 10:30-12:00.
321. Remedial Techniques in Teaching (2) II Ganoung
Designed to aid teachers in recognizing learning difficulties and discovering their causes; ways and means for correcting different types of difficulty at all grade levels. Demonstrations where possible. Open to seniors. P, senior or graduate standing and one or more courses in elementary-school methods and curriculum. Fee, \$1. 9:20-10:20.
323. The Elementary-School Curriculum (3) I Kelley
The elementary-school curriculum and its relationships; basic theories and techniques of curriculum construction discussed, evaluated, and applied. 10:30-12:00.
327. Elementary-School Administration and Supervision (3) II Rucker
The administrative and supervisory problems of the principal of an elementary school or of a small school system. Special emphasis will be placed on teacher participation in planning and administering the educational program. 8:50-10:20.
328. Observation and Study of Exceptional Children (3) II Smith
A course designed to study specific types of exceptional children, their physical limitations, causes and effects, personality factors, psychological implications and specific educational approaches to their individual problems. Field trips and class observation of various types of exceptional children will be arranged. 8:50-10:20.
329. Investigation in Elementary Education (2) I Rucker
A critical study and evaluation of the investigations and experimental evidence basic to the aims and instructional practices of the elementary school. P, 9 units in education. 7:00-8:00.
333. Extra-Classroom Activities. (3) I Slothower
The purposes of extra-classroom activities; technique of administration. Open to seniors. P, for seniors, 231, 234. 8:50-10:20.
334. The Teaching of English Composition (2) II Muir
An introduction to the problems and procedures in composition courses, with emphasis on Freshman English and attention to secondary school courses and to the relationship between high school and college English. Use of college freshman classes for observation and practical work. (Identical with English 334). 10:30-11:30.
336. High-School Administration (3) I Crowell
The problems of organization and administration of the modern high school. Open to seniors. P, for seniors, 231. 10:30-12:00.

337. Secondary-School Supervision (3) II Crowell
A comprehensive treatment of the organization used, the relationships involved, and the techniques developed for the effective supervision of modern high-school instruction. Open to seniors. P, for seniors, 231 and 234. 8:50-10:20.
338. Curriculum Construction. (3) I Johnston
The curriculum and its relationships; basic theories and techniques of curriculum construction discussed, evaluated, and applied. P, 231. 7:00-8:30.
343. Organization and Administration of Guidance Programs (2) I Danielson
An analysis and evaluation of the administrative organization for guidance and of the techniques for counseling of pupils. Open to seniors. P, for seniors 6 units in education. 9:20-10:20.
344. Problems in Guidance (2) II Danielson
Review of current literature in guidance. Individual or group investigations related to guidance practices. P, 240, 241, 254. 10:30-11:30.
354. Advanced Statistical Methods in Education (3) II Merritt
Further methods of dealing quantitatively with educational data. Required of all doctoral students in education. P, 254 or equivalent. 10:30-12:00.
360. General School Administration. (3) I Johnston
The organization, administration, and supervision of city and town school systems. Open to seniors. P, for seniors, 6 units in education. 10:30-12:00.
371. School Finance (3) I Larson
Sources and distribution of school funds; accounting and reports. Open to seniors. P, for seniors, 6 units in education. 8:50-10:20.
373. Planning and Maintenance of School Buildings (3) II Shafer
A comprehensive treatment of the problems involved in the planning, construction and maintenance of school buildings. An opportunity will be afforded to visit and evaluate some of the newer and more adequate school buildings. P, 12 hours in education. 7:00-8:30.
376. Supervision: Its Organization and Administration (3) II Slothower
Qualifications and preparation of supervisors; essential activities in supervision; organization and administration. Open to seniors. P, for seniors. 6 units in education. 1:00-2:30.
390. Techniques in Educational Research (2) I Merritt
Required as part of the graduate major or minor in education. Open to seniors. P, for seniors, 6 units education. 9:20-10:20.
399. Seminar I Staff
3:30-4:20 Th. (no credit).

ELECTRICAL ENGINEERING

Professor Robert A. Hessemmer
Assistant Professor Manhart
Instructor Nordstrom

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50. Physical Basic for Electrical Engineering (4) I Manhart
A qualitative discussion of the electrical, magnetic, and dielectric properties of materials and their practical applications in electrical and electronic components. 4R. P, Math. 95a, Phy. 10a. Hours to be arranged.
120. Theory of Linear Circuits (4) II Manhart
Basic Circuit analysis treating DC and steady state AC circuits as particular cases of the general transient solution; coupled circuits. P, 50; Math. 201a or CR. Hours to be arranged.
121. Basic Circuits Laboratory (1) II Manhart
P, 120 or CR. Fee \$5. Hours to be arranged.

126aR-126bR. Elements of Electrical Engineering

(2-2) I-II

Nordstrom

Direct and alternating current circuits and machinery. For students in non-electrical branches of engineering. P, Physics 10b, Math. 95b. Hours to be arranged.

126aL-126bL. Electrical Laboratory (1-1) I-II

Nordstrom

Illustrating 126aR-126bR. P, Physics 10b, Mathematics 95b. Fee \$3 each semester. Hours to be arranged.

334s. Transistor Electronics (3) I

Hessemer

Theory of operation of semi-conductor devices; reproduction by equivalent techniques; application to basic transistor circuitry. Hours to be arranged.

352s. Antenna Theory (3) II

Hessemer

Study of the physical principles underlying antenna behavior, design, and experimentation. The basic principle will be applied to antennas of all frequencies. Hours to be arranged.

400. Research (2-5) I, II

Staff

Hours to be arranged.

410. Thesis (3-8) I, II

Staff

Hours to be arranged.

ENGLISH

Professors Powell (Head of the Department), Muir

Associate Professor Gegenheimer

Assistant Professors Irmscher, Huggins, Ramsey, Ketcham

Instructors Kiefer, Kay, Loomis, McNiece, Senob, Funston, Datz

Visiting Lecturer Peck

1a-1b. Freshman Composition (3-3) I-II

The study and practice of good writing, with emphasis on exposition; short and long themes, collateral reading, conferences. Required of all freshmen. 1a and 1b are offered each semester. For the conditions under which exemption from 1a may be granted, 1b will be offered both terms.

1st term:	1a. Section A. 7:00-8:30	Kay
	Section B. 7:00-8:30	Loomis
	Section C. 10:30-12:00	McNiece
1b. Section A. 7:00-8:30	Ketcham	
	Section B. 10:30-12:00	Senob
2nd term:	1b. Section A. 7:00-8:30	Funston
	Section B. 10:30-12:00	Datz

23. Business English (3) I

Ramsey

Primarily for students in business administration P, 1b. 10:30-12:00.

223s. Writing for Children and Young People

(2) I

Peck

The art of writing for juniors; for young children, the "middle between," and teen-age groups. Lectures, class discussions, and criticisms and evaluations of student manuscripts. 9:20-10:20.

224s. Literature of the Southwest (2) I

Huggins

The last frontier in fact and fiction; the accounts of early travelers, the stockwestern, the true regional novel poetry. Useful bibliography. 11:40- 12:40.

226a-226b. Survey of English Literature

(3-3) I-II

Huggins-Kiefer

Required of all majors and teaching minors. 126a is not prerequisite to 126b. 8:50-10:20.

228. Victorian Poets (3) I

Powell

Tennyson, Browning, and their contemporaries. 10:30-12:00.

231a-231b. Shakespeare (3-3) I-II

Irmscher

231a: Introductory course. The life and times of Shakespeare; rapid reading of several representative plays. 231b. A careful study of three plays. 7:00-8:30.

334. The Teaching of English Composition (2) II Muir
An introduction to the problems and procedures in composition courses, with emphasis on Freshman English and attention to secondary school courses and to the relationship between high school and college English. Use of college freshman classes for observation and practical work. (Identical with Education 334). 10:30-11:30.
338. Old English (3) II Muir
The language, with reading of representative prose and poetry. Required of all graduate English majors. 8:50-10:20.
350. Bibliography (2) I Gegenheimer
Aims, methods, and history of literary scholarship; bibliographical tools for the study of literature; thesis style and form. Required of all graduate English majors. 11:40-12:40.

GEOLOGY

Assistant Professor DuBois
Instructor Peirce

- 1a-1b. Elementary Geology (4-4) I-II Peirce
Fundamentals of physical and historical geology. 3R, 3L, which includes 2 field trips. Fee, \$4 each semester. 8:50-10:20. Lab. 1:40-4:30 M.T.Th.
- 212s. Field Geology (Summer Camp) (3) DuBois
Field methods of geologic mapping and the preparation of geologic reports. Laboratory comprises daily field and laboratory work from June 11 to June 27. P, 114, 121, Civil Engineering 52. Fee, \$90 plus \$2.50 registration fee for previously registered University of Arizona students or \$22.50 for non-registered students. Students required to report to camp or nearest rail or bus station. Enrollment limited. For detailed information write to Dr. Frederic W. Galbraith, Department of Geology.
- 213s. Field Geology (Summer Camp) (3) DuBois
Field methods of geologic mapping and the preparation of geologic reports. Laboratory comprises daily field and laboratory work from June 28 to July 14, and side trips to Grand Canyon, Canyon de Chelly and Buell Park. P, 212s. Fee, \$90 plus \$2.50 registration fee for previously registered University of Arizona students or \$22.50 for non-registered students. Students required to report to camp or nearest rail or bus station. Enrollment limited. For detailed information write to Dr. Frederic W. Galbraith, Department of Geology.

GERMAN

Instructor Jardine

- 3a-3b. Intermediate German (3-3) I-II Jardine
8:10-9:10 and 10:30-11:30 (Meets twice daily).
- 108a-108b. Advanced Readings in Science (2-2) I-II Jardine
P, 12 units of German. 108a is not a prerequisite for 108b. Hours to be arranged.

HEALTH EDUCATION

Assistant Professor Bellows

71. School and Community Health (2-2) I-II Bellows
Relationship of the teacher to health problems in the school and to community health agencies. Meets state school law certification requirements. P, sophomore standing. Open to students in all colleges. A required course of all students preparing to teach, 11:40-12:40.
- 293s. Safety Education in the Public Schools (2) I Bellows
Introduces the safety problem in the United States. Includes consideration of problems relative to the administration of safety programs in schools, communities, recreation and industry. Endeavors to provide students with essential information and materials relative to the conduct of research as an integral part of a safety program. 9:20-10:20.

HISTORY AND POLITICAL SCIENCE

Professor Ewing

Assistant Professors Beatson, Gomez

Instructor Mann

2bs. History of the Americas (2) II Ewing

A broad survey of political, economic, and social development of North and South America from the Columbian discovery to the present time. 2a is not prerequisite to 2b. 8:10-9:10.

214s. England Under the Tudors and Stuarts (1485-1714) (2) I Beatson

Study of the English political, social, and institutional developments from Henry VII through Queen Anne. Special emphasis is given to constitutional developments, rise of British imperialism, and development of the Anglican Church. Prerequisite: junior standing. 10:30-11:30.

222. The Latin-American Republics (2) II Ewing

Progress toward stability, prosperity, and international recognition; geography and resources; social, political, and financial situation. 10:30-11:30.

225s. History of the Old South (2) I Beatson

Climate and geography, economic basis of Virginia and the South's "peculiar institution." Movement for independence in the southern colonies. Period of southern dominance. Emergence of the cotton kingdom. Critical analysis of the institution of Negro slavery as it existed in the South. History of the secession movement. 8:10-9:10.

231s. History of Mexico (6) I Ewing

Mexico from about 1517 to the present time. Two weeks of study at the University of Arizona; three weeks lecture tour of Mexico. P, 6 units of history or one year of Spanish. Enrollment limited. For detailed information write to Dr. Russell C. Ewing, Department of History and Political Science. 8:10-10:10.

311. Methods of Research in History and Political Science (1) I Staff

The technique and methods of research work. Supplements the seminar. Required of all graduate majors. Hours to be arranged.

312. Historiography (1) I Staff

A survey of historical writing; great historians of the past and present. Open to seniors. Required of all graduate majors. Hours to be arranged.

410. Thesis (2-8) I-II Staff

Hours to be arranged.

51as. American Government (2) II Mann

A general survey of the constitutional bases, organization, and functioning of American national, state, and local government; recent and current developments and trends. 51a is not prerequisite to 51b. 7:00-8:00.

100s. National and State Constitutions (2) I, II Mann-Gomez

Meets the state requirements for a teacher's certificate. For seniors intending to teach. Not open to students with credit in 51a or 51b. 7:00-8:00.

271s. Introduction to Public Administration (2) I Mann

Development, organization, and functions of the national administrative agencies; merit system of appointment. 9:20-10:20.

292s. American Political Thought (2) II Gomez

American political ideas from Colonial times to the present. Prerequisite 51a-51b. 9:20-10:20.

HOME ECONOMICS

Assistant Professor Allen

257s. Evaluation of Techniques in Clothing

Construction (2) I

Allen

A course in new methods of clothing construction; to provide a basis for selecting construction techniques for various age groups; to give attention to problems of new fabrics; to assemble materials to aid in teaching of the subject. 10:30-11:30 M.W. 10:30-12:30 T.Th.F.

260s. Problems in Home Furnishings and

Decoration (2) I

Allen

A course planned to give practical experience in selection and construction of items for the improvement of physical surroundings of home and classroom; modern sewing machines and attachments will be demonstrated, and used in the construction of window treatments, slip covers, simple upholstery, wall decorations, lamp shades and table coverings. 1:30-2:30 T.F.; 1:30-3:30 M.W.Th.

HUMANITIES

Professors Percy, Schmitz

Associate Professor Gegenheimer

Assistant Professors Beck, Beattie

Introduction to Humanities (4-4) I-II

The cultural life of the Western World as it developed in literature, art, and philosophy from the Greeks to the present. Lectures and discussion. Required of sophomores in Business Administration and Liberal Arts. Fee \$1 each term.

1st term: Section A. 8:10-9:10 and 9:20-10:20Beck
 Section B. 8:10-9:10 and 9:20-10:20Gegenheimer
 Section C. 8:10-9:10 and 9:20-10:20Percy
 2nd term: Section A. 8:10-9:10 and 9:20-10:20Beattie
 Section B. 8:10-9:10 and 9:20-10:20Schmitz

Each section meets twice daily.

JOURNALISM

106a. Radio and Television Writing (2) I

Markland

The writing of all types of radio and television copy, with emphasis on dramatic scripts, music continuity, and commercial continuity. Laboratory use of radio and TV studios and movie film equipment. P, Speech 54. (Identical with Speech 106a) 10:30-11:30.

LIBRARY SCIENCE

Visiting Lecturers Livsey, Keatinge

201a. Literature for Children (2) I

Livsey

The history and development of children's literature with emphasis throughout on standards of evaluation and reading interest. Reading and analysis of books, particularly modern publications, for student interest, ability, and needs, up to the junior high school level. Emphasis will be placed on literature for the elementary school child. P, 151, and 6 units in English or American Literature. 8:10-9:10; 10:30-11:30.

201b. Literature for Children (2) I

Livsey

The history and development of children's literature with emphasis throughout on standards of evaluation and reading interest. Reading and analysis of books, particularly modern publications for student interest, ability, and needs up to the junior high school level. Emphasis will be placed on literature for high school pupils. P, 151 and 6 units in English or American Literature. 8:10-9:10; 10:30-11:30.

- 284s. Book Selections for School Libraries (3) II Keatinge
Selection, evaluation, and acquisition of library books and materials, and generally used methods of acquisition in school and public libraries. Evaluation of general reference works, indexes, bibliographies, and selected titles in subject fields. 10:30-12:00.
- 287s. Cataloguing and Classification (3) II Keatinge
Purpose and principles of cataloguing and classification. The card use, particularly in school libraries; weeding, maintenance, etc. 7:00-8:30.

MATHEMATICS

Professor Graesser (Head of the Department)
Associate Professor Webb
Assistant Professors Foster, Trifan, Lim
Instructors Steinbrenner, Karlin, Kenna, Strang

11. Intermediate Algebra (3) I Strang
Students offering more than 1 entrance unit in algebra do not receive credit for this course. Engineering and mining students receive $\frac{1}{2}$ entrance unit. P, 1 entrance unit in algebra. 10:30-12:00.
20. College Algebra (3) I, II Steinbrenner, Kenna
P, $1\frac{1}{2}$ entrance units in algebra or 11. 10:30-12:00.
24. Plane Trigonometry (2) I, II
Trigonometric function, trigonometric identities, solution of trigonometric equations, solutions of right and oblique triangles. P, $1\frac{1}{2}$ entrance units in algebra and 1 entrance unit in geometry. 7:00-8:00.
1st term: Section A. Foster
 Section B. Steinbrenner
2nd term: Section B. Kenna
25. Analytic Geometry (4) I, II Karlin, Lim
Cartesian and polar co-ordinates, lines and planes, conics, higher planes curves, quadric surfaces. P, 20 or 22, 24. 1st term: 8:10-9:10 and 10:30-11:30; 2nd term: 7:00-8:00 and 9:20-10:20. (Meets twice daily.)
- 69a. Mathematics of Commerce (2) I Strang
Elementary algebra and logarithms with applications to discount, simple and compound interest, annuities certain, and commercial problems. P, 1 entrance unit in algebra. Credit is allowed for only one of the following courses: 20, 22, 69a, 70. 7:00-8:00.
- 79a-79b. Analytic Geometry and Calculus (5) I-II Trifan-Staff
P, 20, 24. 8:10-9:10 and 10:30-11:30. (Meets twice daily).
81. Slide Rule (1) I Staff
Theory and practice of the slide rule including the trigonometric scales and the log-log scales. P, 24 or 70; or 20 and concurrent registration in 24; or 69a and concurrent registration in 24; or $\frac{1}{2}$ entrance unit in trigonometry. 9:20-10:20 M.W.F.
- 95a-95b. Calculus (4-4) I-II Graesser-Webb
Methods of differentiation and integration with applications to geometry, physics and mechanics; series. P, 25. 8:10-9:10 and 10:30-11:30. (Meets twice daily).
- 201a. Differential Equations (3) I Foster
P, 79b or 95b. 10:30-12:00.

MECHANICAL ENGINEERING

Professor Marcoux

- 118a. Thermodynamics (4) I Marcoux
P, Physics 10a, Chemistry 1b. Hours to be arranged.

MUSIC

Professors Peterson, Bloom, Fain
Associate Professors Bakkegard, Lee
Assistant Professors Sammarco, Anthony, Conley
Visiting Lecturer Shelley

- 1a. Music Appreciation (2) I, II Bloom, Sammarco
For non-majors with no technical knowledge. Music of the various periods studied in relationship to other arts; development of the critical attitude through aural training. 9:20-10:20.
- 10-C. Choral Society (1) I Bloom
Open to all students. No previous musical experience necessary. A varied repertory. Fee, \$1. 11:40-12:40.
- 25a. Piano Class (1) I Anthony
Beginning instruction; adult beginners text with supplementary materials; transposition, accompaniment patterns, original compositions, improvisation, sight reading, scale forms. 7:00-8:00.
- 26a. Voice Class (1-1) I, II Bloom, Conley
Beginning instruction. Introduction and development of basic skills, breathing, diction, tone rhythm, sight-singing, repertory songs in English. Practical training in singing without specialization. 8:10-9:10.
31. Fundamentals of Music (2-2) I, II Bakkegard, Sammarco
Rudiments of music theory and basic musical skills for elementary classroom teachers. Classes sectionized according to student's previous musical experience. 10:30-11:30.
205. Music of the Twentieth Century (2) I Anthony
Styles and trends in contemporary music with emphasis on American composers. P, 12 units in music including 1a-1b or 6a-6b. 11:40-12:40.
- 270s. General Music-Education Workshop (2) I
Offered June 11-22 only.
Enrichment of the musical experience through songs, recordings, piano, melody bells, chording instruments, and correlated units.
Section A. elementary 7:00-9:00 a.m. Shelley
Section B. secondary 3:00-5:00 p.m. Staff
272. Elementary School Music (3) I Bakkegard
The problems, technics and the observation of teaching music in the elementary grades. P, 31 and Educ. 151. 8:50-10:20.
- 273b. Music for Children (2) II Peterson
The study of the folk and historic background of materials which deal with the singing, listening and rhythmic activities of the music lesson. P, 171 or 272. 10:30-11:30.
- 274a. Instrumental Materials and Problems in the
School Music Program (2) I Lee
Prerequisite, 171. Hours to be arranged.
376. Modern Tendencies in Music Education
(2) II Peterson
Critique on trend in objectives and articulation of current publications and practice in the field. P, 171, or 272, Education 197m. 8:10-9:10.
399. Seminar (1) II Peterson
Hours to be arranged.
400. Research (2-4) I, II Staff
Hours to be arranged.
- (Applied Music)
(Hours to be arranged)
- Band Instruments, Individual Instruction (1) I, II Staff-Peterson
Piano, Individual Instruction (1) I, II Anthony-Sammarco
Strings, Individual Instruction (1) I, II Sammarco
Voice, Individual Instruction (1) I, II Conley

315. Problems in Applied Music and Ensembles
(1) I, II Staff
For students with graduate standing in music. Participation in ensembles and/or applied music. Special problems dealing with technics and literature. Presentation of a critique paper required of students participating in music ensembles. May be repeated for credit. Hours to be arranged.

PHARMACY

Professor Brewer (Head of the Department)

199. Special Problems (1-4) I, II Brewer
Fee, \$5. Hours to be arranged.
400. Research (1-5) I, II Brewer
Fee \$10. Hours to be arranged.
410. Thesis (1-8) I, II Brewer
Hours to be arranged.

PHILOSOPHY AND PSYCHOLOGY

Professor Simley

Associate Professors Bretall, Marquart

Assistant Professor Hurlbutt

Visiting Professor Kauffman

- 11a-11b. Introduction to Philosophy (3-3) I-II Hurlbutt-Bretall
Man's interpretation of the nature and meaning of reality, of conduct, and of his own thinking. 11a is offered both semesters. 1st term: 7:00-8:30; 2nd term: 10:30-12:00.
220. Philosophy of Conduct (3) I Hurlbutt
The meaning of moral values and responsibility; a critical study of historical philosophies of life. P, 3 units in philosophy other than 12a-12b. 8:50-10:20.
- 236s. Religions of the East (2) II Bretall
A comparative study of Hinduism, Jainism, Buddhism, Taoism, Confucianism, and Shinto. P, one course in philosophy other than 12a-12b. 8:10-9:10.
- 1a-1b. Elementary Psychology (3) I-II Kauffman-Simley
Fundamental principles of human behavior. Applications of principles are stressed. 8:50-10:20.
210. The Individual in the Group (3) I Kauffman
Theory and fact in social psychology. The psychological effects of membership and nonmembership in group situations. (Credit will not be available to any student for both this course and any other course in social psychology). P, 1a-1b or equivalent. 7:00-8:30.
213. Development of Human Behavior—Childhood (3) I Marquart
The principal changes in human beings from birth to adolescence. 10:30-12:00.
218. Abnormal Psychology (3) II Simley
Forms of mental deficiency and other deviations. P, 1a-1b. Fee \$3. 7:00-8:30.
- 251s. Individual Differences (2) I Marquart
An analysis of the differences between individuals, between traits within an individual, and between groups of individuals. The nature of the differences, their measurement, and their implications, P, one year of psychology. 8:10-9:10.

PHYSICAL EDUCATION FOR MEN

Associate Professors Cooper, Sancet
Assistant Professors Bellows, Svob

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- 20g. Beginning Swimming (1) I, II Svob, Sancet
9:20-10:20.
- 60a. Game Supervision and Officiating (2) I Cooper
Rules and mechanics of officiating and supervising athletic sports.
9:20-10:20.
62. Lifesaving (1) I Svob
Life saving techniques and water safety precautions. Qualified students are issued a Senior Red Cross Lifesaving certificate. P, 20g, 1R, 3L. 8:10-9:10.
65. Orientation in Physical Education (1) I Svob
A survey of the qualifications and training needed by students who plan to major in the field of P. E., Health, and Recreation. Required of P. E. majors and minors. 10:30-11:30.
70. First Aid (2) I Cooper
Instruction in First Aid Techniques leading to the Standard Red Cross Certificate, and to the Advanced Certificate for qualified students. Fee \$2. 8:10-9:10.
- 187s. Physical Education Programs in Secondary Schools (2) II Bellows
Purposes of physical education, testing and classification procedures; curriculum survey and construction; and the interrelationship of physical education to the intramural, health education, and sports programs. 9:20-10:20.
- 196s. Athletic Coaching—Baseball (2) II Sancet
Theory of coaching: strategy and tactics; batting, base running, offensive and defensive team play; rules and organized baseball. 7:00-8:00.

PHYSICAL EDUCATION FOR WOMEN

Assistant Professor Gatewood

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- 110sA. Elementary Swimming (1) I Gatewood
Teaching beginners to swim. Students registered in this course must also be registered in some course other than swimming. Physician's certificate required. Locker fee, \$2; deposit \$1. 11:40-12:40.
- 110sBC. Intermediate and Advanced Swimming (1) I Gatewood
Teaching swimming to others than beginners. Students registered in this course must also be registered in some course other than swimming. Physician's certificate required. Open to men and women. Locker fee, \$2; deposit, \$1. 10:30-11:30.
- 165s. Elementary-School Physical Education (2) I Gatewood
The organization and teaching of physical education activities for the elementary school. Games for the school playground, games of low organization, stunts, relays, and social games. Open to men and women. 8:10-9:10.

PHYSICS

Assistant Professor Becker
Instructor Davis

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- 2a-2b. Introductory Physics (4-4) I-II Becker-Davis
For students desiring a non-technical introductory course. P, 1 entrance unit in algebra and geometry. Fee, \$2 each term. 7:00-8:30. Lab. 8:30-11:30 M.W.F.
- 10a-10b. General Physics (5-5) I-II Becker-Davis
For students desiring an introductory course requiring the use of calculus. P, Mathematics 95a-95b. Fee \$4 each term. 7:00-8:30; Lab. 9:30-11:30 M.W.F.; Prob Recit. 8:30-11:30 T.Th. 8:30-9:30 M.W.F.

ROMANCE LANGUAGES

Professor Brooks (Head of the Department)
 Assistant Professors Wonder, Hammond
 Instructors Odenkirchen, Brown, Davis

FRENCH

- 3a-3b. Intermediate French (4-4) I-II Odenkirchen-Hammond
 Review grammar; composition, conversation, reading. P, 1b or 2
 years of high-school French. 8:10-9:10 and 10:30-11:30 (Meets twice
 daily).
199. Special Problems (2-4) I, II Staff
 Hours to be arranged.
400. Research (2-4) I, II Staff
 Hours to be arranged.

SPANISH

- 1a-1b. Elementary Spanish (4-4) I-II Wonder-Davis
 1a and 1b are offered each semester. In the case of students in the
 College of Liberal Arts, degree credit in 1a is allowed only after com-
 pletion of 1b. 7:00-8:00 and 9:20-10:20. (Meets twice daily).
 8:10-9:10 and 10:30-11:30. (Meets twice daily).
- 3a-3b. Intermediate Spanish (4-4) I-II Brooks-Brown
 Introduction to systematic syntax accompanied by reading of modern
 books. P, 1b or two years of high-school Spanish, or the equivalent.
 8:10-9:10 and 10:0-11:30. (Meets twice daily).
- 13a-13b. Elementary Conversation (2-2) I-II Wonder-Davis
 Conversational practice based on every day common activities and
 travel abroad. P, 3b or four years of high-school Spanish or the
 equivalent. 8:10-9:10.
- 14a-14b. Intermediate Composition and Correspondence
 (2-2) I-II Brooks-Brown
 A course in current idiomatic Spanish designed to develop proficiency
 in the practical use of the language. Translation into Spanish, review
 of grammar and elements of commercial correspondence. P, 3b or
 four years of high-school Spanish or the equivalent. 9:20-10:20.
199. Special Problems (1-4) I, II Staff
 Hours to be arranged.
400. Research (1-3) I, II Staff
 Hours to be arranged.
410. Thesis (2-4) I, II Staff
 Hours to be arranged.

SECRETARIAL STUDIES

Associate Professor Langen (Head of the Department)

7. Typing Review (1) I, II Langen
 For those with some knowledge of touch typing, but with
 speed of less than 15 words per minute. Not open to those with
 credit in 6. Fee, \$3. 1st term: 9:20-10:30; 2nd term: 10:30-11:30.
8. Advanced Typing (2) II Langen
 Designed to build superior typing speed and develop skill in forms
 of business communications. Not open to students who type less
 than 40 words per minute. 3R, 3L. P, 7 or two years of high-school
 typewriting. Fee, \$6. 9:20-10:20.

77. Adding-Calculating Machines Techniques

(2) I, II

Langen

Theory and operation of common adding and calculating machines; actual solution of simple problems illustrating the theory of machine calculation; development of a reasonable degree of skill. Fee, \$3. 1st term: 10:30-11:30; second term 8:10-9:10.

272s. Office Management and Control (2) I

Langen

Office management from the supervisory point of view. Analysis of functions of various office departments, their organization and management. Development and use of office manuals; selection, training, pay and promotion of office employees; controlling office expenses and measuring office efficiency; quality and quantity production standards. P, 9 hours of secretarial studies or business administration courses. 8:10-9:10.

SOCIOLOGY

Professor Klaiss

Associate Professor Mulligan

Instructor Hambenne

81. Introduction to Sociology (3) II

Hambenne

The basic concepts and principles of sociology; analysis of group behavior, social institutions, processes, and change. P, sophomore standing. 8:50-10:20.

84. Social Problems (3) I

Klaiss

Principal American social problems; crime, race, divorce, poverty, etc.; causes and methods of treatment. P, sophomore standing. 8:50-10:20.

100. Education for Marriage (3) I

Klaiss

A practical study of factors involved in courtship, selection, marital adjustments, parenthood. P, junior standing. (Does not apply on the sociology major.) 10:30-12:00.

241. Juvenile Delinquency (2) I

Mulligan

Extent, causes, and control of juvenile delinquency. P, 81 and either 287 or Psychology 15. 7:00-8:00.

280. Problems of American Youth (2) II

Mulligan

A study of the social world in which youth functions and the social forces and processes that affect young people in the United States today; the transition experience that bridges the gap between childhood and adulthood with emphasis on the importance of social experience in understanding the problems of youth. P, 81 and 84 or Psychology 1b. 8:10-9:10.

287. Criminology (3) II

Hambenne

Nature and causes of crime; theories of punishment and correction; administration of penal and reformatory institutions. P, 81 and either 84 or Psychology 1b. 10:30-12:00.

SPEECH

Professor Lynn (Head of the Department)

Assistant Professors Lambert, Sparks

2s. Principles of Speech (2) I, II

Lynn-Sparks

An introduction to the field of speech. Designed to develop confidence, poise, and clarity in the use of the body, voice, language, and thought through guided practice in speaking. Sections limited to 20 students. Fee, \$1.50. 1st term: 7:00-8:00; 2nd term: 8:10-9:10.

5. Voice and Diction (2) I, II

Lynn-Sparks

Special attention to the elimination of voice and language difficulties and the cultivation of effectiveness in these respects, including articulation and enunciation, vocabulary, pronunciation, and grammar. 1R. 2L. Sections limited to 15 students. Fee \$1.50. 1st term: 8:10-9:10; 2nd term: 9:20-10:20.

54. Fundamentals of Radio Broadcasting (2) I Markland
Introduction to the radio industry and related fields; the functions of radio personnel, radio law, radio practices, forms of radio transmission, radio functions of advertising agencies; opportunity to use facilities of the Radio Bureau. P, 5. 9:20-10:20.
- 106a. Radio and Television Writing (2) I Markland
(Identical with Journalism 106a). 10:30-11:30.
- 125s. Argumentation and Debate (2) II Sparks
The study of argumentation, together with the theory and practice of debate. 10:30-11:30.
- 274s. Speech Correction Workshop (6) I Lambert
Workshop to extend the full five weeks with a total of 125 class hours for 6 hours credit. A portion of the clinical practice time for each student will be devoted to preparation—reading, lesson plans and in handling the speech and hearing problems in the classroom. Designed for the classroom teacher. (4R, 2L per day). P, junior standing. Fee \$1.50.
8:30-9:30 Speech and Hearing Problems in the Classroom
10:00-11:00 Managing Speech and Hearing Problems in the Classroom
11:00-12:00 Lectures
1:30-3:30 Clinical Practice
199. Individual Problems (1-3) I, II Staff
Hours to be arranged.
- 267s. English Phonetics (2) I Lynn
A scientific study of the structure of English speech, laws and principles determining the facts of pronunciation. 10:30-11:30.
300. Introduction to Graduate Study in Speech Staff
(2) I
A survey and study of problems relating to graduate research, including bibliographies, methods of research, and experimental design. Required of all graduate majors in Speech. Hours to be arranged.
410. Thesis (2) I-II Staff
Hours to be arranged.

ZOOLOGY

Instructors Chiasson, Lanyon, McCauley

- 4a-4b. General Zoology (4-4) I-II Lanyon-Chiasson
An introductory course in the structure, physiology, development and behavior of animals treated from the biological view point.
4a: emphasis on a representative vertebrate and the invertebrates.
4b: emphasis on zoological principles as illustrated by the phylum Chordata. 2R, 6L. Fee \$7 each semester. 8:10-9:10; Lab. 9:20-12:20.
8. Mammalian Anatomy (4) II Lanyon
The gross structure of mamalian animals, using the cat as a laboratory example. Required of majors in physical education; open to others. 2R, 6L. 4a. Fee \$7. 8:10-9:10; Lab. 9:20-12:20.
45. Comparative Anatomy (4) I Chiasson
The classification and phylogeny of the Chordata and the evolution of chordate organ-systems. Required of majors in zoology. 2R, 6L. P, 4b. Fee \$7. 8:10-9:10, Lab. 9:20-12:20.
57. Elementary Physiology (4) I McCauley
Physiological processes of the human body. Primarily for students in physical education, prenursing students, and the general undergraduate. 2R, 3L. P, 8 or 45. Fee, \$6. 7:00-8:30. Lab. 8:40-11:40 M.W.F.

OTHER COURSES

With the approval of the head of the department concerned and of the Dean of the Summer Session, courses from the Biennial Catalogue but not listed in the Summer Session Announcement may be offered.