

# UNIVERSITY OF ARIZONA RECORD

VOL. XLVII, NO. 1  
APRIL, 1954

*Announcement*

*for the*

*Summer*

*Session*



**1954**

**FIRST TERM**  
**June 7—July 10**

**SECOND TERM**  
**July 12—August 14**

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Published by University of Arizona, Tucson, Arizona

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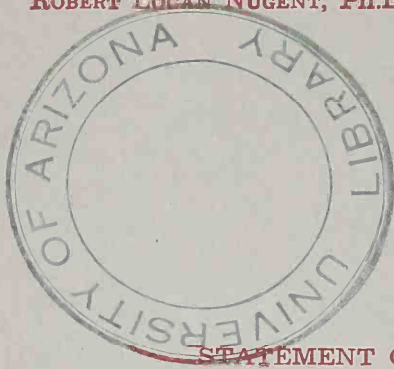
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## STATEMENT OF MAILING PRIVILEGE

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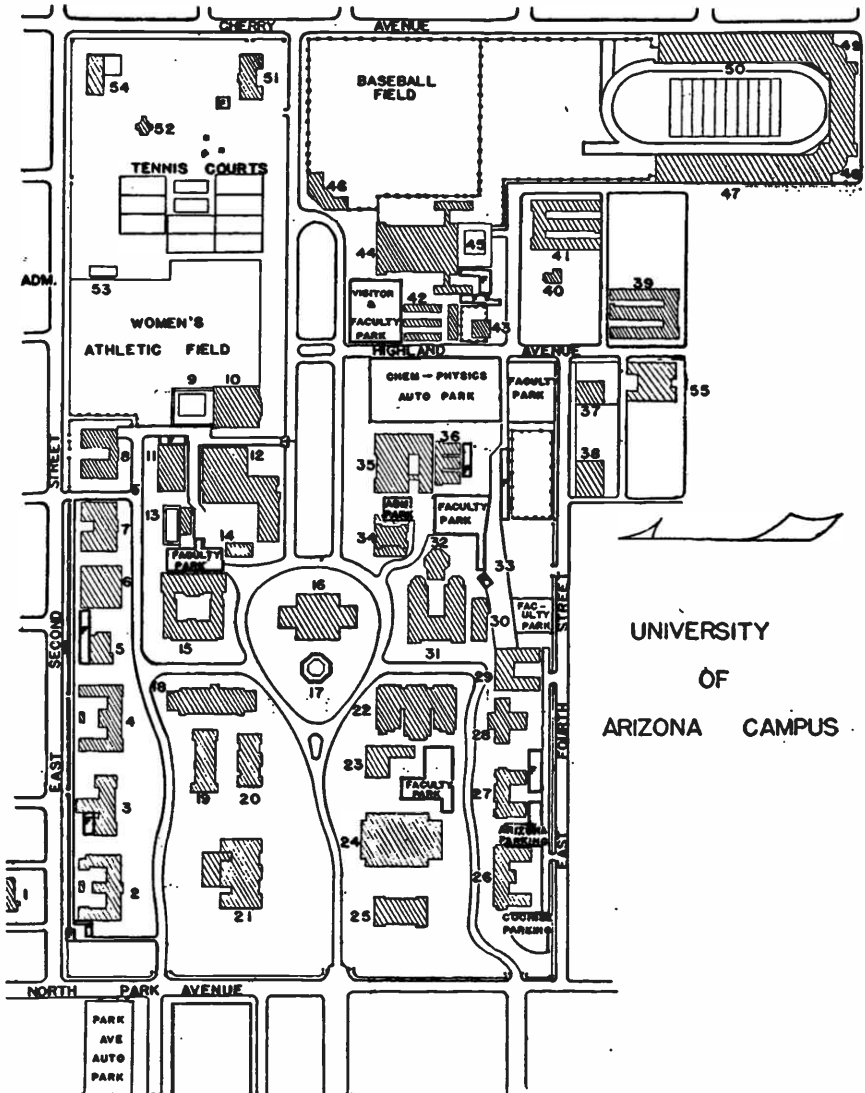
# University of Arizona Record

ANNOUNCEMENT  
FOR THE  
SUMMER SESSION  
1954

First Term  
June 7 - July 10

Second Term  
July 12 - August 14

PUBLISHED BY  
University of Arizona  
TUCSON, ARIZONA



**KEY TO BUILDINGS**

- |                                |                              |                                    |
|--------------------------------|------------------------------|------------------------------------|
| 1. Pima Hall                   | 20. Education                | 39. Papago Lodge                   |
| 2. Gila Hall                   | 21. Library                  | 40. Home Management                |
| 3. Maricopa Hall               | 22. Liberal Arts             | 41. Hopi Lodge                     |
| 4. Yuma Hall                   | 23. Law                      | 42. Temporary Bldgs.               |
| 5. Old Business & Public Adm.  | 24. Auditorium               | 43. Nursery School                 |
| 6. Mines & Metallurgy          | 25. Museum                   | 44. Gymnasium & Military           |
| 7. Mechanical Arts             | 26. Cochise Hall             | 45. Men's Swimming Pool            |
| 8. General Stores & Garage     | 27. Arizona Hall             | 46. Baseball Stadium               |
| 9. Women's Swimming Pool       | 28. Fine Arts                | 47. West Stadium                   |
| 10. Women's Building           | 29. Yavapai Hall             | 48. Pinal Hall                     |
| 11. Aeronautical               | 30. Herring Hall             | 49. Navajo Hall                    |
| 12. Student Union              | 31. Agriculture & Home Ec.   | 50. East Stadium                   |
| 13. Reservoir                  | 32. Agric. Hall              | 51. Infirmary                      |
| 14. Book Store                 | 33. Greenhouse               | 52. Steward Observatory            |
| 15. Engineering                | 34. Administration           | 53. Outdoor Theater                |
| 16. Old Main                   | 35. Chemistry-Physics-Pharm. | 54. Nursery & Home Mgt.            |
| 17. Memorial Fountain          | 36. Greenhouse               | 55. Physical Plant Shop and Office |
| 18. New Business & Public Adm. | 37. Physical Plant Whse.     |                                    |
| 19. Humanities                 | 38. Power House              |                                    |

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 Superintendent of Schools, Mesa; Visiting Lecturer in Education

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**WALLRAFF, CHARLES, Ph.D.**.....Psychology  
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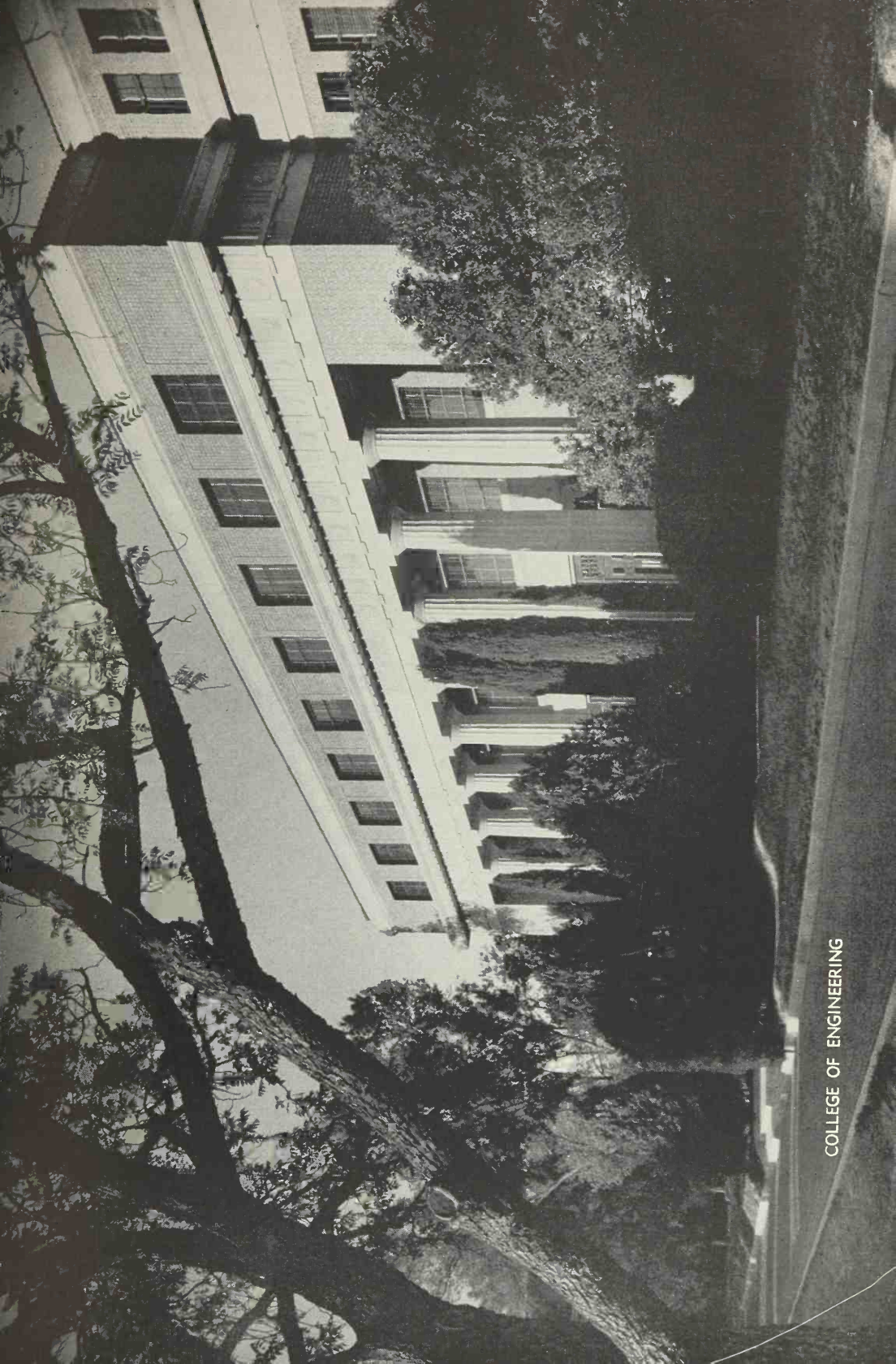
**WARNER, EARLE H., Ph.D.**.....Physics  
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**WEBB, DONALD L., Ph.D.**.....Mathematics  
 Associate Professor of Mathematics

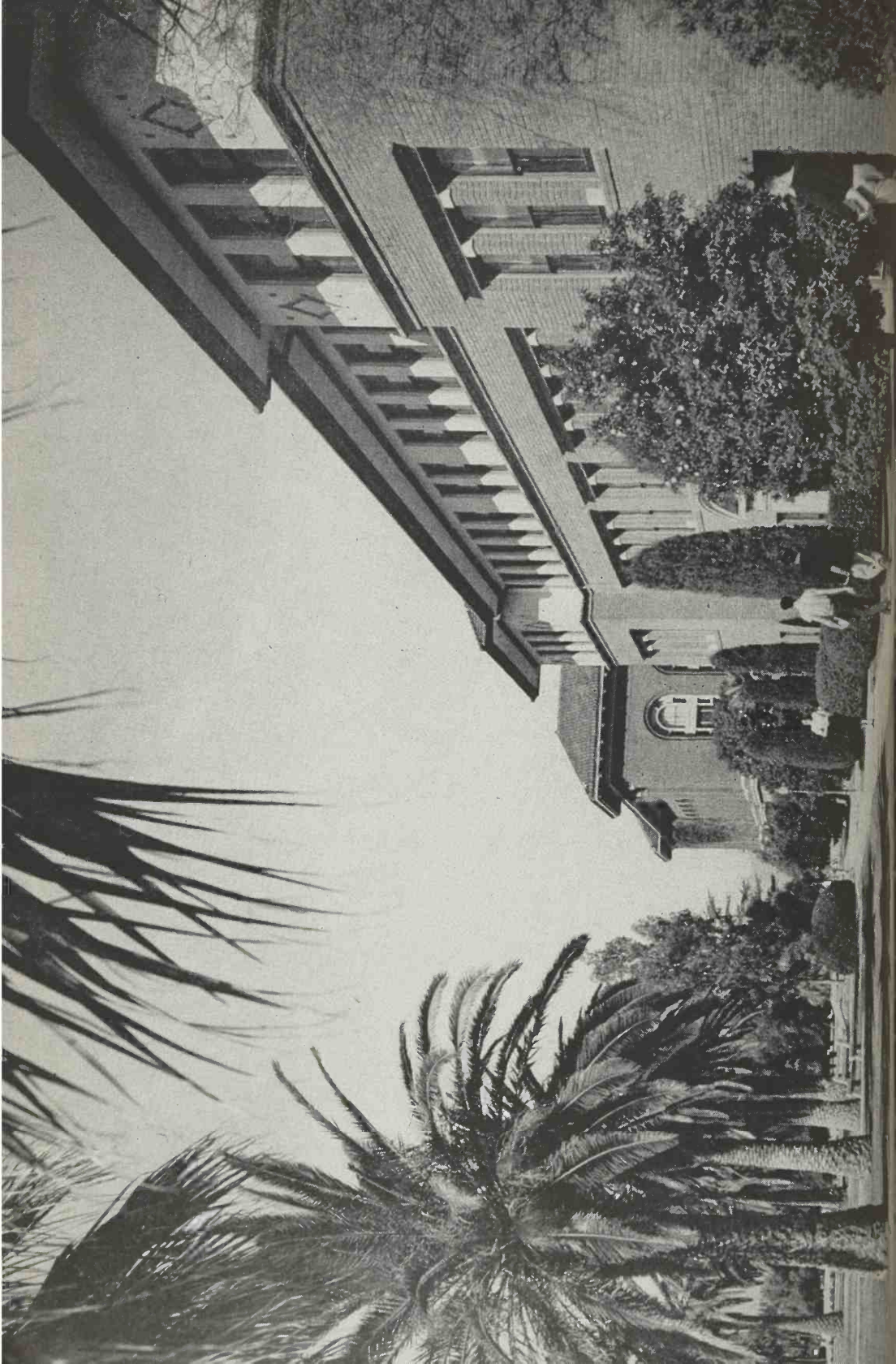
**WHITFIELD, LLOYD A., M.A.**.....Journalism  
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COLLEGE OF ENGINEERING





# UNIVERSITY OF ARIZONA

## SUMMER SESSION, 1954

### 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 14, for the First Term, or after Monday, July 19, for the Second Term.

The calendar follows:

June 6, Sunday, 8 a.m.....	Residence halls open
June 7, Monday.....	Registration for First Term
June 8, Tuesday.....	Classwork begins
July 9, Friday.....	Examinations for the First Term begin
July 10, Saturday.....	First Term ends
July 12, Monday.....	Registration for the Second Term
July 13, Tuesday.....	Classwork begins
Aug. 13, Friday.....	Examinations for the Second Term begin
Aug. 14, 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	Music Education
Economics	French	Music Theory
Agricultural	Geology	Pharmacy
Education	Guidance	Physical Education
Anthropology	Health Education	Physics
Art	History	Piano
Botany	Home Economics	Political Science
Business	Home Economics	Psychology
Administration	Education	Secretarial Studies
Chemistry	Horticulture	Sociology
Civil Engineering	Humanities	Spanish
Classics	Journalism	Special Education
Dramatic Arts	Library Science	Speech
Economics	Mathematics	Voice
Education	Mining and	Zoology
Electrical	Metallurgical	
Engineering	Engineering	

#### 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

Residence accommodations for men and women are provided on the campus. Yuma Hall will be used for women and Cochise Hall for men. Additional halls will be opened if the need arises. Rooms are uniformly furnished with tables, dressers, and chairs. 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.*—Yuma Hall is one of the newest of the five women's residence halls. It represents the latest in construction and facilities. Running water in every room, an electric hair dryer and a laundry and ironing room on every floor, and elevators are modern conveniences provided to meet the needs of the students. Sun decks, a spacious lounge, and an inclosed patio with barbecue pit add much to the pleasure of group life.

During the Summer Session the residence halls are open to both graduate and undergraduate students. All unmarried undergraduate women not living at home are required to live in the residence hall unless exception is made by the Dean of Women before or at registration. All residence 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 practical 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 Residence. The Department will render every assistance possible. Students should, however, inspect accommodations before making definite agreements with householders.

*Residence-hall reservations.*—Accompanying the Registrar's notification that admission has been granted is an application form for reservation of residence-hall space. This should be filled out immediately and mailed to the Director of Residence 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 residence halls.

*Board.*—The University Dining Hall, 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-Session 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 Dean of the Summer Session.

Students who receive failing grades in 50 per cent of the total number of units for which they were registered during the Summer Session are subject to denial of registration in the first semester of the next academic year.

## EXPENSES AND FEES

*Tuition.*—The tuition fee is \$7.50 per semester hour of credit for either 5-week term. There is no nonresident fee for out-of-state students. The tuition fee for registration for thesis only is \$5. For registration after the first day of the term a late registration fee of \$2 is charged. The tuition fee for auditors is \$10 for either term. The fee for courses audited in addition to those taken for credit is \$3.75 per unit. For students registering for 6 or fewer units of credit, the maximum cost for both credit and audited courses is \$45. Each student before attending classes must obtain a receipt showing that all fees have been paid and that the student is entitled to enter upon his classwork.

*Physical education courses.*—Students registering for courses in physical education (except theory) pay a locker and towel fee of \$2 and a deposit of \$1. The deposit is returnable if there are no charges against the student.

*Music.*—For individual instruction in voice or instrumental music a fee is charged in addition to the regular tuition fee, as follows: for two ½-hour lessons a week for 5 weeks the fee is \$20, with 1 unit of credit. For four ½-hour lessons a week for 5 weeks the fee is \$30 with 2 units 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.

*Laboratory and material fees.*—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 description of the courses.

*Residence halls.*—Rooms in Cochise Hall, the residence hall for men, may be obtained for \$20 per 5-week term, per person, two in a room. To the extent that rooms are available, single occupancy will cost \$32.50 per term. Rooms in Yuma Hall, the women's residence hall, will cost \$24 per term, per person, two in a room. Single occupancy, when available, will cost \$40 per term. All students occupy separate single beds.

Students moving from a dormitory before the end of the term will forfeit the entire amount of rental. A room deposit of \$10 must accompany each application for a dormitory room. Do not send cash. The University cannot be responsible for cash deposits sent through the mail. This deposit applies as security against damage to or



loss of University property and does not apply on the rent. This deposit is refunded when a student leaves the dormitory, provided all charges for loss or damage against the student have been paid.. Room reservation deposits will not be returned in case of cancellation unless notice of cancellation reaches the Department of Residence by the Saturday preceding registration for either term.

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

*Recreation.*—To provide funds for recreational and social activities a nominal fee of 50 cents per term is charged.

*Student Union Fee.*—A fee of \$2.50 each term is paid on the day of registration by each student registered for 3 or more units of work.

*Library fee.*—A fee of \$1 each term is paid by each student registered for credit.

*Miscellaneous fees.*—Change of program fee \$1; credit by examination, per unit, \$2.

#### SUMMARY OF FEES AND DEPOSITS

Tuition (either 5-week term, per unit).....	*\$ 7.50
*Plus Library fee of \$1.00 and Recreation fee of 50 cents each term when registering for only one or two units. When registering for three or more units, a Student Union fee of \$2.50 is added each term.	
Tuition for auditors (either 5-week term).....	10.00
Tuition (courses audited in addition to credit courses, see above) per unit.....	3.75
Tuition (registration for thesis only).....	5.00
Late registration fee.....	2.00
Music (individual instruction) (see statement above)	
Courses in physical education (except theory).....	2.00
Deposit (returnable if there are no charges).....	1.00
Laboratory and materials (see course descriptions)	
Field trips (see course descriptions)	
Room in residence hall (term in advance).....	\$20.00 to \$40.00
(See statement above)	
Room deposit (Returnable if there are no charges).....	10.00
Change of program fee.....	1.00
Credit by examination, per unit.....	2.00

As the University is unable to extend credit, it is essential that all students have sufficient funds on entering to defray their immediate expenses.

*Refunds.*—Students withdrawing from the University during the first week of either term (June 7 to 14, inclusive, and July 12 to 19, inclusive) will be refunded all fees except a registration fee of \$5 and the late registration fee of \$2, if any.

**After the first week no fees of any kind will be refunded.**

Room reservation deposits will not be returned in case of cancellation unless notice of cancellation reaches the Department of Residence by the Saturday preceding registration for either term. Other deposits will be returned if there are no charges against the student. Students moving from a dormitory before the end of the term will forfeit the entire amount of rental for the term.

#### 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 of 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 200 to 299 are definitely organized as graduate courses and carry graduate credit. Certain courses numbered from 100 to 199, designated by the letter G following the title, 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 26 and July 31. 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 this 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 290 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 Graduate 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 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 pre-

pare 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 years' 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 workshops under the direction of specialists in the fields. The following workshops are available:

- Art (Education 106s)
- Reading (Education 124s)
- Language Arts (Education 125s)
- Arithmetic (Education 126s)
- Social Studies and Science (Education 127s)
- Conservation of Natural Resources (Education 192s)
- Library Science (Library Science 101b, 139L, 181, 182s)
- Workshop for School Librarians (Library Science 185s)
- Music Education (Music 270s)

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

- Clinic in General Remedial Techniques (Education 221s)
- Reading Clinic (Education 222s)

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 this work should register for the courses indicated in parentheses.

## FINE ARTS SUMMER SESSION FOR HIGH-SCHOOL STUDENTS

The University of Arizona offers an unusual opportunity for High School students (entering grades 9-12) to participate in the major fields of the Fine Arts in the Fine Arts Summer Session, to be held on the campus June 7 to June 19. An outstanding faculty has been selected to provide leadership. Students may participate in one field of their major interest (band, orchestra, choir, drama, art, journalism, or the dance) and, in addition, elect one minor field (drama, painting and drawing, photography, piano, music theory, music and art appreciation, opera production, dance orchestra, or music ensembles). Students may participate in recitals and ensembles, and they may receive class instruction in the applied fields of music.

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 \$15.00 will be charged for the entire session; the cost of room and board for the session is \$32.00.



## Staff.

*University Instructors:*

John Bloom, Choir  
 Edna Church, Piano  
 Eugene Conley, Voice,  
 Opera Production  
 John Johnson, Photography  
 Jack Lee, Band  
 Peter Marroney, Drama  
 Hartley Snyder, Music Theory,  
 Appreciation  
 James Souden, Art  
 Lloyd Whitfield, Journalism

*Guest Instructors:*

Virginia Duncan, Drama Instruc-  
 tor, North Phoenix High School  
 and director of "Mask of the  
 Yellow Moon"  
 Dr. Leslie Hodge, Conductor,  
 Phoenix Symphony Orchestra  
 Virginia Robinson, Dance Instruc-  
 tor, Tucson High School  
 Ardith Shelley, Supervisor of  
 Music, Madison School District,  
 Phoenix

For further information and for application blanks, please write to Dr. Hartley D. Snyder, 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 (300, for graduate students)  
 Thesis (310)

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 65 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 Summer-haven 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, in the Ballroom. Several campus dances will also be given there.

There are excellent tennis courts and a large outdoor swimming pool on the campus. Swimming tags are obtained from the Cashier. 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, 1954**

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**AGRICULTURAL ECONOMICS**

Visiting Lecturer Scanland

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- 112s. The Farmer's Relationships from a Legal Standpoint. (2) I. G. Scanland  
Rights and liabilities involving the ownership, acquisitions, transfer, mortgaging and taxation of farm land, irrigation water and chattels. Prerequisite, upper division standing in Agriculture. (June 7 to June 23.) 7:00-9:10.

**AGRICULTURAL AND HOME ECONOMICS EDUCATION**

Professor Cline (Head of the Department)  
Assistant Professors Schafer, Wall

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**AGRICULTURAL EDUCATION**

- 121s. Introduction to the Teaching of Agriculture. (2) II. Cline, Schafer  
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. Prerequisite, Ed. 109. (Hours to be arranged.)
- 209s. Supervised Farm Practice in Vocational Agriculture. (2) I. Cline, Schafer  
Selecting and planning farming programs, including budgeting, financing, accounting, production, equipment, materials, and practices. Organizing and supervising individual and group learning activities for students on the farm. Prerequisite, 199. (June 24 to July 10.) 9:20-11:30.
- 217cs. Advanced Procedures in Teaching Farm Mechanics. (2) I. Schafer  
Advanced techniques in teaching the planning, construction and repair of farm structures. Selecting, making and interpreting plans, selecting materials including advanced metallurgy problems. Demonstrations by expert tradesmen and practice on repair and construction jobs. Prerequisite, 189. Fee, \$3.00. (June 7 to June 23.) 9:20-10:20; Lab. 1:40-4:30.
299. Seminar. (2) I. Cline  
Study of selected topics and current developments in agricultural education. Prerequisite, 189. (June 7 to June 23) 10:30-12:30.

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\*Unless otherwise specified, all classes meet for 1 clock hour daily from Monday to Friday, inclusive.

The Arabic numerals in parentheses indicate the number of units of credit. The Roman numerals indicate the term in which the course is offered. The letter "G," in courses numbered below 200, indicates that graduate credit is permissible. 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.

## HOME ECONOMICS EDUCATION

- 204s. Teaching Out-of-School Groups. (2) I. Wall  
Organization, objectives, special problems and evaluation of programs in Home Economics for adults and special groups. Prerequisite, Education 139h. 9:20-10:20.
- 206s. Techniques for Evaluating Teaching and Learning in Home Economics. (2) I. Wall  
Studying ways of measuring the effectiveness of teaching and learning. Various kinds of instruments and devices will be evaluated. Emphasis will be given to developing material for the teacher's own needs. Prerequisite, Education 139h. 10:30-11:30.
299. Seminar. (2) I. Wall  
Studying and reporting on recent developments in curriculum, administration, evaluation and other phases of the vocational program. Prerequisite, Education 139h. 11:40-12:40.

## ANTHROPOLOGY

Associate Professors Getty, Kraus  
Assistant Professors Danson, Tanner

- 1a-1b. Introduction to Anthropology. (3-3) I-II. Kraus-Tanner  
A survey designed to give the student a general knowledge of the field of anthropology.  
1a. A consideration of man as an organic being and a preview of archaeology in the Old and New World.  
1b. Living groups, their distribution, arts, sociology, religion, and language. 1a is not prerequisite to 1b. 7:00-8:30.
120. Minority Peoples of the United States. (3) I. G. Getty  
History, present status, and problems of racial and cultural minorities in the United States; American Indian, Negro, Oriental, Spanish-American, and Jewish groups. Prerequisite, 1a-1b or Sociology 81. (Identical with Sociology 120.) 7:00-8:30.
- 134as-134bs. Indians of the Southwest. (3-3) I-II. Getty-Tanner  
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 134as-134bs and 130a-130b. Prerequisite, upper-division standing and consent of the instructor. 10:30-12:00.
- 180s. Field Course in Archaeology. (6) I-II. Danson  
Open to undergraduates who have had introductory courses in anthropology. (June 11 to August 6.) Enrollment limited. For detailed information write to Dr. Emil W. Haury, Department of Anthropology.
- 220s. Advanced Field Course in Archaeology. (6) I-II. 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 11 to August 6.) Enrollment limited. For detailed information write to Dr. Emil W. Haury, Department of Anthropology.

## ART

Professor Scott  
Assistant Professor Quinn  
Visiting Lecturer Peck

- 6a, 6b. Drawing. (2) I, II. Scott-Quinn  
Elementary course in representational drawing and expressive pictorial design. Prerequisite, 4a-4b. Fee, \$1. 7:00-10:00.

- 55a, 55b. Painting I. (2) I, II. Scott-Quinn  
Elementary course in pictorial organization and in methods and techniques of oil painting. Prerequisite, 54a-54b. Fee, \$1. 7:00-10:00.
- 110b. History of Modern Art. (3) I. G. Scott  
Analytical study of the modern schools of art in Europe and America. 10:30-12:00.
126. History of American Art. (3) II. G. Quinn  
Survey of the fine and industrial arts of North America, Mexico, South America; influences of aboriginal and imported art tendencies on modern art and the development of American schools. Prerequisites, 7a-7b, and 6 units of history or art history. 10:30-12:00.
- 132as. Children's Book Illustration. (2) I. Peck  
Designed for artists and students with some art training who wish to study the techniques of working in black and white and in color for reproduction as book illustrations and book jackets. Includes the study of various processes by which illustrations are reproduced: letter press, half-tone, color processes, and offset lithography. The various techniques through which the art work is produced: pencil drawing, pen and ink, scratch-board, lithographic pencil, watercolor and opaque mediums. Prerequisites, 3a-3b, 6a-6b, or equivalents. 7:00-9:10.
- 155a,b,c,d. Painting II. (2) I, II. G. Scott-Quinn  
Study of materials and composition in relationship to the modern painter's problems. Exploration and specialization in water color, gouache, tempera, casein, encaustic, mixed techniques, and mural painting. Prerequisite, 6a-6b. Fee, \$3 each term. 7:00-10:00.
199. Special Problems. (1 to 4) I, II. Scott-Quinn  
(Hours to be arranged.)
240. Problems in Applied Art. (2 to 4) I, II. Scott-Quinn  
(Hours to be arranged.)
300. Research. (1 to 4) I, II. Scott-Quinn  
(Hours to be arranged.)
310. Thesis. (3 to 6) I, II. Scott-Quinn  
(Hours to be arranged.)

## BOTANY

Assistant Professor Hoshaw  
Instructor Harris

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1. General Botany. (4) I. Hoshaw  
The elements of botany, with emphasis upon the structure, function, and development of the plant. Fee, \$4. 8:10-9:10; Lab. 9:20-12:20.
2. Survey of the Plant Kingdom. (4) II. Harris  
A study of plant groups with emphasis upon life history and relationships. Botany 2 is a beginning course and may be taken before Botany 1. Fee, \$4. 8:10-9:10; Lab. 9:20-12:20.
- 114s. 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. The naming of plants and techniques of plant identification will be considered. Fee, \$5. 7:00-8:00.
- 136s. Plants Useful to Man. (2) I. Harris  
A lecture-demonstration course offering practical information on plants and their uses. Subjects discussed will include: foods and food plants, medicinal plants, plants and industry, plants used for textiles, ornamental plants and landscaping and plants involved in human diseases. Prerequisite, 8 units of science. 9:20-10:20.

## BUSINESS ADMINISTRATION

Professors Howard (Head of the Department),

Herrick, Hudson, Strickler

Assistant Professor Bogart

Instructor Myers

Lecturer Parnell

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6. Introduction to Business. (3) II. Strickler  
A survey of the fundamental characteristics, functions, and problems of modern business. Not open to those with credit in 171a-171b. 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.
- 31a-31b. Principles of Accounting. (4-4) I-II. Myers  
A beginning course in basic principles of accounting, including sole proprietorships, partnerships and corporations at retail, wholesale, and manufacturing levels. Fee, 50 cents each term. 8:50-10:20; Lab. 1:40-4:30 M.W.F.
32. Accounting for Engineers. (3) I. Bogart  
Background and mechanisms of accounting; emphasis on industrial and cost accounting. For engineering students only, except by special permission of instructor. 8:50-10:20.
- 120a-120b. Business Law. (3-3) I-II. G. Parnell-Strickler  
120a.: Introduction to sources of commercial law, with emphasis on contracts, property rights, and remedies.  
120b.: Negotiable instruments, credit instruments, and sales; law of the business unit, agency, partnership, and corporation. Prerequisites, 31b. Economics 1b or 2b. Not open to students who have completed 6 or more units of law. 7:00-8:30.
- 131a-131b. Intermediate Accounting. Howard-Bogart  
(3-3) I-II. G.  
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. Prerequisite, 31b. 8:50-10:20.
155. Statistical Methods in Business. (4) II. G. Hudson  
A non-mathematical approach to methods of statistical synthesis and analysis; interpretation of results secured by use of such methods. Prerequisites, Mathematics 69a, 20, or 22. 8:50-10:20; Lab. 1:40-4:30 M.W.F.
- 190s. Controllership. (2) I. G. Howard  
An analysis of the functions of the controller in business and the organization of his department; responsibilities of the controller as a part of the administrative organization; consideration of the problems of the controller and his staff. Prerequisites, 131b and 133b. 10:30-11:30.
- 191s. Budgetary Control. (2) II. G. Bogart  
Need for and the problem of budget making for business enterprises with particular reference to manufacturing; preparation of the budget; comparison of performance with the budget; enforcement and revision of the budget; managerial and accounting problems involved. Prerequisites, 131b and 133b. 10:30-11:30.
- 299a. Seminar in Geography. (2) I. Herrick  
Open to seniors with consent of the instructor. 7:00-8:00.

## CHEMISTRY

Professors Rhodes, Sands  
Associate Professor Seeley  
Instructor Kelley

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2a-2b. General Chemistry. (4-4) I-II. Rhodes-Kelley

Principles of chemistry; properties of elements and compounds. For students with 1 unit of high-school chemistry or 1 unit of high-school physics. Fee, \$7 each term; deposit, \$2.50. 7:00-8:30; Lab. 9:20-12:20 M.W.F.

140a-140b. General Organic Chemistry. (4-4) I-II. Sands-Seeley

General principles of organic chemistry, accompanied by laboratory preparation of organic compounds. Prerequisite, 1b, 2b, or 5. Fee, \$7 each term; deposit, \$2.50. 7:00-8:30; Lab. 9:20-12:20 M.W.F.

## CIVIL ENGINEERING

Assistant Professor Neff

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114R. Mechanics of Materials. (3) I. Neff

Analysis and computation of stresses and strains in bodies subjected to tension, compression, and shear; equation of the elastic curve; deflections in beams, column formulas and design. Prerequisites, 112a, Physics 10a, Mathematics 95b. 7:00-8:30 M-F; 7:00-8:00 S.

## CLASSICS

Instructor Ayers

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15a. The Study of English Words. (2) I. Ayers

Designed to assist the student to increase his command of modern English. Derivations, especially from Greek and Latin, changes in the meanings of words, vocabulary building. 10:30-11:30.

## DRAMATIC ARTS

Professor Marroney (Head of the Department)

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127as-127bs. Problems of Stage Production Procedures:

The School Play. (3-3) I-II. G. Marroney

This course deals with the 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. 10:30-12:00.

135a-135b. Problems of Dramatic Arts in

Public Schools. (2-2) I-II. G. Marroney

Problems of the elementary and high-school teachers in planning and producing dramatic programs, assemblies and holiday events for special occasions. Prerequisite, senior or graduate standing with 12 units of education, including 129 or 139; or senior or graduate standing in the Department of Dramatic Arts. 8:10-9:10.

## ECONOMICS

Professor Gray (Head of the Department)

Instructors Boland, Brookshire, Leonard

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

1a.: Methods of logical economic analysis and the derivation of fundamental economic principles.

1b.: The application of methods of reasoning and principles to the actual problems of economic life. 8:50-10:20.

105. Labor Problems and Trade Unionism. (3) I. G. 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. Prerequisite, 1b or 2b. 8:50-10:20.

122. Public Utilities. (3) I. G. Brookshire

The economic basis for and problems of public utility regulations and management. Prerequisite, 1b or 2b. 7:00-8:30.

148. Money and Banking. (3) I. G. Brookshire

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; the International Bank. Prerequisite, 1b or 2b. 10:30-12:00.

191. Intermediate Economic Theory. (3) II. G. Boland

Survey of economic theory with special emphasis on value and distribution. Required of all graduating seniors in Economics and Business Administration. Prerequisites, 1b or 2b, and senior standing. 10:30-12:00.

192. Economic Investigation and Reports. (2) I, II. G. Staff

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

310. Thesis. (4) I, II. Staff

(Hours to be arranged.)

## EDUCATION

Professor Larson

Visiting Professor Newsom

Associate Professors Crowell, Merritt, Ruff

Assistant Professors Danielson, Flournoy, McGhehey, Robinson

Instructor Logan

Visiting Lecturers Ganoung, Shelley, Shepherd, Talbert

School and Community Health. (2) I, II. Ruff

Relationship of the teacher to health problems in the school and to community health agencies. Meets state school law certification requirements. Prerequisite, sophomore standing. Fee, \$1.50. 11:40-12:40.

103s. The Exceptional Child in the Regular Classroom. (2) I. G. Ganoung

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. 10:30-11:30.

106s. The Arts in the Classroom. (2-4) I. G. 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. Prerequisite, 102 or Art 176. (June 7 to June 26.) 10:00-12:00, 1:00-3:30.



- 112s. History of Education in the United States. (2) I. G. McGhehey  
The development of our educational system from colonial foundations to the present. 10:30-11:30.
- 117s. Visual and Auditory Aids in Teaching. (2) I. G. Shelley  
Use and management of motion pictures, stereoscopes, slides, charts, radio programs, blackboard techniques; actual instruction in the use of equipment. Prerequisite, 151; recommended, 124, 125, 126, 127, or 134. 9:20-10:20.
- 124s. The Teaching of Reading. (2) I. G. Flournoy  
(The Elementary Curriculum and Methods)  
Basic course for those preparing to teach in the elementary school. Functions, curriculum, methods of teaching, and plans for organizing elementary-school reading. Education 151 or the equivalent must precede or accompany this course. This course meets the certification requirement in the elementary curriculum. 8:10-9:10.
- 125s. The Teaching of Language Arts. (2) II. G. Flournoy  
(The Elementary Curriculum and Methods)  
The role which spelling, handwriting, speaking, listening, and correct English usage play in the elementary school. Consideration of problems which teachers have in teaching language arts. Study of language characteristics of elementary-school children. Education 151 or the equivalent must precede or accompany this course. This course meets the certification requirement in the elementary curriculum. 7:00-8:00.
- 126s. The Teaching of Arithmetic. (2) I. G. Flournoy  
(The Elementary Curriculum and Methods)  
Basic course for those preparing to teach in the elementary school. Functions, curriculum, methods of teaching, and plans for organizing elementary-school arithmetic. Education 151 or the equivalent must precede or accompany this course. This course meets the certification requirement in the elementary curriculum. 11:40-12:40.
- 127s. The Teaching of Social Studies and Science. (2) II. G. Flournoy  
(The Elementary Curriculum and Methods)  
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. Education 151 or the equivalent must precede or accompany this course. This course meets the certification requirement in the elementary curriculum. 10:30-11:30.
- 131s. The High School as an Institution. (2) I. G. Crowell  
Historical development of the high school; aims, functions, and outcomes; the curriculum; relation to other divisions of the school system. Prerequisite, 3 units in education. 7:00-8:00.
- 134s. General High-School Methods. (2) II. G. Crowell  
Teaching techniques based on principles of educational psychology. Prerequisites, 131 or concurrent registration therein and 151. 7:00-8:00.
- 140s. Principles and Techniques of Guidance. (2) I. G. Danielson  
Introductory course for those who expect to specialize in student guidance or for the teacher to whom some functions of guidance are assigned. Prerequisites, 131, Psychology 1a. 9:20-10:20.
- 141s. Counseling Techniques. (2) II. G. Danielson  
The functions and techniques of educational and vocational counseling. Prerequisite, 140. 10:30-11:30.

- 143s. Testing Instruments for  
School Counselors. (2) II. G. Danielson  
Study, analysis and evaluation of standardized tests used in counseling; quantitative aspects of the guidance program; use of results of specific tests. Prerequisite, 157; recommended, Psychology 150. Fee, \$2. 7:00-8:00.
- 151s. Educational Psychology. (2) I. Robinson  
The study of the learning process with attention given to motivation, guidance, and control of children of school age. Prerequisite, Psychology 1a. 9:20-10:20.
154. Statistical Methods in Education. (4) I. G. Merritt  
Elementary methods of dealing quantitatively with school data and data resulting from experimental investigations. Required of all graduate majors in education. Prerequisite, 9 units in education or psychology. 7:00-9:10.
- 155s. Problems in the Teaching of the  
Mentally Retarded. (2) I. G. 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. 7:00-8:00.
- 157s. Educational Tests and  
Measurements. (2) I, II. G. Robinson-Merritt  
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. Prerequisite, 151. Fee, \$1. 1st term: 8:10-9:10; 2nd term: 11:40-12:40.
- 159s. Physical Growth and Development  
of the Child. (3) I. G. Kraus  
The nature of growth; the genetic and physiological bases of growth; the measurement of physical growth; the assessment of progress in physical growth; skeletal and dental growth; the relation between physical growth and the behavior in the child. 10:30-12:00.
- 160s. Methods and Materials in Nature Study. (4) I. G. Lowe  
Identification, habits, and habitats of the common harmless and poisonous animals and plants of the Southwest, primarily Arizona. Methods of collecting, maintaining, and studying native plants and animals for the classroom, with interpretation of plant and animal environmental relationships. 10:30-11:30. (Demonstration period to be arranged.)
- 192s. Conservation Workshop. (4) I. G. Harris  
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. 7:00-9:00. (Lab. to be arranged.)
- 193s. Safety Education in the Public Schools. (2) I. G. Ruff  
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. 8:10-9:10.
- 210s. Philosophy of Education. (2) II. McGhehey  
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. Prerequisite: for seniors, 6 units in education. 10:30-11:30.

214. Arizona State School System and School Law. (2) II. Larson  
The principles and problems of 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. Prerequisite for seniors, 6 units in education. 10:30-11:30.
- 216s. 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. 7:00-8:00.
- 221s. Remedial Techniques in Teaching. (2) I. Talbert  
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. Prerequisites, senior or graduate standing and one or more courses in elementary-school methods and curriculum. Fee, \$1. 8:10-9:10.
- 222s. Reading Clinic: Remedial Techniques. (3) I. Talbert  
Practical experience in dealing with problems in remedial reading; laboratory experience in diagnostic reading tests; clinical practice and remedial reading techniques applicable to individual or group needs; actual practice in remedial work. Education 221 is recommended as a prerequisite or to be taken concurrently. 9:20-11:30.
227. Elementary-School Administration and Supervision. (2) II. Shepherd  
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. 9:20-10:20.
- 233s. Extra-Classroom Activities. (2) II. McGhehey  
The purposes of extra-classroom activities. The technique of administration of various extra-curricular activities. Open to seniors. Prerequisites for seniors, 131 and 134 or equivalents. 7:00-8:00.
- 234s. The Teaching of English Composition. (2) I. 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. 11:40-12:40.
- 236s. High-School Administration and Supervision. (2) II. Crowell  
The problems of organization, administration, and supervision of the modern high school. Open to seniors. Prerequisite, 131. 9:20-10:20.
- 238s. The Curriculum. (2) I. Newsom  
The curriculum and its relationships; basic theories and techniques of curriculum construction discussed, evaluated, and applied to both the elementary and the secondary levels. Prerequisite, one or more courses in elementary or secondary school methods and curriculum. 10:30-11:30.
244. Problems in Guidance. (2) I. Danielson  
Review of current literature in guidance. Individual or group investigations related to guidance practices. Prerequisites, 140, 141, 154. 11:40-12:40.

- 260s. **General School Administration. (2) I.** Newsom  
The organization, administration, and supervision of city and town school systems. Open to seniors. Prerequisite for seniors, 6 units in education. 8:10-9:10.
271. **School Finance. (2) II.** Larson  
Sources and distribution of school funds; accounting and reports. Open to seniors. Prerequisite for seniors, 6 units in education. 8:10-9:10.
- 273s. **Planning and Maintenance of School Buildings. (2) I.** McGhehey  
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. Prerequisite, 12 units in education. 9:20-10:20.
- 276s. **Supervision: Its Organization and Administration. (2) II.** Shepherd  
Qualifications and preparation of supervisors; essential activities in supervision; organization and administration. Open to seniors. Prerequisite for seniors, 6 units in education. 11:40-12:40.
290. **Techniques in Educational Research. (2) II.** Merritt  
For advanced students majoring in education. Various methods of research; representative studies of each type. Open to seniors. Prerequisite for seniors, 6 units of education. Required of all graduate students with education as a major. 9:20-10:20.
- 299s. **Seminar. (2) I.** Crowell  
Studies in current educational literature. Open to seniors. Prerequisite for seniors, 6 units in education. Required of all graduate students in education. 10:30-11:30.

## ELECTRICAL ENGINEERING

Instructors Jones, Knickerbocker

- 126a-126b. **Elements of Electrical Engineering. (3-3) I-II.** Knickerbocker-Jones  
Direct and alternating current circuits and machinery. For students in non-electrical branches of engineering. Prerequisites, Physics 10b, Mathematics 95b. Fee, \$3 each term. (Hours to be arranged.)

## ENGLISH

Professors Powell (Head of the Department), Muir, Tucker  
Associate Professor Gegenheimer  
Assistant Professors Huggins, Irmscher  
Instructors Beebe, Hoskins, Ketcham, Kiefer, McNiece,  
Robinson, Sigworth  
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. 1b will be given both terms.
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|-----------|--------------------------|----------|
| 1st term: | 1a. Section A, 7:00-8:30 | McNiece  |
|           | Section B, 10:30-12:00   | Kiefer   |
|           | 1b. 7:00-8:30            | Hoskins  |
| 2nd term: | 1b. Section A, 7:00-8:30 | Beebe    |
|           | Section B, 10:30-12:00   | Robinson |

- 24a-24b. American Literature. (3-3) I-II. Muir-Irmscher  
 24a: From the beginning to the Civil War. 24b: From the Civil War to the present. 24a is not a prerequisite to 24b. Not open to freshmen or, without special permission, to seniors.  
 1st term: 8:50-10:20.  
 2nd term: 10:30-12:00.
- 123s. 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.
- 124s. Literature of the Southwest. (2) I. G. Huggins  
 The last frontier in fact and fiction; the accounts of early travelers, the stock western, the true regional novel, poetry. Useful bibliography. 11:40-12:40.
128. Victorian Poets. (3) I. G. Powell  
 Tennyson, Browning, and their contemporaries. 10:30-12:00.
- 133s. Prose Fiction Since 1900. (3) II. G. Sigworth  
 Short stories and novels studied intensively with particular attention to various critical approaches to fiction. Prerequisite, junior standing or equivalent. 7:00-8:30.
134. Modern Drama. (3) II. G. Tucker  
 The chief dramatic writers of the last half century. 8:50-10:20.
160. History of the English Language. (3) I. G. Huggins  
 Required of all graduate English majors. 8:50-10:20.
185. Types of Folklore. (3) I. G. Ketcham  
 A study of types, including tales, legends, riddles, proverbs, folk songs, children's games and rhymes. Training in methods of collection and analysis. Prerequisites, 6 units of literature and 6 units of related social science. 7:00-8:30.
- 234s. The Teaching of English Composition. (2) I. 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. (This course is also listed as Education 234s.) 11:40-12:40.
250. Bibliography. (2) II. 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.

## FRENCH

Professor Tremblay  
 Assistant Professor Gryting

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- 3a-3b. Intermediate French. (4-4) I-II. Tremblay-Gryting  
 Review grammar, composition, conversation, reading. Prerequisite, 1b or 2 years of high-school French. The class meets twice daily. 7:00-8:00 and 9:20-10:20.
299. Special Problems. (2 to 4) I, II. Staff  
 (Hours and credit to be arranged.)

## GEOLOGY

Assistant Professor Anthony

1a. Elementary Geology. (4) I. Anthony

Fundamentals of physical and historical geology. Fee, \$4. 8:50-10:20; Lab. 1:40-4:30 M.T.Th.

112s. Field Geology (Summer Camp)\* (3) G.†

Field methods of geologic mapping and the preparation of geologic reports. Laboratory comprises daily field work for a period of two and one-half weeks (June 7 to June 23). Prerequisites, 121, Civil Engineering 52. Fee, \$30 not including meals and lodging. Students required to report to camp or to nearest rail and bus station (Holbrook, Arizona). For further information write to Dr. John F. Lance, Department of Geology and Mineralogy.

113s. Geologic Mapping (Summer Camp)\* (3) G.†

Field methods of geologic mapping and the preparation of geologic reports. Laboratory comprises daily field work for a period of two and one-half weeks (June 24 to July 10). Prerequisite, 1b, 105 or 112. Fee, \$30 not including meals and lodging. Students required to report to camp or to nearest rail and bus station (Holbrook, Arizona). For further information write to Dr. John F. Lance, Department of Geology and Mineralogy.

## HEALTH EDUCATION

School and Community Health. (2) I, II.

Ruff

Relationship of the teacher to health problems in the school and to community health agencies. Meets state school law certification requirements. Prerequisite, sophomore standing. Fee, \$1.50. 11:40-12:40. (Also listed under Education.)

## HISTORY AND POLITICAL SCIENCE

Professor Ewing

Assistant Professors Bateman, Gomez

Instructor Beatson

113bs. The French Revolution. (2) I. G.

Beatson

Europe from 1750 through the age of Napoleon. The collapse of the Ancien Regime and the revolutionary transformation of Europe. 8:10-9:10.

120s. The United States Since 1932. (2) I. G.

Bateman

A detailed survey of problems growing out of the Great Depression, of New Deal legislation, of political and economic conflicts of the thirties, of isolationism vs. growing concern with events abroad and of the Second World War. Credit will not be allowed for both 119b and 120s. Prerequisite, upper division standing. 11:40-12:40.

129s. Mexico and the Caribbean. (2) II. G.

Ewing

A study of internal politics, international relations, and foreign investments. 10:30-11:30.

130as. The History of the West. (2) II. G.

Ewing

The settlement and development of the West, and its influences upon national and international affairs at each stage; emphasis on the Trans-Mississippi West. 8:10-9:10.

134bs. History of the United States: 1789-1850.

(2) I. G.

Beatson

The rise of sectionalism; Calhoun, Clay, and Webster; the Mexican War; the Compromise of 1850. 9:20-10:20.

\*The Department recommends that Geology 112 and 113 be substituted for Geology 105 and 106, respectively.

†Graduate credit permitted if student has completed 6 units of field geology.

- 141s. Soviet Russia from 1917-1938. (2) I. G. Bateman  
Rapid survey of the Revolution; retrenchment under the New Economic Policy; struggle for leadership between Stalin and Trotsky; organization of the Soviet system; constitution of 1936. 10:30-11:30.
211. Methods of Research in History and Political Science. (1) II. Ewing  
The technique and methods of research work. Supplements the seminar. Required of all graduate majors. (Hours to be arranged.)
212. Historiography. (1) II. Ewing  
A survey of historical writing; great historians of the past and present. Open to seniors. (Hours to be arranged.)
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- 100s. National and State Constitutions. Gomez-Beatson  
(2) I, II.  
Meets the state requirement for the teacher's certificate. Not open to students with credit in 51a or 51b. 7:00-8:00.
- 154s. Politics in the United States. (2) II. G. Beatson  
A study of the nature of politics and of pressure groups and parties, nominations and elections, and the electorate. 9:20-10:20.
- 192s. American Political Thought. (2) I. G. Gomez  
American political ideas from Colonial times to the present. Prerequisite, 51a-51b. 10:30-11:30.

## HOME ECONOMICS

Associate Professor Wood

- 13s. Camp Cookery. (2) II. Wood  
The selection and preparation of foods for camps. Outdoor laboratory periods and field trips to Mt. Lemmon to be arranged. Lab. fee, \$5; field trip fee, \$3. Registration limited to 20 students. Open to men and women. 11:40-12:40 M.W.F.; Lab. 5:00-8:00 T.Th.

## HORTICULTURE

Assistant Professor Folkner

- 190s. Landscape Management. (2) I. G. Folkner  
Problems in designing, planting, and maintaining small home grounds and farmsteads in Arizona, with special reference to new species and methods. Prerequisite, 12 units in Horticulture and related subjects. Fee, \$3. (June 24 to July 10.) 7:00-9:10.

## HUMANITIES

Professors Schmitz, Solve  
Associate Professor Gegenheimer  
Instructor Ayers

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, 7:00-8:00 and 9:20-10:20  
Section B, 8:10-9:10 and 10:30-11:30  
2nd term: Section A, 7:00-8:00 and 9:20-10:20  
Section B, 8:10-9:10 and 10:30-11:30

Ayers  
Solve  
Schmitz  
Gegenheimer

Each section meets twice daily.

## JOURNALISM

Assistant Professor Whitfield

8. Law of the Press. (3) I. Whitfield  
The rights and restrictions under which the American press operates. 7:00-8:30.
112. Feature Writing. (3) I. Whitfield  
The study and writing of long feature stories suitable for publication in news columns and Sunday sections. Fee, \$3. 10:30-12:00.

## LIBRARY SCIENCE

Visiting Lecturers Coryell, James

- 101b. Literature for Children. (2) II. G. James  
An evaluation of available books and materials in terms of the interests, abilities, and needs of the elementary and junior high school pupil. 8:10-9:10.
- 139L. Apprentice Librarianship. (1 to 5) II. James  
Practice work in local libraries with the opportunity to observe and participate. Discussion of library situations and problems with the instructors. Prerequisite, 12 units of education including Library Science 181. Recommended to be taken after, or concurrently with, 180 and/or 182. (Hours and credit to be arranged.)
181. Library Administration and Organization. (2) II. G. James  
The functions, activities, organization, and management of the library, particularly the school library; budgeting, equipment, and personnel; the contributions of non-library officials, school administrators, teachers, etc., to the successful operation of the library. Prerequisite, Education 151. 9:20-10:20.
- 182s. Organization of Library Materials. (2) II. G. James  
Purpose and principles of cataloguing and classification. The card catalogue, shelf list, filing, vertical files. Organization of materials for use, particularly in school libraries; weeding, maintenance, etc. 10:30-11:30.
- 185s. Workshop for School Librarians. (4 to 6) I. G. Coryell  
The School Library Workshop will center around the problems of the teacher or librarian who is charged with the responsibility for developing a library program which will meet the needs of the educational program in the school. Prerequisite, 12 units of education. 8:10-11:30.

## MATHEMATICS

Professor Graesser (Head of the Department)

Associate Professor Webb

Assistant Professors Duncan, Foster, Trifan

20. College Algebra. (3) I. Duncan  
Fundamental operations, logarithms, progressions, binomial theorem, simultaneous equations, theory of equations, approximation of irrational roots. Prerequisite, 1½ entrance units in algebra. Credit is allowed for only one of the following courses: 20, 22, 69a, 70. 10:30-12:00.
24. Plane Trigonometry. (2) I. Trifan  
Trigonometric functions, trigonometric identities, solution of trigonometric equations, solutions of right and oblique triangles. Prerequisites, 1½ entrance units in algebra and 1 entrance unit in geometry. 7:00-8:00.



25. Analytic Geometry. (4) II. Graesser  
Cartesian and polar co-ordinates, lines and planes, conics, higher plane curves, quadric surfaces. Prerequisites, 20 or 22, 24. 7:00-8:00 and 9:20-10:20. The class meets twice daily.
- 69a. Mathematics of Commerce. (2) I. Trifan  
Elementary algebra and logarithms with applications to discount, simple and compound interest, annuities certain, and commercial problems. Prerequisite, 1 entrance unit in algebra. Credit is allowed for only one of the following courses: 20, 22, 69a, 70. 9:20-10:20.
81. Slide Rule. (1) I. Duncan  
Theory and practice of the slide rule including the trigonometric scales and the log-log scales. Prerequisites, 24 or 70; or 20 and concurrent registration in 24; or 22 and concurrent registration in 24; or 69a and concurrent registration in 24; or ½ entrance unit in trigonometry. 9:20-10:20 M.W.F.
- 95a-95b. Calculus. (4-4) I-II. Webb-Foster  
Methods of differentiation and integration with applications to geometry, physics, and mechanics; series. Prerequisite, 25. 8:10-9:10 and 10:30-11:30. The class meets twice daily.

## MINING AND METALLURGICAL ENGINEERING

109. Mine Surveying. (3) G. Staff  
Surveying and mapping of a portion of an underground mine. The course is given immediately following the close of the second semester of the regular term. The equivalent of two weeks' work is required at some mine in Arizona and 50 hours of laboratory work on the campus. Prerequisites, 102, Civil Engineering 52. Fee, \$15, which does not include room and board. (May 27 to June 11.) For further information write to Dr. T. G. Chapman, Dean, College of Mines.

## MUSIC

Professors Bloom, Fain, Snyder  
Assistant Professors Church, Conley

- 1a. Music Appreciation. (2) I, II. Bloom-Conley  
For non-majors with no technical knowledge of music. Music of the various periods studied in relationship to other arts; development of the critical attitude through aural training. 1st term: 7:00-8:00; 2nd term: 9:20-10:20.
- 10C. Choral Society. (1) I. Bloom  
Open to all students. No previous musical experience necessary. A varied repertory. 11:40-12:40.
- 31a. Fundamentals of Music. (2) II. Snyder  
Rudiments of music theory, applied vocally and through the piano keyboard. Open only to non-music majors for credit. 8:10-9:10.
- 101a-101b. History of Opera. (2-2) I-II. Conley  
History of opera from Peri and Caccini to the present time, including a detailed study of the Ring of the Nibelungen. Prerequisite, 1a-1b or equivalent. 10:30-11:30.
- 133a. Orchestration I. (2) I. G. Fain  
A study of the instruments of the orchestra together with the practical study of the art of symphonic scoring. Original work and transcriptions. Prerequisite, 33b. 7:00-8:00.
- 155a-155b. Opera Workshop. (1-1) I-II. G. Conley  
Training in production and performance of opera. 1st term: 9:20-10:20; 2nd term: 8:10-9:10.

172. Elementary School Music. (3) I. G. Snyder  
The problems and technics of teaching music in the elementary grades. Prerequisites, Psychology 1a, Education 151, and Music 31a, 31b. R. 8:10-9:10; L. 9:20-10:20.
- 173a. Music Appreciation for Children. (2) II. G. Snyder  
A study of the folk and historical background of materials which deal with the singing, listening, and rhythmic activities of the music lesson. Prerequisite, 171 or 172. 9:20-10:20.
- 174b. Orchestra Material and Problems in the School Music Program. (2) I. G. Fain  
Prerequisite, 171. 8:10-9:10.
- 270s. General Music Education Workshop. (2 to 3) I. Snyder  
Enrichment of the musical experience through songs, recordings, piano, melody bells, chording instruments and correlated units. 10:30-12:30.
276. Modern Tendencies in Music Education. (2) II. Snyder  
Critique on trend in objectives and articulation of current publications and practice in the field. Prerequisites, 171 or 172, Education 197m. 7:00-8:00.
- 278s. Music Education Demonstration. (2) I. Snyder, Staff  
Section A. General Music, 9:20-10:20.  
Section B. Music in the Secondary School.  
(Hours to be arranged.)
299. Seminar. (2 to 4) II. Staff  
(Hours to be arranged.)
300. Research. (2 to 4) I, II. Staff  
(Hours to be arranged.)

#### Applied Music

(Hours and credit to be arranged.)

- Band or Orchestral Instruments.  
Individual Instruction. (1 or 2) I. Fain
- Piano. Individual Instruction. (1 or 2) I, II. Church-Staff
- Voice. Individual Instruction. (1 or 2) I, II. Bloom-Conley
215. Problems in Applied Music and Ensembles. (1) I, II. Staff  
For students in 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.)

Fine Arts Summer Session for High-School Students.  
(See page 22 of this Announcement.)

#### PHARMACY

Professor Brewer (Head of the Department)

199. Special Problems. (1 to 4) I, II. Brewer  
Fee, \$5. (Hours to be arranged.)

## PHYSICAL EDUCATION FOR MEN

Associate Professors Ruff, Sancet

Assistant Professors Ott, Svob

26. Beginning Swimming. (1) II. Ruff  
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 M-F.
- 60a. Game Supervision and Officiating. (2) I. Ott  
Leadership training and practice in directing mass activities. 9:20-10:20.
62. Lifesaving. (1) II. Svob  
Practical application of lifesaving techniques and water safety precautions recommended by the American Red Cross. Qualified students are issued a Senior Lifesaving Certificate on completion of the course. 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. 8:10-9:10 M.T.W.Th. 2:00-3:00 M.
- 64s. The Teaching of Water Skills and Sports. (1) II. Ruff  
Provides those interested in managing water-front programs, and the teaching of swimming and diving, with the skills and information essential to success. Prerequisite, ability to swim the 4 basic strokes. Locker fee, \$2; deposit, \$1. 9:20-10:20 M-F.
- 70s. First Aid and Civilian Defense. (2) I. Ott  
Instruction in First Aid techniques leading to the Standard Red Cross Certificate. Specialized instruction offered in Civilian Defense. 7:00-8:00.
182. Supervision and Administration of Intramural Sports. (2) II. G. Svob  
Instruction in the nature of intramural sports; their organization into units of competition; consideration of program content, awards, scoring systems, and administrative problems. Open to men and women. 9:20-10:20.
- 196s. Athletic Coaching — Baseball. (2) I. Sancet  
Theory of coaching; strategy and tactics; batting, base running, offensive and defensive team play; rules and organized baseball. 8:10-9:10.

## PHYSICAL EDUCATION FOR WOMEN

Associate Professor Pilgrim

Assistant Professor Gatewood

- 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. Open to men and women. Locker fee, \$2; deposit, \$1. 11:40-12:40 M-Th. 2:00-3:00 M.
- 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 M-Th. 2:00-3:00 T.
- 152s. Health Programs and Problems. (2) I. G. Pilgrim  
Social, economic, and educational influences on health; principles and procedures in conducting a health program. The application of human physiology to problems of physical education. Open to men and women. Prerequisites, Zoology 4a and 8. 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 all women registered in the College of Education. 8:10-9:10.
- 168s. Camp Administration and Organization. (2) I. Pilgrim  
Camp management and administration; program building and organization; leadership; health and guidance. An actual experience in camping is included. Open to men and women. 7:00-8:00.

## PHYSICS

Professor Warner (Head of the Department)  
Instructor Davis

- 2a-2b. Introductory Physics. (4-4) I-II. Warner, Davis  
For students desiring a non-technical introductory course. Prerequisite, 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. Warner, Davis  
For students desiring an introductory course requiring the use of calculus. Prerequisite, Mathematics 95a-95b. Fee, \$4 each term. 7:00-8:30; Lab. 8:30-11:30 M.W.F. Recitation: 8:30-11:30 T.Th.

## PSYCHOLOGY

Professors Simley, Wallraff  
Associate Professor Marquart

- 1a-1b. Elementary Psychology. (3-3) I-II. Wallraff-Simley  
Fundamental principles of human behavior. Applications of principles are stressed. 8:50-10:20.
- 110s. The Individual in the Group. (3) I. G. Wallraff  
Theory and fact in social psychology. The psychological effects of membership and non-membership in group situations. Credit will not be available to any student for both this course and any other course in social psychology. Prerequisite, 1a-1b or equivalent. 7:00-8:30.
113. Development of Human Behavior —  
Childhood. (3) I. G. Marquart  
The principle changes in human beings from birth to adolescence. Prerequisite, 1a-1b. 10:30-12:00.
118. Abnormal Psychology. (3) II. G. Simley  
Forms of mental deficiency and other deviations. Prerequisite, 1a-1b. 7:00-8:30.
- 151s. Individual Differences. (2) I. G. 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. Prerequisite, one year of psychology. 8:10-9:10.

## SECRETARIAL STUDIES

Instructor Kidwell

7. Typing Review. (1) I. Kidwell  
For those with some knowledge of touch typing, but with a speed of less than 15 words per minute. Not open to those with credit in 6. Fee, \$3. 8:10-9:10.

77. Adding-Calculating Machines Techniques. (2) I. Kidwell  
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. 9:20-10:20.
- 170s. Gregg Shorthand Review. (2) I. Kidwell  
A review of Gregg shorthand theory; dictation practice and transcription of business letters and other materials. Prerequisite, ability to take dictation at 50 words per minute and typewrite at 35 words per minute. A grade of 3 in this course fulfills the requirements for entrance into 174a. Fee, \$3. 7:00-8:00.

### SOCIOLOGY

Associate Professor Mulligan  
Instructor Hambenne

81. Introduction to Sociology. (3) I. Mulligan  
The basic concepts and principles of sociology; analysis of group behavior; social institutions, processes and change. Prerequisite, sophomore standing. 10:30-12:00.
84. Social Problems. (3) II. Hambenne  
Contemporary social problems: crime, poverty, race, divorce, etc.; analysis of causes and methods of treatment. Prerequisite, sophomore standing. 8:50-10:20.
140. Child Welfare Problems. (2) I. G. Mulligan  
Extent, causes, and treatment of child welfare problems in the field of social work; child welfare agencies and services. Prerequisites, 81 and either 138 or 6 additional units of sociology or psychology. 7:00-8:00.
187. Crime and Punishment. (3) II. G. Hambenne  
Nature and causes of crime; theories of punishment and correction; administration of penal and reformatory institutions. Prerequisites, 81 and either 84 or Psychology 1b. 10:30-12:00.

### SPANISH

Professor Brooks (Head of the Department)  
Instructors Brown, Davis, Wonder

- 1a-1b. Elementary Spanish. (4-4) I-II. Wonder-Davis  
A beginning course that includes grammar essentials and translation; emphasizing especially accurate pronunciation and oral work. In the case of students in the College of Liberal Arts, degree credit in 1a is allowed only after completion of 1b. The class meets twice daily. 7:00-8:00 and 9:20-10:20.
- 3a-3b. Intermediate Spanish. (4-4) I-II. Brooks-Brown  
Introduction to systematic syntax accompanied by reading of modern books. Prerequisite, 1b or two years of high-school Spanish, or the equivalent. The class meets twice daily. 8:10-9:10 and 10:30-11:30.
- 13a-13b. Elementary Conversation. (2-2) I-II. Wonder-Davis  
Conversational practice based on everyday common activities and travel abroad. Prerequisite, 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. Prerequisite, 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.)
300. Research. (1-3) I, II. Staff  
(Hours to be arranged.)
310. Thesis. (1-3) I, II. Staff  
(Hours to be arranged.)

## SPEECH

Professors Lynn (Head of the Department), Cable

- 2s. Principles of Speech. (2) I, II. Lynn-Cable  
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. Required of majors in speech. Fee, \$1.50. 1st term: 7:00-8:00; 2nd term: 8:10-9:10.
5. Voice and Diction. (2) I, II. Lynn-Cable  
Special attention to the elimination of voice and language difficulties and cultivation of effectiveness in these respects, including articulation and enunciation, vocabulary, pronunciation, and grammar. Fee, \$1.50 (optional at the discretion of the instructor for those concurrently registering for 2s.) 1st term: 8:10-9:10; 2nd term: 9:20-10:20.
- 10s. Public Speaking. (2) II. Cable  
The beginning course in public speaking with emphasis upon organization of effective thinking and effective delivery. Required of all speech majors. Prerequisite, 2 or by examination. 1st term: 9:20-10:20; 2nd term: 10:30-11:30.
- 169s. Speech Correction. (2) I. G. Lynn  
A survey of the field of speech correction and of the common defects of speech; methods of detection and general principles of retraining. Open to teachers. 9:20-10:20.

## ZOOLOGY

Assistant Professors Cockrum, Lowe, Micklewright

- 4a. General Zoology. (4) I. Cockrum  
An introductory course in the structure, physiology, development and behavior of animals treated from the biological viewpoint. Emphasis on a representative vertebrate and the invertebrates. Fee, \$7. 8:10-9:10; Lab. 9:20-12:20.
57. Elementary Physiology. (4) I. Micklewright  
Physiological processes of the human body. Primarily for students in physical education, prenursing students, and the general undergraduate. Prerequisite, 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.

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