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SOUTHWEST TEXAS STATE UNIVERSITY
San Marcos, Texas

CALENDAR, 1971-1972

Fall Semester

August 23, Monday  First General Faculty Meeting at 4:00 p.m., Evans Auditorium
August 25-28, Wednesday-Saturday  Orientation and Registration
August 30, Monday  Classes begin
September 6, Monday  Labor Day holiday
September 7, Tuesday  Last day to register and add courses
August 30—October 15  Dates to file applications for degrees by candidates who expect to complete degree requirements in December, 1971
September 24, Friday  Last day to drop a course without penalty
October 20, Wednesday  Mid-semester grades due
October 23, Saturday  Homecoming
November 25-28, Thursday-Sunday  Thanksgiving holidays
December 3, Friday  Last day to drop a course and withdraw from the university
December 9-12, Thursday-Sunday  Dead Week
December 13-18, Monday-Saturday  Examination Week
December 18, Saturday  End of semester

Spring Semester

January 11, Tuesday  Orientation for all students
January 12-15, Wednesday-Saturday  Registration for all students
January 17, Monday  Classes begin
January 17—February 11  Dates to file applications for degrees to be conferred on May 19, 1972
January 24, Monday  Last day to register and add courses
February 11, Friday  Last day to drop a course without penalty
March 8, Wednesday  Mid-semester grades due
March 13-18, Monday-Saturday  Spring vacation
May 5, Friday  Last day to drop a course or withdraw from the university
May 6-9  Saturday-Tuesday  Dead Week
May 10-16, Wednesday-Tuesday  Examination Week
May 19, Friday, 8:00 p.m.  Graduation
SUMMER, 1972

First Term

June 5, Monday ......................................................... Registration
June 6, Tuesday ......................................................... Classes begin
June 6-23, Tuesday-Friday .......... Dates to file applications for degrees
to be conferred on August 19, 1972
June 7, Wednesday ..................................................... Only day to register late
and add/drop courses
June 10, Saturday
July 4, Tuesday ........................................ Holiday
July 8, Saturday
July 10, Monday
July 10, Monday ........................................ Examinations begin
July 11, Tuesday ................................................ Examinations end

Second Term

July 13, Thursday
July 14, Friday
July 15, Saturday ................................................ Classes meet
July 17, Monday ................................................ Only day to register late
and add/drop courses
July 29, Saturday .... Three-weeks classes only meet for last time
August 16, Wednesday
August 16, Wednesday
August 17, Thursday ........................................ Examinations end
August 19, Saturday .......... Graduation, Evans Stadium, 8:00 p.m.
August 28, Monday, 4:00 p.m. .......... First General Faculty Meeting
of Fall Semester, 1972
ADMINISTRATION

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1970-1971

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Floyd L. Martine, M.Ed., Dean of Students
Louis C. Moloney, D.L.S., Librarian

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Oscar William Van Auken, Assistant Professor of Biology.
   B.S., High Point College; M.S., Ph.D., University of Utah.

Joe Wayne Walker, Assistant Professor of Industrial Arts.
   B.S., M.Ed., Ed.D., North Texas State University.

Richard Wade Wheeler, Assistant Professor of Psychology.
   B.S., M.A., Ph.D., University of Houston.

Bobby Gene Whiteside, Assistant Professor of Biology.
   A.S., Eastern Oklahoma A&M College; B.S., M.S., Ph.D., Oklahoma State University.

Byron Adams Wolverton, Associate Professor of Music.
   B.Mus., M.A., University of Missouri; Ph.D., Indiana University.
THE GRADUATE SCHOOL

The Graduate Council

1970-1971

Leland E. Derrick, B.A., M.A., Ph.D. .................. Dean of the Graduate School
David C. Whitenberg, B.S., M.S., Ph.D. ................ Biology
Mayron Shields, B.S., M.B.A., Ed.D. ...................... Business Administration
Billy J. Yager, B.S., M.S., Ph.D. .......................... Chemistry
Buford W. Williams, B.S., M.A., Ed.D. ..................... Education
Thomas L. Brasher, B.A., M.A., Ph.D. ........................ English
Elmer A. DeShazo, B.B.A., M.A., Ph.D. ............... Government
Everette Swinney, B.A., M.A., Ph.D. ...................... History
John R. Ballard, B.S., M.A., Ed.D. ........................ Industrial Arts
Henry N. McEwen, B.S., M.Ed., Ph.D. ....................... Mathematics
John F. Saunders, B.A., M.A., Ph.D. ...................... Modern Languages
Robert E. Anderson, B.A., M.A., Ph.D. ................ Physical Education
Doyle G. Ward, B.A., M.A., Ph.D. ......................... Special Education
Lester L. Schilling, Jr., B.S., M.A., Ph.D. ............... Speech

Ex Officio:

Billy M. Jones, B.A., M.A., Ph.D. .................... President
Joe H. Wilson, B.A., M.A., Ph.D. ........................ Dean of the University
Alton G. Brieger, B.A., M.A. ............................ Dean of Admissions and Registrar

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GENERAL INFORMATION

AUTHORIZATION

The establishment of a Graduate School at Southwest Texas State University was authorized by the Board of Regents at its meeting on July 15, 1935. Graduate courses were first offered during the summer session of 1936, and the first Master of Arts degree was conferred at the spring commencement of 1937. In 1950 the Board of Regents authorized the granting of the Master of Education degree in addition to that of Master of Arts. In 1968 action of the Coordinating Board, Texas College and University System, added the degree of Master of Business Administration for implementation in 1969. The graduate program, originally designed exclusively for the preparation of teachers and school administrators, has been expanded more recently to meet other demands such as the preparation of junior college instructors and to fulfill the present role of the university as a general regional institution.

ORGANIZATION AND ADMINISTRATION

The university is organized into the School of Creative Arts, the School of Liberal Arts, the School of Sciences, the School of Business, the School of Education, the School of Applied Arts, and the Graduate School.

The Graduate Council determines the policies of the Graduate School, and these policies are administered by the Dean of the Graduate School. Besides the Dean, who serves as chairman, the Graduate Council is composed of a representative of each department which offers a graduate major. The President of the University, the Dean of the University, and the Registrar are ex officio members of the council.

Major programs leading to the Master of Arts or Master of Education degree are offered in the following fields: biology, chemistry, education, English, government, health and physical education, history, industrial arts, mathematics, physics, Spanish, special education, and speech and drama. Programs are also available in agricultural education and music education. Minors are offered in each of these fields and also in agriculture, business administration, German, and music. The program leading to the Master of Business Administration degree does not require a minor field; instead, the student works within the field of business administration only. The Master of Science degree is offered in biology, chemistry, mathematics, and physics.

DEGREES OFFERED

The Master of Arts degree requires the completion of at least 30 semester hours of work, including the thesis, in courses carrying graduate credit. At least 15 hours, including the thesis, must be earned in courses numbered 5000 or above. The degree program will consist of a major of
18 or 21 hours, including the thesis, and a minor of 9 or 12 hours, or two minors of 6 hours each.

The Master of Education degree requires the completion of 36 hours of course work, as a minimum, at least 18 hours of which must be in courses numbered 5000 or above. The degree program will normally consist of a major of 21 hours and a minor of 15 hours, or two minors of 9 and 6 hours each.

The Master of Business Administration degree normally requires the completion of at least 30 semester hours of work in business, including the thesis, in courses numbered 5000 or above. For those students who have earned a baccalaureate degree in a field other than business administration, a two-year program leading to the degree of Master of Business Administration will be available.

The Master of Science degree requires the completion of at least 30 semester hours including the thesis or 36 semester hours without the thesis. Both the major and the minor must be in the sciences.

For teacher certification, conversion from the secondary to the elementary teaching field will require the completion of 36 hours including the thesis or 42 hours on the non-thesis plan.

OBJECTIVES OF THE GRADUATE SCHOOL

The purpose of the Graduate School is to provide the means for continued intellectual growth through advanced and specialized education. The ultimate aim is to develop leaders in the professions and in research. More explicitly, the following objectives have been adopted to add both breadth and depth to the academic and professional preparation received at the undergraduate level:

1. To reinforce and extend the student's academic and professional equipment as a means of improving professional competence.

2. To familiarize the student with current and recent research in his field; to acquaint him with the techniques of research; to enable him to interpret his own and current research, to derive significant implications therefrom, and to apply pertinent findings.

3. To challenge the student intellectually, to develop the power of independent thought, and to direct him toward the goal of greater effectiveness in both his personal and professional life.

CHARACTERISTICS OF GRADUATE STUDY

Graduate study affords students of superior ability opportunity for continued intellectual growth and development. It presupposes a broad background of knowledge, adequate preparation in the major and minor fields of study, and a command of the skills and techniques needed to carry on intensive research and investigation with a high degree of
resourcefulness and self-direction. Policies of the Graduate Council provide that graduate instruction will differ from undergraduate instruction in at least the following respects:

1. More emphasis is placed on bibliography and on the use of library materials.
2. More extensive reading is required.
3. More comprehensive papers and reports are required.
4. The graduate student is expected to assume greater responsibility and to exercise more initiative.
5. Seminar methods will be employed more frequently, requiring more class participation on the part of the student.

RESPONSIBILITY OF THE STUDENT

This bulletin is provided for the guidance of the graduate student. Failure to become thoroughly familiar with the policies and regulations of the Graduate School may result in complications and delay the completion of degree requirements.

COURSE NUMBERS

Courses numbered 5000 and above are open to graduate students exclusively. Courses in the 3000 and 4000 series may, in some instances, be accepted for graduate credit. The inclusion of undergraduate courses in a graduate program must have the prior approval of the Dean of the Graduate School, and graduate students enrolled in such courses will be held to a higher standard of performance than is required of undergraduates.

Graduate courses typically carry 3 semester hours of credit; among the exceptions are thesis courses, which yield 6 semester hours of credit.

AMOUNT OF WORK PERMITTED

At the graduate level the normal course load during a semester is 12 hours; the maximum is 15 hours. The maximum load during a summer term of six weeks is 6 hours. The permissible load of assistant instructors and other part-time employees of the university will be determined by the department.

Teachers who are employed full time in the public schools must have the approval of their employer and of the Dean of the Graduate School to enroll for more than three hours during any semester; they may not under any circumstances earn more than six hours of credit during any semester nor more than nine hours during any long session.
1. Bachelor's Degree: Graduates of Southwest Texas State University and of other institutions of standard collegiate rank recognized by an accrediting agency such as the Southern Association of Colleges and Secondary Schools are eligible to apply for admission to the Graduate School.

A senior student in the university who lacks 9 or fewer semester hours toward graduation may enroll for courses to be applied toward the master's degree, provided that the number of hours applicable to the master's degree shall not exceed the difference between 15 semester hours (maximum load) and the number of hours needed for graduation, and provided further that, at the discretion of the Dean of the Graduate School, students of demonstrated superior ability, who lack 12 hours for graduation may enroll for three hours of graduate work.

2. Grade Requirements: Admission to graduate study will be restricted to those applicants whose records indicate probable success in graduate work. Determination of the applicant's eligibility will be made on the basis of the undergraduate grade average and the score on the Graduate Record Examination in accordance with policies established by the Graduate Council. The minimum requirement for admission is a “C” plus (2.5 on a scale with “A” equal to 4) grade-point average over the entire undergraduate program.

3. All applicants for admission to graduate study are required to take the aptitude sections of the Graduate Record Examination. Dates on which examinations are scheduled can be obtained from the Graduate Office or from any testing center which administers the Graduate Record Examination. The examinations should be taken well in advance of the application for admission.

4. Admission Procedures: Admission is granted by the Dean of the Graduate School upon the presentation by the applicant of proper credentials. Applicants, including graduates of Southwest Texas State University, should forward or present to the Dean of the Graduate School official transcripts of all college work completed. No responsibility can be assumed for processing applications that are not submitted at least thirty days in advance of the date of original enrollment in the Graduate School. The application for admission is completed in the Graduate Office, either in conference with the applicant or on the basis of correspondence. A written application for admission should include the following:

   a. An official transcript. Graduates of this university should obtain a copy of their permanent record from the Registrar.
   b. Designation of the proposed major and minor fields of study.
   c. A statement of the applicant's preference as to degree plan.

5. Admission to Graduate Study Versus Admission to Candidacy: Admission to graduate study shall not be understood as implying admission to candidacy for the master's degree.
ADMISSION TO CANDIDACY FOR THE MASTER'S DEGREE

1. Degree Program: The student who expects to become a candidate for the master's degree should apply to the Dean of the Graduate School for an outline of the proposed degree program.

2. Appointment of Major Professor: When he has approved the degree program, the chairman of the department in which the student majors will appoint a graduate advisor. The student should confer with his advisor as soon as possible after receiving notice of the appointment.

3. Application for Candidacy: Upon the successful completion of 15 semester hours of graduate work with at least a "B" average, the student will make a formal application for candidacy for the master's degree. The application, bearing the signature of the major professor, must be filed in the Graduate Office not later than 30 days prior to the commencement at which the student expects to have the degree conferred.

REQUIREMENTS FOR THE MASTER'S DEGREE

1. Residence Requirement: Thirty semester hours of graduate work must be completed on the campus of Southwest Texas State University.

2. Credits by Transfer, Extension Study, or Correspondence: A maximum of six semester hours of credit earned at another institution may be accepted on transfer and applied toward the master's degree, provided that the credit was earned in graduate courses completed in residence at an accredited institution, that the courses are appropriate to the student's degree program at this university, and that acceptance of the transferred credit does not violate the 30-hour residence requirement.

   Not more than six semester hours of graduate credit may be earned in extension courses offered by Southwest Texas State University and acceptance of such credit may not reduce the residence requirement.

   No credit toward a master's degree may be earned through extension courses at another institution or through correspondence study.

3. Time Limit: A program leading to the master's degree must be completed within six years from the date of the student's initial enrollment for graduate courses. No credit will be applied toward the master's degree for courses completed more than six years before the date on which the degree is to be conferred. An extension of time will be given to students who are inducted into military service.

4. The minimum number of semester hours required for the master's degree is 30; the maximum is 42.

5. At least one half of the courses applied toward the degree must be numbered 5000 or above.

6. Ordinarily, except as noted, not more than six hours of credit earned in courses open to juniors may be applied toward the master's de-
gree, and credit in such courses may be applied only with the express approval of the Graduate Dean. Students enrolled in undergraduate courses for graduate credit will be required to meet higher standards of work, both quantitatively and qualitatively, than are required for undergraduates.

7. Majors in education who apply for the Master of Education degree must include a problems course: Education 5390 or Education 5391. As a part of the requirements of each course the student will write a formal report prepared in conformity with instructions given in the manual for writing the thesis.

8. Prerequisites for Graduate Courses: A background of at least 24 semester hours, including 12 advanced, is required for the graduate major; and 18 hours, including six advanced, are required for the graduate minor. In some instances 18 advanced hours in education may be sufficient background for a major in education. Majors in any field of education who have not completed student teaching must complete this course as a background requirement or obtain a waiver from the Department of Education on the basis of teaching experience. Background for the degree of Master of Business Administration normally consists of the baccalaureate degree in business administration, or 30 hours in the field to include these courses or their equivalents: accounting, 6 hours; economics, 6 hours; business law, 3 hours; finance, 6 hours; management, 3 hours; marketing, 3 hours; statistics, 3 hours.

9. Grades in all courses taken for graduate credit and in all courses completed in the major field must average "B," provided that no grade of "D" shall be valid, and provided further that a grade of "A" must be earned for each grade below "B" and for each incomplete grade, except in thesis courses. An "A" grade earned at another institution may not be used to remove a grade deficiency earned at this university. A student who falls two points below a "B" average may not continue a degree program without approval of the Dean of the Graduate School.

10. Thesis Requirements: If the student elects to write a thesis, a committee to direct the thesis will be assigned by the department chairman in conference with the student.

   a. The thesis must demonstrate the student's capacity for research and independent thought. The completed thesis must be submitted to the chairman of the thesis committee not later than 30 days before the date of the commencement at which the degree is to be conferred; and two unbound copies of the thesis, bearing the signatures of the members of the committee, must be deposited with the Dean of the Graduate School for final approval not later than 15 days before the date of the commencement at which the degree is to be conferred.

   b. Two copies of the thesis must be deposited in the library, and a fee to cover the cost of binding must be paid to the library before the degree is conferred.
c. The thesis must be prepared in conformity with the style manual, which is available in the University Bookstore.

d. Credit for the thesis will be recorded as course number 5699 or 5399 in the field in which the subject matter of the thesis falls, e.g. Education 5699, English 5699. If the student does not complete the thesis in the term or semester in which he is enrolled for it, he will receive a grade of “P” with the privilege of redeeming credit for the course by completing the thesis at any time prior to his graduation.

A student may enroll for either three or six hours of credit in the thesis course in any semester or summer term, for a total of six hours. A student will be required to enroll and pay the fee for at least three hours of the thesis course during any semester or term during which he desires thesis supervision. Preliminary discussions regarding the selection of a topic and assignment to a supervisor will not require enrollment for the thesis course.

11. Comprehensive Examination: All candidates for the master’s degree must pass a comprehensive examination, either written or oral or both, covering at least the field of concentration and the thesis if a thesis is written. This examination may not be taken until the student has acquired at least 18 hours of graduate credit and may not be taken before the final term or semester if the student has a grade deficiency. The grade on the comprehensive examination must be filed in the Graduate Office at least ten days before the commencement at which the degree is to be conferred. Arrangements for the examination may be made with the major professor or the department head.

12. Application for the Degree: The candidate must file in the Graduate Office application for his degree within the period announced in the university calendar. He also must pay a diploma fee in the Business Office.

13. Recommendations for the Degree: Upon the completion of all requirements for the master’s degree, and with the approval of the department concerned, candidates are certified for graduation by the Dean of the Graduate School. Degrees are conferred publicly at the close of the spring semester and of the summer session.

14. Degree plans:
   a. The program leading to the Master of Arts degree requires the completion of at least 30 semester hours including the thesis. Majors in English, drama, Spanish, and speech must follow this program.
   b. The Master of Education degree requires the completion of 36 semester hours without the thesis.
   c. The Master of Business Administration degree requires the completion of at least 30 semester hours including the thesis.
   d. For the Master of Science degree both the major and minor must be in the fields of biology, chemistry, mathematics, and physics. The program requires the completion of at least 30 semester hours including the thesis or 36 hours without the thesis.

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OPTION I.
PROGRAM LEADING TO THE MASTER OF ARTS DEGREE

Plan A: Thirty semester-hour plan

(1) A minimum of 30 semester hours of work, selected from courses recognized for graduate credit, must be completed, including the six semester hours allowed for the thesis.

(2) Of the 30 hours of work required, at least 15 hours, inclusive of the credit allowed for the thesis, must be in courses numbered 5000 or above.

(3) This degree program must include:
   (a) a major of 18 semester hours, inclusive of the thesis, and two minors of six semester hours each or one minor of 12 hours, or
   (b) a major of 21 semester hours, inclusive of the thesis, and a minor of nine hours.

Plan B. Thirty-six semester-hour plan

(1) Students who earned their baccalaureate degree in the secondary field and who wish to take their Master of Arts degree in elementary education must do so by completing the prescribed course of study including a minimum of 36 semester hours.

(2) This program must include:
   (a) a major of 18 semester hours in elementary education, inclusive of the thesis, and
   (b) a minor of 18 semester hours in professional subject matter.

OPTION II.
PROGRAM LEADING TO THE MASTER OF EDUCATION DEGREE

Plan A: Thirty-six semester-hour plan

(1) If no major change in objective is involved, a student may omit the thesis and earn the Master of Education degree by completing 36 hours of graduate work.

(2) This degree program normally includes:
   (a) a major of 21 semester hours, and
   (b) a minor of 15 semester hours or two minors, one of six hours and one of nine.
Plan B.: Forty-two semester-hour plan.

(1) Students who earned their baccalaureate degree in the secondary field and who wish to do their graduate work in elementary education may omit the thesis and earn the Master of Education degree by completing a prescribed course of study including a maximum of 42 semester hours of graduate work, provided that this number may be reduced if warranted by elementary work completed by the candidate at the undergraduate level.

(2) This degree program must include:
   (a) major of 21 semester hours in elementary education, and
   (b) a minor of 21 semester hours.

PROGRAM LEADING TO THE MASTER OF BUSINESS ADMINISTRATION DEGREE

The program consists of a minimum of 30 semester hours in business administration including the thesis. No minor is required.

Students whose baccalaureate degrees are in a field other than business administration will be prescribed background work for a preliminary year or a part of a preliminary year.

PROGRAM LEADING TO THE MASTER OF SCIENCE DEGREE

(1) A minimum of 30 semester hours including the thesis or
(2) A minimum of 36 semester hours without the thesis.

The thesis is optional with departments and within departments.

Both the major and minor must be in the fields of biology, chemistry, mathematics, and physics.
## FEES AND EXPENSES

### TYPICAL EXPENSES FOR NINE MONTHS AT SOUTHWEST TEXAS STATE UNIVERSITY

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and fees</td>
<td>$198.00</td>
</tr>
<tr>
<td>Textbooks and supplies</td>
<td>160.00</td>
</tr>
<tr>
<td>Room and Board</td>
<td>792.00</td>
</tr>
<tr>
<td>Personal Expenses</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$1,150.00</td>
</tr>
</tbody>
</table>

These estimates are based upon university air-conditioned housing. The total cost will vary from student to student depending upon the courses in which he is enrolled and housing accommodations. The University has made no effort to estimate the amount of personal expenses needed.

### REGISTRATION FEES AND DEPOSITS

**General Property Deposit.** Each student is required to make a General Property Deposit of $10.00 which must remain with the university through his career here except as noted in "A" below. All charges for property losses or damages or breakages or violations of rules of the university must be settled promptly. However, any unpaid current charges will be deducted from the deposit before a refund is made.

**A. Refund of General Property Deposit.** The General Property Deposit less charges will be returned to the student at the end of his career as a student, provided, however, that any General Property Deposit which remains without call for refund for a period of four years from the date of last attendance at this university shall be forfeited and the deposit become a part of and operative to the permanent use and purpose of the University Student Deposit Fund.

### REQUIRED REGISTRATION FEES FOR EACH SEMESTER

<table>
<thead>
<tr>
<th>Fee</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Service Fee</td>
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</tr>
<tr>
<td>Tuition (For resident of Texas)</td>
<td>50.00</td>
</tr>
<tr>
<td>Building Use Fees</td>
<td>24.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$99.00</strong></td>
</tr>
</tbody>
</table>

Estimated cost of textbooks and supplies: $80.00 to $100.00
EXPENSES

The summer tuition for resident students shall be $25.00 per six-weeks term or $50.00 for twelve weeks session of summer school.

Tuition fee for non-residents: Pursuant to provisions of House Bill 265, enacted by the 55th Legislature of Texas, tuition fees for students who are not residents of Texas have been established as follows:

1. For each semester, $200.00.
2. For a summer term of six weeks the fee shall be $100.00, or $200.00 for the 12 weeks session.

The university reserves the right to change fees in keeping with the acts of the Texas Legislature.

Payment of Fees. All fees and deposits are payable at the time of registration and a student is not registered until his fees are paid. Payment may be made in check or money order payable to Southwest Texas State University. If checks are returned unpaid for any reason other than the admitted error of the bank, the student must pay in cash immediately. Students whose checks have been dishonored may be required to pay in cash thereafter.

The payment of these fees entitles the student to admission to classes in accordance with the provisions of this catalog, admission to auditorium and athletic attractions, subscription to the “University Star,” use of the Student Center facilities, health services, Sewell Park facilities, and partial purchase of the “Pedagog.” These fees also help provide funds for the Student Senate, Band, A Cappella Choir, dramatics, debate, and other student activities.

Auditing Fees. Where auditing of a course is permitted, all fees will be the same as if the course were taken for credit.

Extension and Correspondence Instruction: Pursuant to the action taken by the Board of Regents, the fee for extension instruction is $50.00 for a three-hour course. The audit fee for extension courses is the same as if the course were taken for credit.

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COURSES FOR GRADUATE STUDY

DEPARTMENT OF AGRICULTURE

The Department of Agriculture offers a graduate minor but not a major. A major program is available, however, in agricultural education, consisting of 15 hours in education, 6 hours in agricultural education, and 15 hours in technical agriculture.

Agriculture

Courses for Undergraduates and Graduates

4313 Crop Improvement and Seed Production. (2-2) Credit, 3 hours. Practical methods of crop improvement, seed production, curing, storing, cleaning, packing and distributing, and seed certification. Visits are made to see agencies and to well-equipped seed farms.

Prerequisite: Biology 3450 and senior standing in Agriculture.

4321-5321 Advanced Range Management. (2-2) Credit, 3 hours. Advanced problems in range management such as range and ranch economics, maintenance and improvement of the range through reseeding, brush control, and proper stocking.

4347-5347 Conservation of the Natural and Agricultural Resources. (3-0) Credit, 3 hours. A study of resources related to farm and community life. Special emphasis will be placed on the conservation of soil, water, forest range land, wildlife, minerals, health, and safety. Visiting consultants in the above fields will be used.

4361 Rural Electrification. (2-2) Credit, 3 hours. The fundamentals of electric current generators and transmission, farm applications, electric heating, lighting and power, wiring motors, power rates, meter reading, safety rules and regulations.

4373 Farm Mechanics Welding, (1-4) Credit, 3 hours. The advanced welding problems in farm mechanics such as selection of equipment and supplies, metal identification, hard facing, welding cast iron and high carbon steel, distortion control, preparation of metals, brazing, cutting, and the use of the carbon arc.

4426-5426 Classification and Management of Range Soils. (3-2) Credit, 4 hours. Classification and management of range soils in Texas. The physical relationships of soil moisture, temperature, penetrability, and aeration to plant growth. Range condition classes, range sites, land classes, and problems areas as they affect management.
Courses for Graduates Only

5313 Advanced Problems in Farm Crop Production. (3-0) Credit, 3 hours. Intensive study of the latest research in the production and harvesting of crops. Comparative study of the characteristics of the most recently recommended varieties of the chief farm crops grown in Texas.

5370 Problems in Technical Agriculture. Credit, 3 to 6 hours. A conference course. Problems will be selected to meet the needs of the individual student.

Agricultural Education

Courses for Graduates Only

5314 Problems in Teaching Vocational Agriculture. Credit, 3 to 6 hours. The student is given the opportunity to work on problems of special interest and need in teaching high school vocational agriculture. If taken for three semester hours credit, this course may be repeated for additional credit.

5318 Administration and Supervision of Vocational Education. (3-0) Credit, 3 hours. Problems of organization, administration, and supervision of vocational education. Study of the Smith-Hughes, the George-Barden, the National Defense Education, and other national and state laws that govern vocational education.

DEPARTMENT OF BIOLOGY

Courses for Undergraduates and Graduates

4301-5301 Evolution. (3-2) Credit, 3 hours. Basic genetics principles applied in the interpretation of such phenomena as natural selection, adaptation, genetics of populations, speciation and man's future. Consideration is given to the origin of life, nature of chromosomal variation, evolution of genetic systems, and certain other selected topics. Laboratory is by special arrangement averaging about two hours per week. Open to students who have completed Biology 3450.

4310-5310 Field Biology of Plants. (2-3) Credit, 3 hours. Basic ecological relationships and natural history of plants including geomorphology, historical geology, and plant geography; special emphasis on plant-soil-water relationship to develop better conservation concepts, and on the soils, vegetation regions and surface geology of central Texas. The laboratory will include field trips to observe and study the nature of different vegetational regions. Students will make a permanent representative collection of plant groups.

4313-5313 Parasitology. (3-3) Credit, 3 hours. A study of the biology and biological significance of the common parasites of men and animals.
4315-5315 Ichthyology. (2-3) Credit, 3 hours. An introduction to the study of the morphology, taxonomy, natural history, and evolution of fish. Field trips will be made to collect study specimens, and laboratory periods will be devoted to morphological and systematic analyses.

4320-5320 Field Biology of Animals. (2-3) Credit, 3 hours. Basic environmental relationships and natural history of invertebrate and vertebrate animals; special emphasis upon taxonomy, aspects of speciation and biotic provinces. The laboratory will include field trips for the study and collection of animals in their natural habitats. Students will assemble a permanent representative collection of animal groups.

4325-5325 Biometry. (3-0) Credit, 3 hours. Basic principles of statistical methods as applied to biological problems such as sampling techniques, analysis of data, experimental design and population dynamics. Emphasis will be on practical application.

Prerequisite: One year of mathematics.

4330-5330 Experimental Techniques. (2-3) Credit, 3 hours. Methods applicable in biological investigations; special emphasis on respiratory techniques and other methods specifically related to cell physiology; library work, as well as the reporting of scientific data. May be repeated for credit in different biological subject matter areas.

4340-5340 General Physiology. (3-3) Credit, 3 hours. Principles basic to cell physiology (colloidal systems, surface phenomena, osmotic pressure, permeability, etc.) and a discussion of protoplasm.

4345-5345 Advanced Genetics. (3-2) Credit, 3 hours. The course includes the study of inheritance of biochemical and physiological characteristics, medical genetics and modifications of genetic systems by radiations and chemicals. The genetic systems of various organisms are included but reference and application to the genetic system of humans are of special interest.

Prerequisite: Biology 3450 and a sufficient background in physiology. Suggest Biology 4301-5301 and biochemistry.

4365-5365 General Entomology. (3-3) Credit, 3 hours. A survey of the basic principles of morphology, physiology, and taxonomy of terrestrial arthropods with major emphasis on insects.

Considerable laboratory time will be devoted to a taxonomy study of the common Orders and Families of insects.

4370-5370 Limnology. (2-3) Credit, 3 hours. A study of the physical chemical, and biological factors affecting productivity in lakes, ponds, and streams. Limnological sampling methods, chemical and biological analysis of samples, and hydrographic surveying are included in the laboratory.

Prerequisite: Biology 2360 and Chemistry 3410, or consent of the instructor.
4380-5380 **Cytology and Microtechnique.** (3-3) Credit, 3 hours. Microscopic and ultra microscopic cellular structures, their origin, development, and function. Typical and atypical nuclear and cellular reproduction. Various cytological techniques will be demonstrated including histochemical methods, staining techniques, fluorescent microscopy and auto radio-graphic methods.

Courses for Graduates Only

5110 **Seminar in Biology.** (1-0) Credit, 1 hour. A graduate student majoring in biology is required to absorb a minimum of two semester hours in this course in addition to the standard requirements for the advanced degree.

5312 **Radiation Biology.** (2-3) Credit, 3 hours. A review of the physical theory of ionizing radiation important to living organisms. Survey of the effects of ionizing radiations on biological systems.

5319 **Animal Ecology.** (3-3) Credit, 3 hours. Basic principles of animal ecology including environmental analysis, populations and community organization; field and laboratory exercises devoted to specific ecological problems.

5335 **Fisheries Management.** (2-4) Credit, 3 hours. An introduction to techniques and principles involved in the management of fisheries. Laboratory and lecture will include the study of artificial habitats; effects of physiocochemical factors on fish; stocking rates; reproduction; carrying capacity; productivity; sampling procedures; population estimates; mortality, survival, and growth rates; commercial and sport fisheries.

Prerequisite: Biology 4315-5315 or permission of instructor.

5350 **General Physiology.** (3-1) Credit, 3 hours. Selected topics such as photosynthesis, bioluminescence, muscle mechanics, bioelectrics, cell correlations, and some intermediary metabolism. Laboratory is by special arrangement averaging about one hour per week. May be repeated for credit in different biological subject-matter areas.

5360 **Comparative Physiology.** (2-3) Credit, 3 hours. Attention is given to the way in which different organisms perform similar functions. May be repeated for credit in different biological subject-matter areas.

5361 **Biology of Water Pollution.** (2-3) Credit, 3 hours. Biological aspects of water pollution and purification will be stressed. Special attention will be given to the response of aquatic communities to changes in water quality.

Prerequisite: Biology 2360 and Chemistry 3410 or consent of the instructor.

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5390 or 5690 Problems in the Biological Sciences. Credit, 3 or 6 hours. Open to graduate students on an individual basis at any time by arrangement with the faculty member concerned; problems in the areas of systematics and environmental biology, physiology and biophysics, and cytology and genetics.

5399 or 5699 Thesis. Credit, 3 or 6 hours.

5610 National History Expedition. Credit, 6 hours. The course work consists primarily of a four-week field trip preceded by a week of preparation and followed by a week of final disposition on the campus. The course is normally conducted during the summer school sessions. The one-week preparatory sessions involve classroom study of geology, geography, climate, flora and fauna of the area to be visited. Field methods and techniques will also be considered in the classroom. Outside the classroom, participants prepare and assemble expedition equipment and supplies. During the trip emphasis will be on the collecting and preparation of biological specimens and group discussions of regional ecology. Type specimens will be placed in the Natural History collection of the Southwest Texas Department of Biology. Participants are urged but not required to prepare personal collections. Open, by permission, to Graduate biology majors. Enrollment: 17 students. Transportation only will be provided participants.
Courses for Graduates Only

*5311 Current Developments in Marketing. (3-0) Credit, 3 hours. Advanced study of marketing functions and institutions; marketing structures, strategies, policies, and problems. Each student will be given an opportunity to examine developments of special interest to him.

5312 Seminar in Management. (3-0) Credit, 3 hours. Study and analysis of management theory; managerial functions; management principles; philosophies of management; analysis of nature and problems and approaches to planning, organizing, decision making, and controlling through the study of recent relevant literature and selected cases.

5330 Industrial Relations. (3-0) Credit, 3 hours. A study of current developments and practices in industrial relations, including executive development programs; employee communications; wage administration; labor force and labor market; employee services; human relations and productivity; the labor agreement; settlement of labor disputes and current contributions to personnel theory.

*5332 Quantitative Methods. (3-0) Credit, 3 hours. This course will review mathematical procedures, probability, sampling, and sampling distributions. Model building and simulations will be studied with topics to include simplex, MODI, transportation, index and ratio-analysis methods; applications to production management and marketing problems along with capital investment decisions; Monte Carlo method; waiting lines; incremental and total value analysis; and statistical quality control; computer applications will be introduced.

*5333 Problems in Business Administration. Credit, 3 or 6 hours. The student is here given the opportunity to work in the field of his special interest, particularly in the subject of accounting, business law, marketing, statistics, finance, and insurance. The course will be conducted by conferences between the student and instructors concerned. Problems will be assigned as nearly as possible for the needs of the individual student.

5361 Advanced Accounting Theory. (3-0) Credit, 3 hours. An examination of the theory of business income, evaluated in the light of criticisms implicit in other concepts of income. The social significance of accounting; valuation principles and presentation of financial statements.

*May be repeated once with different emphasis for additional credit.
*5367 Advanced Seminar in Finance. (3-0) Credit, 3 hours. An advanced study of financial analysis including contemporary problems and methods used in financing business enterprise, both internally and externally; interest rate trends, government regulation of securities markets, taxation and the public debt; sources of information useful for research in solving financial problems.

*5378 Advanced Economic Theory. (3-0) Credit, 3 hours. This course treats the vital function of an economic system to sustain a satisfactory rate of economic growth consonant with social goals reflected in economic stabilization goals and policy. A brief historical review of theories of development, comparative means of effecting economic integration and solving economic problems, delineation of the scope and method of a theory of development, the role of aggregate economics in analysis of growth, its measurements, and providing policy-making premises; emphasis upon intersectoral and interregional economic relations, and the role of price in furnishing "coefficient of choice" to guide policy-making. A corollary goal is to present monetary theory, which overlaps both micro- and macro-economics, as the "bridge" between these two major areas of economic theory.

5387 Financial Control. (3-0) Credit, 3 hours. A study of the financial framework within which businesses operate and the principles governing operational decisions and the flow of funds through the individual company. Topics include accounting principles and conventions, price level problems related to accounting data, limitations associated with financial statements, basic procedures for statement analysis and interpretation, evaluation of alternate methods of business financing, and controls effected through budgets and accounting reports.

5699 Thesis. Credit, 6 hours.

*May be repeated once with different emphasis for additional credit.
DEPARTMENT OF CHEMISTRY

Courses for Undergraduates and Graduates

4335 Advanced Qualitative Analysis. (2-6) Credit, 3 hours. An advanced course in inorganic analysis; analysis and detection of cations and anions with special emphasis on general analysis of ores, complex salts, alloys and commercial products; experience in the use of semi-micro technique.

4340-5340 Analysis and Synthesis of Organic Compounds. (2-6) Credit, 3 hours. A laboratory study with lectures on the principles and techniques used for the identification and synthesis of organic compounds. Some time is also given to quantitative analysis and glass blowing.

Prerequisite: Chemistry 2420.

4345-5345 Chemical Bonding and Structure. (3-0) Credit, 3 hours. A study of modern theories of chemical bonding in both organic and inorganic systems. Topics include both valence bond and molecular orbital approaches. Huckel molecular orbital theory and ligand field theory are included.

Prerequisite: Chemistry 1420 and Mathematics 3372.

4430-5430 Instrumental Analysis. (3-4) Credit, 4 hours. The theory and technique of physico-chemical methods of analysis; principles underlying the analytical application of spectroscopy, spectrophotometry, colorimetry, electrolytic separation of metals, potentiometric determination, polarography, and ion exchange.

Prerequisite: Chemistry 3340.

4475-5475, 4485-5485 Biochemistry. (3-3) Credit, 4 hours each. The first semester is devoted to a study of the chemistry of carbohydrates, lipids, proteins, vitamins, and other cellular constituents; the second semester, to a study of digestion, absorption, intermediary metabolism and respiration. Emphasis is placed on the importance of enzymes in these processes. Chemistry 4475-5475 does not require validation by Chemistry 4485-5485.

The course is intended for students majoring in biology or chemistry and minoring in the other.

Prerequisites: Chemistry 2240, 3340, six semester hours of biology, or permission of the department.

Courses for Graduates Only

5110 Seminar in Chemistry. (1-0) Credit, 1 hour. A graduate student majoring in chemistry is required to absolve a minimum of 2 semester hours in this course in addition to the standard requirements for the advanced degree.
5325 Selected Topics in Physical Chemistry. (3-0) Credit, 3 hours. Topics are chosen from Chemical Thermodynamics, Chemical Kinetics, Colloid Chemistry, Electrochemistry, Spectroscopy, Nuclear Chemistry, or Quantum Mechanics with specific topic to be discussed agreed upon prior to registration. Course may be repeated once for additional credit providing a different topic is to be covered.

Prerequisite: Chemistry 3340.

5350 Selected Topics in Organic Chemistry. (3-3) Credit, 3 hours. Topics are chosen from Mechanisms of Organic Reactions, Effect of Structure on Reactivity, Polymer Chemistry, Petroleum Chemistry, or Heterocyclic Chemistry, with the special topic to be discussed agreed upon prior to registration. This course may be repeated one time for additional credit providing a different topic is to be covered.

Prerequisite: Chemistry 2420.

5360 Selected Topics in Analytical and Inorganic Chemistry. (3-3) Credit, 3 hours. Topics are chosen from Organic Reagents in Inorganic Qualitative and Chemical Applications of Group Theory, Organometallic Chemistry,Transition Metals, Boron and Other Electron Deficient Compounds, Analytical Instrument Circuitry, Nonmetallic Elements, Radiation Chemistry, with the specific topic to be discussed agreed upon prior to registration. This course may be repeated one time for additional credit providing a different topic is to be covered.

Prerequisite: Chemistry 3410, 4440.

5370 Problems in Chemistry. Credit, 3 hours. Open to graduate students on an individual basis at any time by arrangement with the faculty member concerned. May be repeated one time for credit.

5380 Selected Topics in Biochemistry. (3-0) Credit, 3 hours. Topics are chosen from protein and Enzyme Chemistry, Intermediary Metabolism, Vitamins and Hormones, or Physical Biochemistry, with the specific topic to be discussed agreed upon prior to registration. This course may be repeated one time for additional credit providing a different topic is to be covered.

Prerequisite: Chemistry 4475-5475.

5699 Thesis. Credit, 6 hours.
DEPARTMENT OF EDUCATION
Courses for Graduates Only

Education

5305 Group Testing. (3-2) Credit, 3 hours. Problems of administering and interpreting educational tests for group administration; utilization of educational measurements—aptitude, achievement, attitude, and adjustment—in national, state and local programs; elementary statistical methods and test—construction problems; laboratory activities in test construction, administration, scoring and interpretation.

5313 Human Growth and Development I. (3-0) Credit, 3 hours. Training for teachers (elementary or secondary), counselors, supervisors, and administrators to improve their professional effectiveness through the direct study of individual pupils according to an organizing framework of scientific knowledge of human growth and development; emphasis on the physical processes, the affectional processes, and peer relationship.

This course is offered as a workshop in the summer session with two hours of laboratory each week by arrangement.

5314 Human Growth and Development II. (3-0) Credit, 3 hours. For teachers (elementary or secondary), counselors, supervisors, and administrators to increase their understanding of the motivation, the developmental level, and the abilities of individual pupils by a direct study of individuals in the classroom; emphasis upon increasing scientific knowledge of culture, self-development, and self-adjustive areas of development.

This course is offered as a workshop in the summer session with two hours of laboratory each week, by arrangement.

Prerequisite: Education 5313 or approval of the instructor.

5321 The Improvement of Reading Instruction. (3-0) Credit, 3 hours. This course attacks two problems: (1) the improvement of the basic reading program; (2) the correction of reading difficulties, in individuals or in groups; the psychology of reading, factors involved in reading, characteristics of a good reading program; determination of and the development of readiness; development of basic reading abilities; diagnosis of reading difficulties; improvement of recognition techniques, vocabulary, comprehension, and interest.

5325 Workshop in Corrective Reading for Elementary Teachers. Credit, 3 hours. Lectures, demonstrations, group and individual work, and laboratory practice; types, causes, and analysis of reading difficulties; the choice and preparation of remedial materials, and procedures in their use; the planning of preventive and corrective programs. Laboratory sessions include opportunity to apply analytic corrective techniques.

5326 The Elementary School Curriculum. (3-0) Credit, 3 hours. Principles of curriculum development and organization, selection of curriculum
experiences, planning of various types of units, and overview of curriculum outcomes in various areas, guiding school experiences and unit activities, and actual practice in preparing curriculum materials.

**5327 Principles and Practices in the Elementary School.** (3-0) Credit, 3 hours. This course defines and interprets the newer trends in elementary school practices; the philosophy and objectives of the elementary school and procedures for implementing these objectives; classroom organization and management, the principles of unified learning as applied to school experiences, procedures for planning and developing experiences, meeting individual needs, and evaluation.

**5328 Elementary Social Studies: Curriculum Problems.** (3-0) Credit, 3 hours. Development and purposes of the social studies curriculum; contributions of the social sciences to the social studies curriculum; relation of the social studies to the total elementary program; curriculum construction, supervision, and evaluation; current issues and trends.

**5329 The Elementary School Science Curriculum.** (3-0) Credit, 3 hours. An intensive study of the philosophies of discovery and inquiry as they relate to the elementary school science curriculum; laboratory experiences related to the objectives, content, methods, and materials of selected innovative programs. Examples: Inquiry development program, Elementary science study, Science—A process approach, Introductory science study, Science curriculum improvement study, Minnesota Mathematics, and science teaching project.

**5333 The Secondary Curriculum.** (3-0) Credit, 3 hours. A brief history of curriculum development with special emphasis upon the Texas curriculum program; basic principles of curriculum making, and techniques of curriculum construction and installation; aims and purposes of the curriculum as a function in perpetuating and improving democratic ideals; attention to significant researches in curriculum development.

**5340 Public School Administration.** (3-0) Credit, 3 hours. The overall principles of administration of public schools, preliminary to courses with more intensive study of specific problems; relations with the board of education, problems concerning the school plant, business and finance, pupil personnel activities, the curriculum, supervision of instruction, personnel, and public relations.

**5341 Supervision of Instruction.** (3-0) Credit, 3 hours. Fundamental problems of supervision of instruction in the small and moderate sized public schools; the nature and organization of supervision, supervisory plans and principles; teacher participation in forming educational policies; effect of recent educational practices upon supervision; duties, relationship, and training of supervisory officials; standards for judging teachers; methods of improving instruction; case studies in supervision; the use of conferences, teacher's meetings, demonstration teaching, visitation, and research studies as supervisory agencies.
5342 Supervision of the Elementary School. (3-0) Credit, 3 hours. The general organization of the elementary school; problems of classification, grouping, promotion and progress, school and community relations; the principal's routines; in-service training and guidance of teacher growth; the improvement of other factors in the teacher-learning situation.

5343 Supervision of the Secondary School. (3-0) Credit, 3 hours. Such problems as the organization of the secondary school; classification, promotion, and progress; co-curricular activities; duties of the principal; school and community relations; in-service training and guidance of teacher growth; supervisory principles and plans; standards for judging teaching; methods of improving instruction; methods of follow-up on both drop-outs and graduates.

5344 School-Community Relations. (3-0) Credit, 3 hours. The development of concepts and methods of value in bringing closer integration of the school and the community; the contribution of the teacher, supervisor, guidance worker, and administrator to the improvement of school-community relations; emphasis upon ways to promote better community relationships; bridges between the school and community; importance of community life in the education process; role of the school in building better communities; and the community school concept—its meaning and outstanding examples of its practice.

5346 The Principalship. (3-0) Credit, 3 hours. Duties at both elementary and secondary levels; elements common to all; work in areas where functions are sharply differentiated at various levels. Consideration to such topics as these: The place of the principal in the administrative organization, community relationships, his business and personnel functions, office management, scheduling, administration of the curriculum, the library and other auxiliary services, the extra-curricular program, the guidance program, the school plant.

5348 The Nature and Supervision of Student Teaching. (3-0) Credit, 3 hours. Consideration is to be directed to the problems and practices of educators who accept the responsibility of supervision of and participation in the student teaching program. A seminar approach is designed to aid the current as well as the prospective supervising teacher in reviewing appropriate literature, understanding program procedures, analyzing current practices and techniques, and developing materials which will aid in the effective implementation of the program.

5350 Organization and Administration of a Guidance Program. (3-0) Credit, 3 hours. Practical problems in organizing, installing, and administering a guidance program. Units on (1) principles and purposes underlying guidance; (2) the present status of guidance; (3) relationships between the administrator, guidance director, and counselors; (4) functions of the classroom teacher in the program; (5) supervision of the program; and (6) evaluation of the program.
5354 **Counseling Techniques for Personnel Workers.** (3-0) Credit, 3 hours. Techniques for counseling individuals and groups; the brief interview, the counseling interview, and psychological counseling in the light of both directive and non-directive techniques; the use of supplementary aids such as records, reports, sociometric techniques, and referrals; techniques of group therapy, verbal and non-verbal. All procedures are studies in reference to practical situations.

5355 **Vocational Guidance.** (3-0) Credit, 3 hours. An introduction to the nature and use of occupational information in counseling and special group guidance classes; sources of information, methods of developing information through job analysis, and community surveys.

5357 **Individual Testing.** (3-2) Credit, 3 hours. Problems of administering and interpreting psychological tests designed for individual administration; the utilization of intelligence, proficiency and projective tests in evaluation, classification and prediction. Laboratory activities in tests administration, scoring and interpretation of the Wechsler Intelligence Scales.

5358 **Group Procedures in Guidance.** (3-0) Credit, 3 hours. A presentation of the materials and techniques of group approaches to vocational, educational, emotional, and social guidance. Part of the course is devoted to the theories and techniques of group therapy in the treatment of emotional and educational maladjustment. Techniques for the utilization of the home room, career days, field trips, and the incorporation of group guidance in the curriculum are explored.

5389 **Internship Practicum.** Credit, 3-6 hours. Offered separately for administrators, counselors, supervisors and those who are candidates for positions in various areas of special education; will vary with the field chosen. A practicum is included for all like candidates for planning purposes, for discussions, and for evaluation. When taught out-of-town, a special fee is charged; see the fee sections of the general catalog. A number following the course title on the permanent record will indicate the area, according to this code: (1) Administration, (2) Counseling, (7) Supervision.

5390 **Research Seminar in Elementary Education.** (3-0) Credit, 3 hours. A course in which each student will be given an opportunity to choose for study special problems to fit his particular needs and interests; research procedures needed in the preparation of a thesis or other research reports; to demonstrate his mastery of these procedures, the student will present a research paper on a selected problem.

Credit may be applied toward certification as elementary principal, or as teacher of the mentally retarded, when an appropriate research problem is chosen.

A number following the course title on the permanent record will indicate the area, according to this code: (1) Administration, (4) Mental Retardation, (7) Supervision.
5391 Research Seminar in Secondary Education. (3-0) Credit, 3 hours. Problems in secondary education; emphasis on research procedure; a research paper is required of each student.

Credit may be applied toward certification as a secondary principal or as a counselor, or for credit in supervision when an appropriate research problem is chosen.

A number following the course title on the permanent record will indicate the area, according to this code: (1) Administration, (2) Counseling.

5699 Thesis. Credit, 6 hours.

6340 Public School Administration. (3-0) Credit, 3 hours. The over-all principles of administration of public schools. Consideration of such topics as these: The processes of administration, organization — federal, state, local districts, instructional personnel and staff, relations with staff and school board.

6342 Organization, Administration, and Supervision of the Elementary School. (3-0) Credit, 3 hours. Duties and problems of the elementary school administrator. Consideration of such topics as these: The place of the elementary principal in the administrative organization, community relationships, organizational duties, problems of pupil personnel, instructional leadership. Special emphasis on supervision responsibilities of the elementary principal.

6343 Organization, Administration, and Supervision of the Secondary School. (3-0) Credit, 3 hours. Duties and problems of the secondary school administrator. Consideration of such topics as these: The place of the secondary principal in the administrative organization, community relationships, organizational duties, problems of pupil personnel, instructional leadership. Special emphasis on supervision responsibilities of the secondary principal.

6344 Educational Leadership Through Human Relations. (3-0) Credit, 3 hours. An examination of human relations concepts involved in educational administration. Consideration of such topics as the relationships involved in the social setting and educational environment; personal qualities of leadership conducive to good human relations; decision making; techniques of effective communications, group dynamics.

6347 The Superintendency. (3-0) Credit, 3 hours. The basic issues of problems confronting the superintendent, such as school buildings: planning, contracting, financing, equipping; fiscal and business management; taxation; budgeting, accounting; administering special services; transportation, food services, custodial services; management of personnel.
6348 Public School Laws. (3-0) Credit, 3 hours. Constitutional provisions, statutory laws, court decisions, and regulations governing public schools, with special reference to Texas and federal relationships.

6349 School Finance and Business Management. (3-0) Credit, 3 hours. Study of school funds on local, state, and federal level; budgeting, data processing; other systems of accounting, and reporting. Supply management as related to school efficiency. Maintenance of building, grounds, and equipment.

6647 Studies in the Humanities and Sciences. (6-0) Credit, 6 hours. An interdisciplinary approach to furnishing administrative candidates with greater depth in the social sciences, humanities and science. Although offered under the auspices of the Education Department, the course is taught by a team of two or more members from the arts and sciences, supplemented by visiting lecturers. The aim is to give insight on man and his world, dealing with such sub-topics as “Man in a Scientific Age,” “Man and Society,” “Man and Communication Media.”

Interdepartmental Courses

The courses identified below are taught under the auspices of the Department of Education. They are listed by course number and title and with full description among the courses offered by the respective departments concerned. They may be elected for credit in the field of education by those deemed qualified to enroll.

Agricultural Education 5314. Current research in teaching vocational agriculture. (3-0) Credit, 3 hours.

Agricultural Education 5318. Administration and supervision of vocational education. (3-0) Credit, 3 hours.

Music Education 5313, 5317. Problems in music education. (3-0) Credit, 3 hours each.
DEPARTMENT OF ENGLISH AND PHILOSOPHY

Courses for Undergraduates and Graduates

4310-5310 Applied Linguistics. (3-0) Credit, 3 hours. A study of the English language with particular emphasis on structural linguistics and transformational grammar; American dialects, lexicography, phonology, intonation, morphology, and syntax.

4323-5323 Modern Biography and Essay. (3-0) Credit, 3 hours. The development of the biography and of essay forms in English language literature with a reading of representative examples.

4334-5334 The Concord Writers. (3-0) Credit, 3 hours. Emerson, Thoreau, and Hawthorne with attention to intellectual backgrounds and literary relationships.

4351-5351 Chaucer and His Time. (3-0) Credit, 3 hours. Selected studies in the more important works of Chaucer, with an attempt to realize his significance as creator and social critic in an important literary and social era.

4355-5355 The Later Shakespeare. (3-0) Credit, 3 hours. The later period from the problem comedies through the tragedies to the serenity of the plays of the final years; emphasis on reading in depth of the plays, significant critical material, and selected plays by Shakespeare's contemporaries.

4358-5358 Milton. (3-0) Credit, 3 hours. Milton's thought expressed in the longer poems and most important prose writing, especially as his thought affected the ideas of the writers and thinkers in the centuries following him.

4361-5361 The Brownings. (3-0) Credit, 3 hours. Their lives and works, including a study of the development of Robert Browning's dramatic poetry and Elizabeth Barrett Browning's poetic treatment of social and political questions of her time.

Courses for Graduates Only

*5321 Contemporary Novel. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5331 Studies in American Poetry. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

* May be repeated once with different emphasis for additional credit.
*5332 Studies in American Prose. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5353 Studies in Medieval English Literature. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5356 Studies in Seventeenth Century Drama. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5357 Studies in Elizabethan Drama. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5359 Studies in Eighteenth Century Literature. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5364 Studies in the English Romantic Movement. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5366 Studies in Victorian Poetry. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

*5368 Studies in Victorian Prose. (3-0) Credit, 3 hours. Prerequisite, 24 hours in English and graduate standing.

5371 Studies in British Poetry: 1800-1940. (3-0) Credit, 3 hours. Generally, the study of Yeats and his contemporaries.

5381 Studies in Modern British and American Drama: 1900-Present. (3-0) Credit, 3 hours. The work of G. B. Shaw and Eugene O'Neill.

5386 Studies in Later American Prose: 1900-1940 (3-0) Credit, 3 hours. Hemingway, Fitzgerald, and their contemporaries.

*5395 Problems in Literary Criticism. Credit 3 hours. Open to graduate students on an individual basis by arrangement with the department.

5699 Thesis. Credit, 6 hours.

* May be repeated once with different emphasis for additional credit.
DEPARTMENT OF GOVERNMENT

Courses for Graduates Only

*5301 Problems in American Foreign Relations. (3-0) Credit, 3 hours. A seminar based on selected topics in American foreign policy and U.S. involvement in international relations.

*5304 Problems in Political Theory and Methodology. (3-0) Credit, 3 hours. A seminar for the exploration of problems in political theory and/or the methodology of contemporary political science.

*5305 Problems in Comparative Government and Politics. (3-0) Credit, 3 hours. The intensive study of selective areas in comparative political institutions.

5310 Problems in Public Administration. (3-0) Credit, 3 hours. Such matters as the organization and management of the machinery for executing public policies, bureaucracy, the civil service, span of control, and Hoover Commission-type inquiries.

5320 Problems in State and Local Government. (3-0) Credit, 3 hours. Exploring the areas of urban affairs, metropolitan politics, inter-state relations, intra-state relations, county problems, and local affairs.

5330 Problems in Public Law. (3-0) Credit, 3 hours. Problems in the areas of constitutional interpretations, court cases, judicial processes, and general matters of law.

5340 Problems in American Public Policy. (3-0) Credit, 3 hours. Problems arising in the areas of political decision making, executive-legislative relationships, functions of government, and regulatory activities of the government.

5350 Problems in American Politics. (3-0) Credit, 3 hours. Problems arising with respect to parties, legislation, the presidency and political behavior.

5360 Problems in International Politics. (3-0) Credit, 3 hours. A course dealing with selected topics in the field of international politics.

5361 Problems in International Law and Organization. (3-0) Credit, 3 hours. A course dealing with selected topics in international law and/or international organization.

* May be repeated once with different emphasis for additional credit.
5380 Economics and Social Problems of International Relations. (3-1) Credit, 3 hours. A course dealing with selected topics in the economic and social fields of international relations.

5382 Problems in World Political Geography. (3-0) Credit, 3 hours. A course dealing with selected topics in geopolitics and world political geography.

5699 Thesis. Credit, 6 hours.
DEPARTMENT OF HEALTH AND
PHYSICAL EDUCATION
Courses for Graduates Only

Physical Education

5303 Advanced Athletic Training. (3-0) Credit, 3 hours. Advanced research into new methods concerning the prevention and care of athletic injuries, with special added emphasis on rehabilitation through use of physiotherapy techniques.

5304 Psychology for Motor Learning. (3-0) Credit, 3 hours. The nature of scientific research, theories of behaviour development, learning and acquisition of motor skills, empirical principles of learning in relation to motor learning and structural, physiological and other factors in relation to motor skill performance.

5305 Advanced Course in Tests and Measurements in Physical Education. (3-0) Credit, 3 hours. Intensive study of existing tests in physical education and the methods of test construction. Laboratory experiences are provided.

Prerequisite: Undergraduate course in Tests and Measurements.

*5321 Workshop for Teachers in Physical Education. (3-0) Credit, 3 hours. Current problems in physical education; intramurals, curriculum, public relations, and athletics.

5345 Supervision of Health and Physical Education. (3-0) Credit, 3 hours. Basic principles of supervision as they apply to the field of health and physical education; the planning of programs and the techniques of supervision such as interviewing, conferences, evaluation procedures, and visitations. Where possible, the students are given opportunities to practice these techniques.

5346 Literature and Research in Physical Education. (3-0) Credit, 3 hours. Directed reading, reports and discussions of the current literature in the field of physical education, a critical analysis of research techniques and the locations and securing of information, together with the steps necessary to the solution of research problems in this field.

5347 Problems in Health and Physical Education. (Hours and credit are arranged). This course follows Physical Education 5346 and may be taken by a student who desires to work on a research problem. He gathers pertinent data and submits a report on the results of his research.

* May be repeated once with different emphasis for additional credit.
5348 Organization of the Physical Education Program for the Elementary School. (3-0) Credit, 3 hours. A course designed to help students overcome problems existing at the elementary level through program planning and organization. Discussions on problems of instruction, evaluation, philosophy and objectives to be attained; role of the teacher in sharing responsibility with all other teachers and administrators; the unique contribution of the physical education teachers in the educational process, the concept of the teacher as a community member, and suggestions for the improvement of the quality of professional education.

5353 Curriculum Development in Health and Physical Education. (3-0) Credit, 3 hours. The planning and operation of the total health and physical education program with special attention to overcoming difficulties peculiar to this field. Assistance will be given in preparing curriculum materials for specific purposes and situations.

5390 Seminar in Athletic Coaching. (3-0) Credit, 3 hours. The logical basis underlying present techniques of coaching at all levels of the secondary schools, devoted more to the “why” of coaching than to the “how.”

5699 Thesis. Credit, 6 hours.

Health Education

5310 History and Philosophy of Health Education. (3-0) Credit, 3 hours. An intensive study is made of the historical development of the school health program and the current political and public health issues and cultural changes which influence the school program.

5311 Organization and Administration of a School Health Program. (3-0) Credit, 3 hours. The organization and development of a functional and comprehensive health program, including both elementary and secondary levels; emphasis upon the coordination of all aspects of the program, the evaluation of health needs of pupils and the community, and the use of the community resources in the school health program.

5315 Evaluation and Test Construction in Health. (3-0) Credit, 3 hours. An extensive study is made of existing tests in health, of the methods of test construction, and of curriculum and program evaluation procedures. Laboratory experiences are provided.

5331 Seminar in Current Problems in Health Education. (3-0) Credit, 3 hours. Current national and international trends and problems in health which effect the school age are studied. The course may be repeated once if the areas studied are different.
5310 Problems in Modern European History. (3-0) Credit, 3 hours. A seminar based upon selected topics in the history of Europe since 1870.

5313 Problems in Early American History: The Age of the American Revolution. (3-0) Credit, 3 hours. A seminar based upon selected topics in the Revolutionary and Early National periods of American History.

5321 Seminar in the National Period of Latin American History. (3-0) Credit, 3 hours. This course will approach the history of Latin American countries from the period of their independence to the present. Topics will vary, allowing both a study by country (or countries) and an institutional treatment of the general area.

5322 Seminar in Colonial Latin American History. (3-0) Credit, 3 hours. The colonial history of Latin America will be approached through a study of the following aspects: aboriginal and Iberian backgrounds; discovery and exploration; political, economic, and social institutions of the Ibero-American empires; the independence movements.

5330 Problems in the History of Asia. (3-0) Credit, 3 hours. A seminar based upon selected topics in the History of Asia.

5342 Problems in the Social and Intellectual History of the United States. (3-0) Credit, 3 hours. A seminar based upon selected topics in the intellectual and social history of the United States.

5347 Problems in Texas History. (3-0) Credit, 3 hours. A seminar based upon selected topics in the history of Texas.

5348 Problems in the Diplomatic History of the United States to 1898. (3-0) Credit, 3 hours. A seminar based upon selected topics in the early diplomatic history of the United States.

5349 Problems in the Diplomatic History of the United States Since 1898. (3-0) Credit, 3 hours. A seminar based upon selected topics in recent American diplomatic history.

5350 Problems of the Frontier in American History. (3-0) Credit, 3 hours. A seminar based upon selected topics in the history of the frontier in American development.

5351 Problems in Modern American History. (3-0) Credit, 3 hours. A seminar based upon selected topics in United States history since 1877.
5355 Problems in Southern History. (3-0) Credit, 3 hours. A seminar based upon selected topics in Southern United States History.

5357 The Gilded Age. (3-0) Credit, 3 hours. A seminar based upon selected topics in late nineteenth century American history.

5360 American Historiography. (3-0) Credit, 3 hours. A study of the literature of American history with some attention to the philosophies of history and the principles of historical research.

5362 Problems in American Military History. (3-0) Credit, 3 hours. A seminar based upon selected topics in the military history of the United States.

5364 War and Society. (3-0) Credit, 3 hours. A study of the relationship of war with social and cultural institutions from the eighteenth century to the present.

5365 Seminar in Problems of Contemporary Europe. (3-0) Credit, 3 hours. An intensive study of problems of Europe since 1919, based on independent research and writing of the student. Papers will be in-depth studies of rather narrow historical problems.

5367 Problems in the American Civil War. (3-0) Credit, 3 hours. A seminar based on selected topics in the American Civil War.

5368 The Era of Reconstruction, 1865-1877. (3-0) Credit, 3 hours. A seminar based upon selected topics in post-Civil War American history.

5370 Minority Groups in American History. (3-0) Credit, 3 hours. A seminar based upon selected topics in the history of the various ethnic and racial groups within American society.

5390 Problems in Historical Research. (3-0) Credit, 3 hours. This course is open to graduate students on an individual basis at any time only by arrangement with the division.

5699 Thesis. Credit, 6 hours.
DEPARTMENT OF INDUSTRIAL ARTS

Courses for Graduates Only

5381 Industrial Methods and Production Technique. (3-0) Credit, 3 hours. This course will furnish industrial arts teachers selected information regarding the structure of modern manufacturing methods and techniques. Students gain insight into enlightened industrial practices. Selected examples of the technology of a specific industry and analysis of its methods so that basic principles of production and selected techniques may be brought to students in the typical school situation.

5382 Housing and Industrial Arts. (3-0) Credit, 3 hours. Policies and practices in the construction and allied industries, and their relationships to the production of housing; development of teaching materials dealing with selected aspects of housing as a community, family, and individual problem; determination of housing studies within the framework of industrial arts.

5384 Technical Problems in Industrial Arts. (3-0) Credit, 3 hours. A course for the industrial arts teacher who needs to become acquainted with new development within the industrial arts curriculum and for the graduate student who desires to strengthen certain experiences initiated in undergraduate courses. Plans will be developed upon an individual basis.

5385 Modern Industries. (3-0) Credit, 3 hours. A course to assist teachers of industrial arts with the problems of guiding high school students to sources of information on technical, social, and economic aspects of modern industries. Individual and group studies will be made. Results will be submitted in a form suitable for publication.

5387 Planning Advanced Industrial Arts Laboratories. (3-0) Credit, 3 hours. Studies in depth of architectural, engineering, and educational problems encountered in designing, equipping, arranging, and specifying facility requirements for advanced industrial arts courses at the senior high school level.

5388 New Developments in Industrial Arts. (3-0) Credit, 3 hours. Study of new concepts appearing in industrial arts since 1950 as a result of the increasing importance of technology.

5389 Curriculum Construction in Industrial Arts. (3-0) Credit, 3-6 hours. Techniques and procedures in selection, organization, and production of teaching materials for use in junior and senior high school courses. Course may be repeated once with different emphasis for additional credit.

5390 Research and Industrial Arts. (3-0) Credit, 3 hours. Identification, analysis, and evaluation of significant research in industrial arts education.
Explanation of research techniques applicable to problems. Preparation of research reports with view to publication.

5699 Thesis. Credit, 6 hours.

DEPARTMENT OF MATHEMATICS
Courses for Undergraduates and Graduates

4305 Probability and Statistics. (3-0) Credit, 3 hours. Basic concepts of probability such as sample space probability of events, conditional probabilities, binomial and multinomial distribution, random variables and normal approximations, and statistical inference with practical applications.
Prerequisite: Six hours of calculus.

4306 Fourier Series and Boundary Value Problems. (3-0) Credit, 3 hours. Advanced solution methods for differential equations; partial differential equations; series approximations, Fourier series; boundary value problems typical of scientific applications.
Prerequisite: Mathematics 3323.

4307 Introduction to Modern Algebra. (3-0) Credit, 3 hours. Elementary notions of sets, algebraic structures and functions; viewpoints, basic concepts and techniques of modern (abstract) algebra.
Prerequisite: Six hours of calculus.

4309 The Theory of Determinants. (3-0) Credit, 3 hours. Elements of the theory of matrices and determinants; fundamental operations of matrices, definition and properties of determinants, Cauchy and Laplace expansions, multiplication of determinants, application of determinants to solutions of systems of equations, to geometry determinants of special form, and Jacobians.
Prerequisite: Six semester hours of advanced courses in mathematics, or consent of instructor.

4315 Advanced Calculus. (3-0) Credit, 3 hours. A second course in advanced calculus. Thorough study of Riemann-Stieltjes integrals, sequences and series of functions, power series, and associated topics. Students are required to prove theorems and to understand the proofs of theorems. Basic for students who do further work in mathematical analysis.
Prerequisite: Mathematics 4313.

*4316 Projective Geometry. (3-0) Credit, 3 hours. Processes of projection and section by the synthetic process; elements and primitive forms; principles of duality, perspectivity, harmonic sets; projectively related primitive forms and fundamental theorems.
Prerequisite: Six hours of advanced mathematics and the consent of the instructor.

*May be repeated once with different emphasis for additional credit.
4325 Vector Analysis. (3-0) Credit, 3 hours. An introduction to vector analysis; a first course in calculus is assumed; applications of a wide and diverse nature with special emphasis on geometry and mechanics: leads naturally to tensor analysis.

Prerequisite: Mathematics 4313.

4373-5373 Theory of Functions of Real Variables. (3-0) Credit, 3 hours. This course presupposes a year's course of calculus and preferably an elementary course in differential equations or in advanced calculus. The course discusses those topics which will enable the student to obtain a better grasp of the fundamental concepts of the calculus of real variables and the more recent development of this branch of analysis.

Courses for Graduates Only

5301 Partial Differential Equations. (3-0) Credit, 3 hours. The theory and application of partial differential equations; deduction of the differential equation; use of vector and tensor methods; equations of the first order; wave equations; vibrations and normal functions; Fourier series and integral; Cauchy's method, initial data; methods of Green; potentials; boundary problems; methods of Riemann-Volterra; characteristics. May be repeated once for additional credit.

Prerequisite: Mathematics 3323 and consent of the instructor.

5303 History of Mathematics. (3-0) Credit, 3 hours. A study of the development of mathematics and of the accomplishments of men who contributed to its progress. Not open to students who take Mathematics 5699.

5305 Advanced Course in Probability and Statistics. (3-0) Credit, 3 hours. Advanced topics in probability and statistics. May be repeated once for credit.

Prerequisite: Mathematics 4305.

5307 Modern Algebra. (3-0) Credit, 3 hours. Topics in modern Algebra. Materials will be adapted to the needs of the class. May be repeated once for credit.

Prerequisite: Mathematics 4307.

5309 Foundations of Analysis. (3-0) Credit, 3 hours. A critical study of the basis of mathematical analysis. Material will vary according to the needs of the class. May be repeated once for credit.

Prerequisite: Mathematics 4315 or consent of the instructor.

5311 Foundations of Differential Equations. (3-0) Credit, 3 hours. A critical study of the foundations of derivative equations, operator spaces
and such basic topics. Recent developments in this field will be investigated and independent investigation will be encouraged. May be repeated once for credit.

Prerequisite: Mathematics 3323 and consent of the instructor.

5312 Functions of a Complex Variable. (3-0) Credit, 3 hours. Modern developments in the field of functions of a complex variable. May be repeated once for credit.

Prerequisite: Mathematics 4313 and consent of the instructor.

5317 Problems in Advanced Mathematics. (3-0) Credit, 3 hours. Open to graduate students on an individual basis by arrangement with the mathematics department. A considerable degree of mathematical maturity is required. May be repeated once for additional credit.

5319 The Theory of Integration. (3-0) Credit, 3 hours. A course in the theory of integration, with special emphasis on Lebesgue integrals. A course in the theory of real variables, with knowledge of point set theory, is desirable as a background for this course. A considerable amount of mathematical maturity is required.

Prerequisite: Mathematics 4313, 4373, and consent of the instructor.

5375 General Topology. (3-0) Credit, 3 hours. The theory of convergence and continuity in metric spaces and general topological spaces; countability axioms, separation axioms, compactness and product spaces.

Prerequisite: Six hours of advanced mathematics.

*5380 Topics in Ordinary Differential Equations. (3-0) Credit, 3 hours. Selected topics dealing with the theory and solution of ordinary differential equations will be developed.

Prerequisite: Mathematics 3329 or 4306.

5399 or 5699 Thesis. Credit, 3 or 6 hours.

* May be repeated with different emphasis for additional credit.
DEPARTMENT OF MODERN LANGUAGES

The Department of Modern Languages offers a graduate major in Spanish and a minor in German.

German

Courses for Undergraduates and Graduates

4302 Modern German Novel and Short Story. (3-0) Credit, 3 hours. Intensive study of the novel and the short story; works of fiction that serve as exponents of new literary movements, reflect interesting phases of life and thought, or embody tendencies characteristic of certain periods.

4340 Advanced Conversation, Composition and Stylistics. (3-0) Credit, 3 hours. A course designed to strengthen total command of the language. Collateral readings; oral and written reports in German.

4360-5360 German Epic and Lyric. (3-0) Credit, 3 hours. An intensive study of the German epic from its beginning; a study of the development of verse forms through the best works of Germany’s most representative poets.

*4390 Studies in German Literature, a conference course. (3-0) Credit, 3 hours. Students pursue a program of research in periods, genres, authors, or literary criticism in line with their own initiative and interest. Intensive reading and individual research.

Prerequisite: Approval of departmental chairman and of the Dean of The Graduate School.

Courses for Graduates Only

5302 History of the German Language. (3-0) Credit, 3 hours. An introduction to the historical development of German as a literary language with emphasis upon linguistic change. Selected readings.

*5305 The Age of Goethe. (3-0) Credit, 3 hours.

Spanish

Courses for Undergraduates and Graduates

4301-5301, 4302-5302 Modern Spanish Novel. (3-0) Credit, 3 hours each. The novel from the beginning of the “Costumbrista” movement in the 19th century to the Generation of 1898. The second semester continues the study of the novel to the present.

* May be repeated once with different emphasis for additional credit.
4303-5303 Modern Drama of Spain. (3-0) Credit, 3 hours. The beginning of the romantic movement to the present.

4304 Golden Age Drama. (3-0) Credit, 3 hours. The dramas of Claderon de la Barca, Lope de Vega, Tirso de Molina and other leading dramatists of the 16th and 17th centuries.

4330-5330 The Spanish-American Novel. (3-0) Credit, 3 hours. The most representative novels in the literary history of Spanish-America.

4340 Advanced Spanish Grammar and Stylistics. (3-0) Credit, 3 hours. Major emphasis is placed on syntax, usage and grammatical nomenclature. Attention is also focused on technical neologisms.

4360-5360 Modern Spanish Poetry and the Modernista Poets of Spanish-America. (3-0) Credit, 3 hours. The poetry of Spain from the beginning of the 19th century to the present, and of Spanish-America from the precursors through the modernista movement to the present.

*4390 Studies in Spanish and Spanish-America Literature. (3-0) Credit, 3 hours. Students pursue a program of research in periods, genres, authors, or literary criticism in line with their own initiative and interest; intensive reading and individual research.

Prerequisite: Approval of departmental chairman and of the Dean of the Graduate School.

Courses for Graduates Only

5305 History of the Spanish Language. (3-0) Credit, 3 hours.

Prerequisite: Five advanced undergraduate courses in Spanish or departmental approval and graduate standing.

5306 Cervantes. (3-0) Credit, 3 hours.

Prerequisite: Five advanced undergraduate courses in Spanish or departmental approval and graduate standing.

*5307 Twentieth Century Hispanic Literature. (3-0) Credit, 3 hours.

Prerequisite: Five advanced undergraduate courses in Spanish or departmental approval and graduate standing.

5308 Generation of '98. (3-0) Credit, 3 hours.

Prerequisite: Five advanced undergraduate courses in Spanish or departmental approval and graduate standing.

5699 Thesis. Credit, 6 hours.

* May be repeated once with different emphasis for additional credit.
DEPARTMENT OF MUSIC

The Department of Music offers a graduate minor but not a major. A major program is available, however, in music education, consisting of 15 hours in education, 6 hours in music education, and 15 hours in music.

Courses for Undergraduates and Graduates

4303 Advanced Theory Review. (3-0) Credit, 3 hours. A review of the basic principles of diatonic and chromatic harmony, form analysis, and counterpoint. Emphasis is placed upon the application of these principles to teaching in the classroom and studio and in rehearsing bands, orchestras, and choirs.

4313 Survey of Twentieth Century Music. (3-0) Credit, 3 hours. Emphasis upon music of the modern period and its development from music of earlier periods. Numerous examples of vocal and instrumental works in both large and small forms are used to illustrate twentieth-century styles and trends.

4315 Orchestral and Choral Arranging. (3-0) Credit, 3 hours. Principles of orchestral and choral writing and arranging, reading orchestral and vocal scores, and editing vocal and instrumental music with emphasis upon music suitable for the public schools.

4333 Counterpoint. (3-0) Credit, 3 hours. Elementary counterpoint with emphasis upon an appreciation of counterpoint as encountered in teaching and performing. Knowledge of the subject is gained from writing and from analysis of contrapuntal works.

4349 Introduction to Musicology. (3-0) Credit, 3 hours. A synthesis of all music knowledge with particular emphasis on musical acoustics, psychology, music aesthetics, tradition of interpretation, and the philosophy of music history; a survey course in the field of musical research concerned primarily with music as an art and as a science.

*4351, *4353 Problems in Music. (3-0) Credit, 3 hours each. Study of one or more problems in music. Problems chosen may not duplicate the scope of another course offered for credit. The courses are conducted as seminars and are open to students on an individual basis by arrangement with the Chairman of the Music Department.

Courses for Graduates Only

5301, 5302 Graduate Organ. (0-1), Credit, 3 hours. Private instruction in music through performance.

* May be repeated once for additional credit.
5305, 5306 Graduate Orchestral Instruments. (0-1) Credit, 3 hours. Private instruction in music through performance.

5310 Music Literature of the Baroque. (3-0) Credit, 3 hours. Style characteristics and literature of the music of 1600-1750, with special emphasis on Bach and Handel.

Prerequisite: Music 3237 or permission of the instructor.

5311, 5312 Graduate Piano. (0-1) Credit, 3 hours. Private instruction in music through performance.

5315, 5316 Graduate Voice. (0-1) Credit, 3 hours. Private instruction in music through performance.

5320 Music Literature, Viennese Classical. (3-0) Credit, 3 hours. Style analysis of music literature from 1750 to 1830, with emphasis on Haydn, Mozart, and Beethoven.

Prerequisite: Music 3239 or permission of the instructor.

5334 Introduction to Graduate Study in Music. (3-0) Credit, 3 hours. Techniques and materials of research, emphasizing bibliography, library usage, and collection and interpretation of data.

*5336 Seminar in Music Education. (3-0) Credit, 3 hours. A seminar course designed to acquaint the student with research techniques and procedures in music education. Formulation of a research problem, definition, design, procedure, technique for location, collection, quantification, and treatment of data. Each student is expected to carry out a practical or creative project or investigation.

5340 Music Literature, 19th Century Romantic. (3-0) Credit, 3 hours. Music literature of the period from 1830 to 1910, with analysis of styles.

Prerequisite: Music 3239 or permission of the instructor.

Music Education

*5313, *5317 Problems in Music Education. (3-0) Credit, 3 hours each. Study of one or more problems in music education that hold special interest or offer opportunity for professional improvement and growth.

* May be repeated once with different emphasis for additional credit.
DEPARTMENT OF PHYSICS

Courses for Graduates Only

5311 Nuclear Physics. (3-0) Credit, 3 hours. The study of radio-activity, nuclear structure, binding energies, and particle accelerators.

Prerequisites: Physics 3312 and Mathematics 3372.

5312 Quantum Mechanics, Part II. (3-0) Credit, 3 hours. A continuation of Quantum Mechanics, Part I, Physics 4312. Topics covered include time independent and time dependent perturbation theory, multiparticle systems, and the Pauli exclusion principle.

Prerequisite: Physics 4312 or approval of the instructor.

5320 Solid State Physics. (3-0) Credit, 3 hours. An introductory course in the theory of solids.

Prerequisite: Mathematics 3323.

5330 Electromagnetic Field Theory, Part II. (3-0) Credit, 3 hours. A continuation of the introduction to electromagnetic field theory presented in Physics 4310. Topics covered include Maxwell's equations and applications, special theory of relativity, electrodynamics.

Prerequisite: Physics 4310 or approval of the instructor.

5340 Advanced Dynamics, Part II. (3-0) Credit 3 hours. Classical mechanics at an advanced level. Topics covered include special relativity in classical mechanics, Hamilton equation of motion, canonical transformations, and Hamilton-Jacobi theory.

Prerequisite: Physics 4313 or approval of the instructor.

*5370 Problems in Advanced Physics. (3-0) Credit, 3 hours. Open to graduate students on an individual basis by arrangement with the Physics Department.

5399 or 5699 Thesis. Credit, 3 or 6 hours.

*May be repeated once for additional credit.
DEPARTMENT OF PSYCHOLOGY

The Department of Psychology does not offer a major or minor at the graduate level, but certain courses in psychology are included in programs in education and in special education.

Courses for Undergraduates and Graduates

4330-5330 Psychology of Language. (3-0) Credit, 3 hours. A study of the development of language in children, with emphasis on language perception and production and the task of learning verbal behavior.

4365 The Exceptional Child in the Family. (3-2) Credit, 3 hours. This course is to develop the understanding and professional skill of special education teachers and clinicians in counseling parents of exceptional children. Parents of children enrolled in demonstration classes or in the clinic will actively participate in the class.

Prerequisite: Eligibility for certification as a special education classroom teacher or a speech and hearing therapist.

Courses for Graduates Only

5315 Mental Hygiene. (3-0) Credit, 3 hours. Personality theory and development, and principles governing the development of human behavior; emphasis upon the various current theories of personality structure, experiences with the family, neighborhood, and school which are common to all individuals; especially designed for those majoring in counseling and special education.

5364 Psychological Problems of the Mentally Retarded. (3-0) Credit, 3 hours. A course dealing with the theories which attempt an explanation of intellectual deficiency. Etiologies and psychical mechanisms of mental retardation will be studied to provide bases for improvement in the performance of mentally retarded pupils.

5370 Psychology of Learning. (3-0) Credit, 3 hours. A study of the basic problems in the acquisition of responses, treating with such constructs as reinforcement, extinction, retention, forgetting, problem solving, motivation, and punishment. Major theories are treated through attention to classical experiments, but greatest emphasis is given contemporary research.
DEPARTMENT OF SPECIAL EDUCATION

Courses for Undergraduates and Graduates

4301 Speech Pathology. (3-0) Credit, 3 hours. The nature and underlying causes of defective speech; opportunity for students with basic training in the management of speech disorders to investigate etiologies and procedures advanced by authorities in the profession. Clock hours of supervised clinical practice may be obtained while the student is concurrently enrolled for this course.

4317 Speech and Hearing Therapy in Public Schools. (3-3) Credit, 3 hours. A professional course designed to train students of speech pathology for employment in public schools. Emphasis upon screening, evaluative, scheduling, and management procedures. Must precede practicum in public school speech therapy.

Prerequisite: Special Education 3367.

4363 Differential Diagnosis of Communicative Problems. (3-0) Credit, 3 hours. The nature of the causes of communicative problems. Emphasis on the interdisciplinary approach to the evaluation of pupils with neurological involvement.

4366 Curriculum and Methods for the Mentally Retarded. (3-0) Credit, 3 hours. A library-laboratory course in the development of curriculum and methods suited to particular problems with the mentally retarded. For principals, supervisors, and teachers now engaged in the field, and for those having a background in the psychology of exceptional children. Attention is given to philosophy, methods, and materials adapted to various age grouping; pupil guidance and evaluation; study of suitable job outlets and work experiences.

4373 Structured Language for Slow Learners. (3-0) Credit, 3 hours. Basic factors of oral and written English: Vocabulary, syntax, rhythm, and intonation, and sound elements that create academic difficulties for pupils with specific language disorders derived from environmental influences or neurological impairment.

Courses for Graduates Only

5301 Seminar in Speech Pathology. (3-0) Credit, 3 hours. Discussion of various areas of speech pathology with adaption to individual needs and emphasis upon pilot studies.

5331 Seminar in Stuttering. (3-0) Credit, 3 hours. The course will emphasize description of the characteristics of stuttering at various stages of the disorder, and theories and research in the areas of etiology and management. Lecture and independent student review of literature.
5332 Cleft Palate and Voice Disorders. (3-0) Credit, 3 hours. The first part of the course will deal with the anatomy and physiology of cleft palate and appropriate management techniques. The remainder of the course will deal with the characteristics and management techniques for other types of voice disorders.

5333 Language and Articulation Disorders in Children. (3-0) Credit, 3 hours. Normal development of speech and language will be contrasted with a typical development resulting in various types of articulation and language disorders. Articulation will be discussed as a phonological component of language.

5342 Aphasia and Related Disorders. (3-3) Credit, 3 hours. A study of language disabilities in children and adults.

5343 Advanced Clinical Practice in Speech Pathology. (3-0) Credit, 3 hours. For graduate students completing their supervised clinical practicum in speech pathology. Supervised clock hours may be obtained with cases which stimulate an advanced level of specialized study. Special emphasis upon evaluative procedures.

5360 The Education of Exceptional Children. (3-0) Credit, 3 hours. A survey course to orient students to the program and problems in the education of all types of exceptional children: the mentally retarded, slow learner, gifted, blind, partially sighted, deaf, hard of hearing, orthopedically handicapped, emotionally disturbed, socially maladjusted, brain-injured, and those with limited vitality, speech disorders, and language disorders. Field trips, visiting lecturers, and films supplement class lectures.

5362 Readings in Special Education. (3-0) Credit, 3 hours. A critical and thorough investigation of the literature in an area of audiology (section 3), mental retardation (section 4), physical handicaps (section 5), or speech pathology (section 6); reported in a formal paper and discussed in seminar meetings with the appropriate instructor. Required of all graduate majors in Special Education who are candidates for the degree of Master of Education.

5364 Psychological Problems of the Mentally Retarded. (3-0) Credit, 3 hours. A course dealing with the theories which attempt an explanation of intellectual deficiency. Etiologies and psychical mechanisms of mental retardation will be studied to provide bases for improvement in the performance of mentally retarded pupils.

5365 Education of the Physically Handicapped. (3-0) Credit, 3 hours. Basic characteristics of physical disorders resulting in motor dysfunction and/or learning disabilities, with special emphasis upon disorders deriving from neurological impairment; general principles for educating pupils with such impairment in public schools. Visiting lecturers from medical and parmedical fields will assist in teaching this course.
5368 Methods and Materials for Teaching Physically Handicapped Pupils. (3-0) Credit, 3 hours. Methods and materials for teaching elementary classroom subject matter such as reading, spelling, and arithmetic to pupils with physical handicaps. Special emphasis upon teaching the child with cerebral palsy and related disorders.

Prerequisite: Special Education 4365 or 5365, and Special Education 4363, or their equivalents. Taught on an individual basis.

5389 Internship Practicum. Credit 3-6 hours. Laboratory and clinical teaching experiences in the areas of special education. When scheduled out-of-town, a special fee is charged; see the fee section of the general catalog. The area will be indicated according to this code, with the appropriate digit to be used as a section number: (3) Hearing, (4) Mental Retardation, (5) Physically Handicapped, (6) Speech Therapy.

5699 Thesis. Credit, 6 hours.
DEPARTMENT OF SPEECH

Speech

Course for Undergraduates and Graduates

4347-5347 Leadership and Group Communication. (3-0) Credit, 3 hours. An advanced course in group communication designed to examine in detail the phenomenon of leadership in groups. Various approaches to group leadership will be surveyed, and methods of leadership training will be investigated.

Prerequisite: Speech 2330 or consent of the instructor.

Courses for Graduates Only

5300 Problems in Speech and Drama Research. (3-0) Credit, 3 hours. An examination of problems and research techniques in speech and drama. Historical, critical, descriptive, and experimental research approaches will be surveyed, and basic procedures in research report writing will be considered.

5322 Rhetorical Theory. (3-0) Credit, 3 hours. A study of the history and works of rhetorical theorists from classical to 20th century.

5325 Seminar in Human Communication Theory. (3-0) Credit, 3 hours. An examination of non-rhetorical theories of speech communication, including a survey of recent experimental evidence on human communication.

5333 Theories of Argumentation. (3-0) Credit, 3 hours. A study of the theories of argumentation pertinent to present-day forensic speaking.

5341 British Public Address. (3-0) Credit, 3 hours. A study of the history of British public speaking and speakers from the eighteenth century to the present.

5343 Contemporary Public Address. (3-0) Credit, 3 hours. The historical and critical study of the style, effect, and uses of modern speeches and speaking.

Drama

Course for Undergraduates and Graduates

*4360-5360 Problems in Theatre. (3-0) Credit, 3 hours. Designed to give supervised experience to qualified advanced students in theatre history, playwriting, directing, acting, technical or other theatre problems. Research problems or actual production problems may be chosen.

*May be repeated with different emphasis for additional credit.
Courses for Graduates Only

5337 Studies in Theories and Techniques of Acting. (3-2) Credit, 3 hours. A study of the theories of acting with practical application designed to further the development of the student's acting ability and to prepare him to teach acting. Practical experience in university productions as required for one semester.

5349 Studies in Advanced Technical Theatre Production Techniques. (3-2) Credit, 3 hours. The study of advanced contemporary staging, construction, and lighting techniques with attention given to the use and operation of theatre equipment. Practical experience in the university productions as required for one semester.

5350 Readers Theatre Techniques. (3-0) Credit, 3 hours. A study of methods in script development and production techniques for Readers Theatre.

5357 Advanced Theatre Design. (3-2) Credit, 3 hours. The study of theatre design for the complete play, including scenery, costume, and lighting, with attention given to theatre architectural design.

5367 Studies in Dramatic Theory and Criticism. (3-0) Credit, 3 hours. The study of dramatic theory and criticism from Aristotle to the present.

5368 Studies in Theatre History and Literature I. (3-0) Credit, 3 hours. Studies in the history of the theatre and its literature from its beginning to the 18th century.

5369 Studies in Theatre History and Literature II. (3-0) Credit, 3 hours. Studies in the history of the theatre and its literature from the 18th Century to the present.

5370 Studies in Advanced Creative Dramatics for Children. (3-0) Credit, 3 hours. Studies of the methods of creative dramatics and their use in the classroom. Attention is given to creativity and creative teaching.

5377 Studies in Advanced Theatre Directing. (3-2) Credit, 3 hours. A study of problems and techniques of directing in the contemporary theatre. Attention will be given to theatre organization and management. Practical experience in university productions for one semester.

5388 Seminar in Playwriting. (3-2) Credit, 3 hours. The study of advanced techniques of playwriting culminating in the writing of a full-length play worthy of production.

Prerequisite: Evidence of competence in playwriting and consent of the instructor.
Speech or Drama

Courses for Undergraduates and Graduates

4310-5310 Teaching of Speech and Drama. (3-0) Credit, 3 hours. Designed to meet the needs of teachers in the public schools. Emphasis is placed on well-developed speech and drama program for the grades and high school and consideration of methods and materials for the diagnosing and improving of speech and drama.

4320-5320 Directing Speech and Drama Activities. (3-0) Credit, 3 hours. Designed to assist any teacher whether of speech and drama or some other subject, in directing the speech and drama activities. During the course those in the class will actually direct debate, plays, declamation, and other activities.

Course for Graduates Only

5699 Thesis. Credit, 6 hours.
METHODS AND MATERIALS

The prescribed minor for a program in elementary education includes the following content courses for the elementary grades:

3323 Art for the Elementary Teacher. (3-3) Credit, 3 hours. Art theory and experiences as used in the elementary classroom which contribute to the educative process. Research, structure, and development toward a personal philosophy of presenting art.

Biology 4305-5305 Nature Study. (3-3) Credit, 3 hours. Planned for elementary teachers who wish to use nature materials in the teaching of elementary science; local environmental resources; the study of birds, insects, trees, flowers, and elementary astronomy.

English 3385 Children's Literature. (3-0) Credit, 3 hours. Traditional and creative literature for children from which newer and better materials for reading in the elementary grades may be drawn; a literary history of children's books designed to be of service to the elementary teacher in book and story selection. Creditable only for elementary education degree candidates.

General Science 3310, 3320 General Science. (3-2) Credit, 3 hours each. A laboratory course designed to acquaint the student with the fundamentals of physical, biological, and earth science.

Health Education 3375 Health Education for the Elementary Teacher. (3-0) Credit, 3 hours. Designed to meet the state certification requirements; the role of the elementary teacher in the total school health program with special emphasis upon areas of instruction and health services; instructional units, methods and materials, and problems connected with the school health program.

Industrial Arts 3386 Industrial Arts for Teachers of Elementary Grades. (3-3) Credit, 3 hours. Experience in the use of tools, materials, and projects adapted to the manual skills of the elementary child to qualify teachers to make practical, inexpensive additions to the activity center of the elementary schoolroom.

Mathematics 4302 Materials and Methods in Arithmetic for Elementary Teachers. (3-0) Credit, 3 hours. Fundamental topics in arithmetic, primarily for those preparing to teach arithmetic in the elementary grades; a background for the meaningful teaching of the beginning number concepts and counting, and the fundamental processes and their applications in problem solving.

Prerequisite: Senior standing.
Music 3340 Music Activities in the Elementary School. (3-0) Credit, 3 hours. The five phases of the music program in the elementary school: rhythmic activities, singing, playing simple instruments, listening, and creative activities; and examination of recently published materials in the field of music for the elementary grades.

Physical Education 5348 Organization of the Physical Education Program for the Elementary School. (3-0) Credit, 3 hours. A course designed to help students overcome problems existing at the elementary level through program planning and organization. Discussions on problems of instruction, evaluation, philosophy and objective to be attained; role of the teacher in sharing responsibility with all other teachers and administrators; the unique contribution of the physical education teachers in the educational process, the concept of the teacher as a community member, and suggestions for the improvement of the quality of professional education.

Speech 5370 Studies in Advanced Creative Dramatics for Children. (3-0) Credit, 3 hours. Studies of the methods of creative dramatics and their use in the classroom. Attention is given to creativity and creative teaching.