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Calendar

Summer Session, 1965

First Term

Registration for the first term	June 2-3
Instruction begins at 7:20 A.M.	June 4
Only day to change sections or add courses	June 7
Last day to drop a course with grade of W	June 17
Independence Day—a College holiday	July 4
Last day to drop a course	July 6
Final examinations for the first term	July 8-9

Second Term

Registration for the second term	July 12-13
Instruction begins at 7:20 A.M.	July 14
Only day to change sections or add courses	July 16
Last day to drop a course with grade of W	July 27
Last day to drop a course	Aug. 5
Last day to submit reports, theses, and dissertations to the Graduate Dean	Aug. 11
Final examinations for the second term	Aug. 18-19
Commencement	Aug. 21

Long Session, 1965 - 1966

Fall Semester, 1965

Registration for the fall semester	Sept. 14-16
Instruction begins 8 A.M.	Sept. 17
Only days to change sections or add courses	Sept. 22-23
Last day to drop a course with grade of W	Oct. 18
Thanksgiving Vacation	
Instruction ends at 10 P.M.	Nov. 24
Instruction resumes at 8 A.M.	Nov. 29
Christmas Vacation	
Instruction ends at 12 Noon	Dec. 18
Instruction resumes at 8 A.M.	Jan. 3
Last day to drop a course	Jan. 4
Final examinations for the fall semester	Jan. 14-21

Spring Semester, 1966

Registration for the spring semester	Jan. 25-27
Instruction begins at 8 A.M.	Jan. 28
Only days to change sections or add courses	Feb. 2-3
Last day to drop a course with grade of W	Feb. 28
Spring Vacation	
Instruction ends at 12 Noon	April 6
Instruction resumes at 8 A.M.	April 14
Last day to drop a course	May 2
Last day to submit reports, theses, and dissertations to the Graduate Dean	May 18
Final examinations for the spring semester	May 18-25
Commencement	May 28

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Term Expires February 19, 1965

(Will serve until new members are appointed)

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Term Expires February 19, 1967

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Term Expires February 19, 1969

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 WILLA VAUGHN TINSLEY, Ph.D., Dean of Home Economics
 CLAUDE ADRIAN VAUGHAN, M.J., Director of Public Information
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 D. M. McELROY, Director of Educational Television
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 Benefits
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 on Student Loans
 JAMES RICHARD TARTER, M.S., Director of Undergraduate Admissions
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 MARGARET WATSON WEEKS, M.S., Dean Emeritus of Home Economics
 OTTO VINCENT ADAMS, M.S.E., D.Sc., Civil Engineering (Dean of Engineering
 1932-1949)
 VIVIAN JOHNSON ADAMS, M.A., Home Economics Education
 LOUISE CRAWFORD ALLEN, M.A., Journalism
 CHARLES VICTOR BULLEN, M.S. in E.E., Electrical Engineering
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 CHARLES DUDLEY EAVES, Ph.D., History
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 EUNICE JOINER GATES, Ph.D., Foreign Languages
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CECIL HORNE, B.A., Journalism
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Graduate Council

The Graduate Council is composed of ten members, eight of whom are elected by the Graduate Faculty and two of whom are appointed by the Dean. The Dean is *ex officio* chairman of the Council; the Associate Dean is an *ex officio* member of the Council. Members serve for a period of three years and are not eligible for immediate re-election unless they have been chosen to fill an unexpired term. By a system of rotation, some new members join the Council each year, replacing those whose terms of office have expired. The date after a name indicates the year of expiration of the individual's term of office.

The Graduate Council, assisted by the Graduate Faculty, is charged with the responsibility of formulating the policies of the Graduate School and the requirements for graduate degrees. These policies are administered by the Dean.

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MERTON LYNN DILLON, Ph.D., Professor of History (1967)

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BILLY JOE SANDLIN, Ph.D., Associate Professor of Physics (1965)

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* Appointed member.

Office of the Dean of the Graduate School 251 Administration Building

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MRS. IRENE F. TEMPLE, Administrative Assistant

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MRS. SALLY K. SCOTT, Secretary I

Graduate Faculty Members

Members of the Graduate Faculty participate in all phases of the graduate program, assist in determining policy, and vote on candidates for graduate degrees. Membership is conceived of as a means of recognizing the distinguished members of the faculty as evidenced by scholarship, creativity, and direction of graduate research and study.

JOE A. ADAMCIK, Ph.D., Associate Professor of Chemistry

BONNIE L. ALLEN, Ph.D., Associate Professor of Agronomy and Range Management

JOHN ARTHUR ANDERSON, Ph.D., Assistant Professor of Chemistry

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THEODORE ANDREYCHUK, Ph.D., Professor and Head of the Department of Psychology

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- F. ALTON WADE, Ph.D., Professor of Geosciences
- WARREN S. WALKER, Ph.D., Professor of English
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- JUDDIE JOHNSON WILLINGHAM, Ph.D., Professor and Head of the Department of Dairy Industry
- ARTHUR W. YOUNG, Ph.D., Professor and Head of the Department of Agronomy and Range Management

Associate Members

Associate Members of the Graduate Faculty teach courses of all graduate levels and act as members of students' advisory committees except that they may not serve as chairmen of doctoral committees.

- BURL M. ABEL, M.B.A., Associate Professor of Finance
- ROBERT CUSTER ALBIN, Ph.D., Assistant Professor of Animal Husbandry
- THEODOR W. ALEXANDER, M.S., Associate Professor of Foreign Languages
- ARCHIE C. ALLEN, Ph.D., Assistant Professor of Biology
- JAMES GEORGE ALLEN, M.A., Professor of English and Dean of Student Life
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- THOMAS ANDREW ATCHISON, Ph.D., Assistant Professor of Mathematics
- CECIL I. AYERS, M.S., Professor of Agronomy
- MOHAMED M. AYOUB, Ph.D., Associate Professor of Industrial Engineering
- ETHEL JANE BEITLER, M.Ed., Associate Professor of Applied Arts
- GEORGE WILLIAM BERRY, Ph.D., Associate Professor of Finance
- GERMAIN BONIFACE BOER, Ph.D., Associate Professor of Accounting and Acting Assistant Dean of Business Administration

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PETER DRAGO BUBRESKO, M.A., Assistant Professor of Foreign Languages

HENRY EDSSEL BUCHANAN, M.A., Assistant Professor of Health, Physical Education, and Recreation for Men

CHARLES L. BURFORD, M.S., Reg. Prof. Engr. (Oklahoma), Assistant Professor of Industrial Engineering

WILLIAM G. CAIN, Ph.D., Professor of Management

MARY SUE CARLOCK, Ph.D., Associate Professor of English

WALTER J. CARTWRIGHT, Ph.D., Assistant Professor of Sociology

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PEDER G. CHRISTIANSEN, Ph.D., Assistant Professor of Foreign Languages

DAVID D. CLARK, Ed.D., Assistant Professor of Psychology

CECIL ROBERTS COALE, JR., Ph.D., Assistant Professor of Electrical Engineering

JOHN W. COBB, P.E.D., Associate Professor of Health, Physical Education, and Recreation for Men

EUGENE A. COLEMAN, Ph.D., Assistant Professor of Agronomy and Range Management

JACQUELIN COLLINS, Ph.D., Assistant Professor of History

MURRAY WHITFIELD COULTER, Ph.D., Assistant Professor of Biology

JOHN PAUL CRAIG, B.S. in E.E., Visiting Assistant Professor of Electrical Engineering

DUANE A. CRAWFORD, M.S., Reg. Prof. Engr. (Texas), Assistant Professor of Petroleum Engineering

CHARLES E. DALE, LL.B., Associate Professor of Finance

LEWIS J. DAVIES, Ph.D., Associate Professor of Sociology

KENNETH WALDRON DAVIS, Ph.D., Assistant Professor of English

ROBERT W. DEAHL, M.M., Assistant Professor of Music

HARRY De La RUE, A.M., Assistant Professor of History

PHYLLIS DRAKE, M.S., Associate Professor of Home Economics Education and Home and Family Life

WILLIAM L. DUCKER, B.S., Reg. Prof. Engr. (Texas, Oklahoma), Professor and Head of the Department of Petroleum Engineering

ROY SYLVAN DUNN, M.A., Associate Professor of Sociology

MARTIN J. DVORACEK, M.S., Assistant Professor of Agricultural Engineering

LUTA P. EAVES, M.B.A., Assistant Professor of Accounting

FLOYD EUGENE EDDLEMAN, Ph.D., Assistant Professor of English

ULRICH LEWIS EGGENBERGER, Ph.D., Associate Professor of Agricultural Education

GEORGE O. ELLE, Ph.D., Professor of Park Administration, Horticulture and Entomology

ARTHUR McAULEY ELLIOTT, Ph.D., Assistant Professor of Biology

PAUL RAYMOND ELLSWORTH, M.A., Associate Professor of Music

LAURA KATHERINE EVANS, A.M., Associate Professor of Education

BILLY COTTON EVERTON, Ed.D., Assistant Professor of Education

DOROTHY J. FILGO, M.A., Assistant Professor of Education

JAMES FRESCO, Ph.D., Assistant Professor of Chemistry

GORDON FULLER, Ph.D., Professor of Mathematics

WALLACE E. GARETS, M.S., Professor and Head of the Department of Journalism

P. M. GHARE, M.S., Assistant Professor of Industrial Engineering

ANTHONY A. GIOIA, Ph.D., Assistant Professor of Mathematics

HOWARD E. GOLDEN, Ph.D., Associate Professor of Marketing

PRESTON FRAZIER GOTT, M.A., Associate Professor of Physics

LOLA BETH GREEN, Ph.D., Associate Professor of English

HERBERT W. GRUBB, Ph.D., Assistant Professor of Agricultural Economics

ARTHUR H. HAFNER, Ed.D., Associate Professor of Education

CHARLES G. HALCOMB, Ph.D., Assistant Professor of Psychology

- A. MAYNOR HARDEE, Ph.D., Associate Professor of Foreign Languages
 LEVI MARLIN HARGRAVE, M.S., Professor of Agricultural Education
 RAE L. HARRIS, JR., Ph.D., Associate Professor of Geosciences
 DELMAR D. HARTLEY, Ph.D., Associate Professor of Finance
 HUBERT REED HEICHELHEIM, Ph.D., Assistant Professor of Chemical Engineering
 ELLIS RICHARD HEINEMAN, M.A., Professor of Mathematics
 SHELBY K. HILDEBRAND, Ph.D., Assistant Professor of Mathematics
 GLADYS K. HOLDEN, M.S., Associate Professor of Food and Nutrition
 DAVID A. HOWE, Ph.D., Assistant Professor of Physics
 DOROTHY B. HOYLE, M.A., Associate Professor of Health, Physical Education, and Recreation for Women
 ROLF EUGENE HUFF, Ph.D., Assistant Professor of Biology
 ALEX P. HULL, JR., Ph.D., Associate Professor of Foreign Languages
 ALONZO D. JACKA, Ph.D., Associate Professor of Geosciences
 J. W. JACKSON, M.A., Professor and Acting Head of the Department of Government
 LOUIS THOMAS JARDINE, M.A., Assistant Professor of Foreign Languages
 CHESTER CARTWRIGHT JAYNES, M.S., Associate Professor of Agronomy and Range Management
 LEONID A. JIRGENSONS, M.A., Assistant Professor of Foreign Languages
 WILLIAM R. JOHNSON, Ph.D., Assistant Professor of History
 MARGARET KASSOUNY, M.S., Assistant Professor of Food and Nutrition
 AFZAL MOHAMMED KAZI, Ph.D., Visiting Associate Professor of Mathematics
 GENE KENNEY, M.M., Associate Professor of Music
 RICHARD O. KESLIN, Ph.D., Associate Professor of Anthropology
 KENNETH CLARENCE KILIAN, Ph.D., Assistant Professor of Agronomy and Range Management
 M. DEAN KILLION, M.M., Associate Professor of Music and Director of Bands
 LILA A. KINCHEN, M.S., Associate Professor of Clothing and Textiles
 JAMES W. KITCHEN, Ph.D., Assistant Professor of Horticulture
 KARL W. KLEMENT, Ph.D., Assistant Professor of Geosciences
 SHELDON CHARLES KLOCK, JR., M.A., Assistant Professor of Foreign Languages
 MARTIN L. KORNBLUTH, Ph.D., Associate Professor of English
 MURRAY R. KOVNAR, Ph.D., Professor of Psychology
 FRANZ FERDINAND KRIWANEK, M.A., Assistant Professor of Applied Arts
 LYLE C. KUHNLEY, Ph.D., Assistant Professor of Biology
 JAMES E. KUNTZ, Ph.D., Professor of Psychology and Director of the Counseling Center
 MARTIN T. KYRE, JR., Ph.D., Assistant Professor of Government
 JAMES HAROLD LAWRENCE, JR., Ph.D., Reg. Prof. Engr. (Texas), Associate Professor of Mechanical Engineering
 ROBERT M. LAWRENCE, Ph.D., Assistant Professor of Government
 CHARLES A. LAWRIE, M.M., Assistant Professor of Music
 HONG YONG LEE, M.S., Assistant Professor of Agricultural Economics
 SAMUEL H. LEE, JR., Ph.D., Professor of Chemistry
 HAROLD LOYD LEWIS, Ph.D., Assistant Professor of Biology
 IVAN L. LITTLE, Ph.D., Professor of Philosophy and Associate Dean of Arts and Sciences
 MOHAMMAD ARFIN KHAN LODHI, Ph.D., Assistant Professor of Physics
 MILDRED EILEEN LOWE, Ph.D., Assistant Professor of Biology
 VINCENT P. LUCHSINGER, Ph.D., Associate Professor of Management
 CLARA MUELLER McPHERSON, M.S., Assistant Professor of Food and Nutrition
 RAYMOND D. MACK, M.A., Assistant Professor of Government
 STANLEY STEPHEN MADEJA, M.A., Associate Professor of Applied Arts
 GLEN A. MANN, Ph.D., Associate Professor of Physics
 ROBERT E. MARTIN, M.S., Reg. Prof. Engr. (Texas), Associate Professor of Mechanical Engineering

- HENRY JAMES MAXWELL, Ph.D., Associate Professor of Foreign Languages
 GEORGE P. MECHAM, Ph.D., Professor of Education
 ROY L. MEEK, Ph.D., Assistant Professor of Government
 KISHOR C. MEHTA, M.S., Assistant Professor of Civil Engineering
 WILLIAM D. MILLER, Ph.D., Assistant Professor of Geosciences
 RAYMOND W. MIRE, Ph.D., Assistant Professor of Physics
 EVELYN INA MONTGOMERY, M.S., Assistant Professor of Sociology and Anthropology
 BENJAMIN HAVELOCK NEWCOMB, Ph.D., Assistant Professor of History
 ROBERT L. NEWELL, M.S. in M.E., Reg. Prof. Engr. (Texas), Professor of Mechanical Engineering and Assistant Dean of Engineering
 JAMES E. OSBORN, Ph.D., Assistant Professor of Agricultural Economics
 ROBERT M. PARKER, M.A., Associate Professor of Mathematics
 WILLIAM T. PARRY, Ph.D., Assistant Professor of Geosciences
 L. E. PARSONS, B.S., Reg. Prof. Engr. (Texas), Professor and Acting Head of the Department of Textile Engineering
 HUGH PENDEXTER, III, Ph.D., Associate Professor of English
 WILLIE E. PHILLIPS, Ph. D., Associate Professor of Electrical Engineering
 CHARLES W. POST, M.A., Assistant Professor of Music
 JOHN WILLIAM QUEEN, M.F.A., Assistant Professor of Applied Arts
 SUE AVA RAINEY, M.A., Associate Professor of Health, Physical Education and Recreation for Women
 JAMES V. REESE, Ph.D., Assistant Professor of History
 CORWIN C. REEVES, JR., M.S., Assistant Professor of Geosciences
 LEVERN A. REIS, M.Met.E., Assistant Professor of Mechanical Engineering
 ELBERT B. REYNOLDS, JR., Ph.D., Associate Professor of Mechanical Engineering
 CHARLES L. RIGGS, Ph.D., Professor of Mathematics
 GEORGE S. ROBERT, Ph.D., Assistant Professor of History
 LOUISE BUENGER ROBERT, Ph.D., Part-time Assistant Professor of History
 ARTHUR T. ROBERTS, Ph.D., C.P.A., Professor of Accounting
 BILLY IRVAN ROSS, Ph.D., Associate Professor of Marketing
 CHESTER M. ROWELL, JR., M.S., Assistant Professor of Biology
 MORRIS H. SCHNEIDER, M.S. in I.E., Assistant Professor of Industrial Engineering
 RONALD SCHULZ, M.A., Associate Professor of Speech
 JOSEPH L. SCHUSTER, Ph.D., Assistant Professor of Agronomy and Range Management
 WILLIAM FREDERICK SCHWIESOW, M.S., Reg. Prof. Engr. (Illinois, Texas), Associate Professor of Agricultural Engineering
 JESSE Q. SEALEY, Ph.D., Professor of Biology
 HERMAN BRAZILL SEGRE, Ed.D., Associate Professor of Health, Physical Education and Recreation for Men
 EARL R. SIFERT, Ph.D., Visiting Professor of Education
 HAROLD LESTER SIMPSON, Ph.D., Associate Professor of Foreign Languages
 FRANCIS SISTRUNK, Ph.D., Assistant Professor of Psychology
 THOMAS E. SMITH, Ph.D., Assistant Professor of Sociology and Anthropology
 ALFRED B. STREHLI, M.A., Professor of Foreign Languages
 HASKELL GRANT TAYLOR, M.A., C.P.A., Professor of Accounting
 SCOTT MAE TUCKER, Ph.D., Professor of Foreign Languages
 ARUNKUMAR M. VAIDYA, M.S., Assistant Professor of Mathematics
 MARY JEANNE VANAPPLEDORN, M.M., Associate Professor of Music
 ESTELLE H. WALLACE, M.S., Associate Professor and Acting Head of the Department of Home and Family Life
 ROBERT G. WELCH, Ph.D., Assistant Professor of Agricultural Economics
 OLIVE BOONE WHEELER, Ed.D., Associate Professor of Education
 WILLIAM ELMER WHITTINGTON, Ph.D., Professor of Accounting
 RICHARD E. WILDE, JR., Ph.D., Assistant Professor of Chemistry
 WILFORD WAYNE WILKINS, M.S., Assistant Professor of Electrical Engineering

- IRA L. WILLIAMS, M.S., Reg. Prof. Engr. (Texas), Professor of Agricultural Engineering
- BILLIE F. WILLIAMSON, M.A., Associate Professor of Home Economics Education and Assistant to the Dean of Home Economics
- JIA HSI WU, Ph.D., Assistant Professor of Biology
- BARBARA J. ZECHES, M.S., Assistant Professor of Food and Nutrition
- DALE WENDEL ZINN, M.S., Associate Professor of Animal Husbandry
- EDWARD WILLIAM ZUKAUCKAS, JR., M.S., Associate Professor of Park Administration, Horticulture and Entomology
- WOLODYMYR TARAS ZYLA, M.A., Assistant Professor of Foreign Languages

General Information

Historical and Geographical Statement

Texas Technological College, which was founded in 1923 and enrolled its first students in the autumn of 1925, is a State-supported coeducational institution comprising the School of Agriculture, the School of Arts and Sciences, the School of Business Administration, the School of Engineering, the School of Home Economics, the Division of Extension, and the Graduate School.

Lubbock, the seat of Texas Technological College, is a city of approximately 155,000 inhabitants. It is situated in the Plains area of West Texas at an altitude of 3,256 feet. Dry, crisp air and sunny days throughout practically the entire year provide a healthful and invigorating climate.

Three airlines, two railways, splendid highways, and a network of bus routes make the city easily accessible from all directions.

The College campus lies at the western edge of the business section of the city. On the other three sides are residential areas. The College buildings number more than 168, of which 103 are considered permanent structures.

The first president of Texas Technological College was Paul Whitfield Horn (1925-1932). He was followed by Bradford Knapp (1932-1938), Clifford Bartlett Jones (1938-1944, President Emeritus, 1944—), William Marvin Whyburn (1944-1948), Dossie Marion Wiggins (1948-1952), Edward Newlon Jones (1952-1959), and Robert Cabaniss Goodwin (1959—).

Graduate work has been offered at Texas Technological College since 1927. In 1937, the graduate program became a separate unit under its own dean and council. Between 1928, when the first Master's degree was awarded, and Aug. 31, 1964, a total of 3,190 Masters' degrees had been conferred; and since 1952, when the first doctorate was awarded, 114 Doctors' degrees have been conferred; of these 52 are Ph.D.'s and 62 are Ed.D's.

The following professors have served as graduate dean: William Albert Jackson (1937-1938), Robert Cabaniss Goodwin (1938-1945), William Curry Holden (1945-1950), William Bryan Gates (1950-1963), and Fred Durnford Rigby (1963-).

Housing Accommodations

Prospective graduate students who are interested in living in a College residence hall should address an inquiry to the Office of Room Reservations.

Information concerning living accommodations off the campus may be obtained from the Office of the Dean of Men or the Office of the Dean of Women.

The Library

In the spring of 1962, the Library moved from its long-since out-grown quarters (erected in 1937) into its completely air-conditioned new building which provides open-stack facilities for all and convenient study space for graduate students.

For more than a decade, the emphasis in new acquisitions has been upon items needed for research by faculty members and by graduate students, particularly in the departments offering doctoral work. Especially significant are the virtually complete files of many of the principal scholarly journals — domestic and foreign — and rare material in microfilm and microcard reproductions. Significant materials recently acquired are a depository collection of the Atomic Energy Commission publications, and a History of Science collection consisting of over 1,400 items.

The Southwest Collection

Of special interest to students of the culture of this area is the Southwest Collection, which is located in the Social Science Building (formerly the Library Building) and which comprises a large assortment of books, newspapers, letters, and other manuscripts dealing with the Southwest.

Student Health Service

The College Infirmary provides limited accommodations for regularly enrolled students who are ill enough to require constant supervision but who do not require surgery or the services of specialists. The College cannot provide students with hospital service elsewhere, and it cannot assume responsibility for the continued medical care of students suffering from chronic diseases.

Additional details about the Student Health Service may be found in the General Catalog of Texas Technological College.

Graduate Degrees and Teachers' Certificates

Prospective students should understand that the material in this Bulletin applies only to requirements for graduate degrees and has no direct relation to certificates for public school teachers. The Graduate School gives no assurance that a program for a graduate degree and a program for a certificate will coincide. Students interested in certificates should confer with the Director of Teacher Certification at the outset of their work.

The Placement Service

Graduate students are urged to file their complete records (including photographs) at the Office of the Placement Service (252 West Engineering Building) even though they may not contemplate immediate use of its facilities. Experience has shown that sooner or later almost every graduate with a Master's or Doctor's degree feels the need of having his record on

file at the Placement Office. Assembling such a record after the student has left the campus is difficult and sometimes impossible.

Fees and Deposits

The following information concerning fees and deposits applies only to semesters of a long session; the Summer School Bulletin carries details about fees required in the summer terms.

Texas Technological College reserves the right to change fees at any time in keeping with acts of the Texas State Legislature or of the Board of Directors of the College.

No student is considered enrolled in the College until final settlement of fees has been made. Checks, money orders, and drafts are accepted subject to final payment.

By an act of the Texas Legislature, students who are not legal residents of Texas are required to pay a higher registration fee than those who are residents of the State. Prospective students should consult the Dean of Admissions about their legal residence. Any student who wrongfully pays the fees charged legal residents of Texas is subject to a penalty.

REGISTRATION FEE PER SEMESTER FOR RESIDENTS OF TEXAS:

For 12 or more semester hours	\$50
For 11 semester hours	\$47
For 10 semester hours	\$43
For 9 semester hours	\$39
For 8 semester hours	\$35
For 7 semester hours	\$31
For 6 semester hours	\$27
For 5 semester hours	\$23
For 4 semester hours	\$19
For 3 semester hours or less	\$15

REGISTRATION FEE PER SEMESTER FOR NON-RESIDENTS:

For 12 or more semester hours	\$200
For 11 semester hours	\$184
For 10 semester hours	\$167
For 9 semester hours	\$150
For 8 semester hours	\$134
For 7 semester hours	\$117
For 6 semester hours	\$100
For 5 semester hours	\$ 84
For 4 semester hours	\$ 67
For 3 semester hours or less	\$ 50

STUDENT SERVICES FEE: \$17 per semester; required of all students enrolling for 6 or more semester hours.

GENERAL PROPERTY DEPOSIT: \$7, which must be maintained at all times by replacement of charges against it. The unused portion is returnable if a request is made not later than four years after the student's last attendance.

STUDENT UNION FEE: \$5 per semester; required of all students enrolling for 3 or more semester hours.

LABORATORY FEES: \$2 per semester for each course carrying 3 semester hours' credit or less; \$4 per semester for each course carrying 4 or more semester hours' credit.

CHANGE-OF-SCHEDULE FEE: \$3 for each change after registration has been completed unless the change is made for the convenience of the College.

VISITOR'S FEE: \$10 for each course. Applicable only to persons not enrolling in the College.

ENROLLMENT FOR NO CREDIT: A student regularly enrolled in the College in either a regular or a summer session may register for residence courses for no credit and no grade. Such registrations are considered on the same basis as credit registrations in determining fees and course loads. A student registered for no credit has the privilege of taking part in class discussions, submitting papers, and taking examinations.

FEE FOR REPLACING A LOST I-D ACTIVITY CARD:

Fall Semester	Spring Semester	Fee
After Oct. 15	After March 1	\$12.75
After Nov. 15	After April 1	\$ 8.50
After Dec. 15	After May 1	\$ 4.25

FEE FOR A DUPLICATE RECEIPT: \$.50.

LOCKER OR GYMNASIUM FEE: Students who are not enrolled in a class in physical education but who wish to use the gymnasium will be required to pay a fee of \$1 for a locker. Towel service is available for a fee of \$2, \$1 of which represents a deposit. This deposit is refundable at the end of the semester.

FACULTY FEE FOR GYMNASIUM-NATATORIUM FACILITIES: \$2 for each fiscal year or portion thereof.

FEES FOR SPECIAL COURSES AND FACILITIES:

APPLIED MUSIC

For private instruction in certain courses in
Applied Music (115, 116, 215, 216, 315, 316).....\$15

For private instruction in certain courses in
Applied Music (125, 126, 225, 226, 235, 236,
325, 326, 345, 346, 425, 426, 435, 436, 445,
446, 535, 545)\$30

For use of a practice room and piano, the semester fee is \$5 per hour for each day and \$2.50 for each additional hour. The fee for the rental of musical instruments for classes in strings, woodwinds, and brass (each class) is \$2.50.

HEALTH, PHYSICAL EDUCATION, AND RECREATION FOR MEN

P.E. 4321 \$12.50

HEALTH, PHYSICAL EDUCATION, AND RECREATION FOR WOMEN

P.E. 4321 \$12.50

GRADUATION FEE: \$5. Once a diploma has been ordered for a student, there can be no refund of this fee even if he does not graduate as expected. For a subsequent graduation, a supplementary fee of \$2 is required.

FEE FOR GRADUATING IN ABSENTIA: \$1.50.

FEE FOR BINDING REPORTS, THESES, AND DISSERTATIONS: Usually \$3 per copy, but the fee is subject to change without notice. The fee for the microfilming of a doctoral dissertation is \$25. Details are shown on Page 40 of this Bulletin.

EXEMPTION FROM FEES BECAUSE OF HONORABLE DISCHARGE FROM THE ARMED FORCES: Information may be obtained from the Coordinator of Veterans' Affairs in the Office of the Registrar.

REFUND OF FEES: Refunds are not made on courses of less than six weeks' duration. A student who is suspended from the College is not entitled to a refund of fees. With these exceptions, a student who officially withdraws during either semester will receive a refund of registration and activity fees according to the following schedule:

First class day through the 14th class day	80 per cent
Fifteenth through the 20th class day	60 per cent
Twenty-first through the 25th class day	40 per cent
Twenty-sixth through the 30th class day	20 per cent
After the 30th class day	no refund

Fellowships and Assistantships

All inquiries concerning fellowships and assistantships should be addressed to the head of the department concerned.

Fellowships

A number of Graduate Fellowships requiring no duties on the part of the students are offered.

Three-year fellowships are available for doctoral students in physics under the provisions of the National Defense Education Act.

Fellowships from the National Science Foundation are available under the Graduate Traineeship Program, the Cooperative Graduate Fellowship Program and the Program of Summer Fellowships for Graduate Teaching Assistants.

Under a grant from the National Aeronautics and Space Administration, eight predoctoral traineeships in the space sciences have been awarded to begin in September, 1965.

Assistantships

Most of the departments which participate in the graduate program have Graduate Teaching Assistantships for properly qualified students. The duties and stipends vary in relation to the qualifications of the recipient and the amount of service he renders.

Policies and Regulations

Nature of Graduate Study

Graduate study is much more than a continuation of undergraduate work. Its true spirit is one of inquiry and the desire to add something to human knowledge. Graduate study should therefore be contemplated only by students who have already demonstrated in their undergraduate programs unusual intellectual attainments and the power of independent thought and investigation.

For this reason, practically all graduate schools exercise some type of selectivity in their admission of students. Selective entrance requirements are partly for the maintenance of the high standards that must always characterize graduate study and partly for the benefit of students in helping them decide early whether they should undertake such work.

The Graduate School of Texas Technological College recognizes its obligation both to the standards mentioned above and to the citizens of Texas. In connection with the first obligation, the Graduate School requires evidence of an applicant's special ability for admission to its degree programs and reserves the right to decline to accept any applicant whose admission would not be to his best interest or that of the College. On the other hand, under its twofold classification of graduate students, the Graduate School makes its facilities available to a wide variety of students, whether they are applicants for degrees or not.

The Graduate School, like other schools of Texas Technological College, reserves the right to institute, after due notice and during the course of a student's work toward a degree, any new ruling which may be necessary for the good of the College and therefore, ultimately, of recipients of its degrees.

Responsibility of Students

Graduate students are expected to make themselves thoroughly familiar with the regulations of the Graduate School and the requirements for degrees. Failure to follow the regulations and requirements almost inevitably results in complications for which the Graduate School cannot assume responsibility.

To facilitate communications, graduate students should promptly notify the Graduate Office of their changes of address.

Affidavit Required by State Law

By an act of the Texas Legislature, every person owing allegiance to the United States is required to sign an affidavit of loyalty in the presence of a Notary Public before he may be permitted to register in a Texas state-supported college or university.

Admission to the Graduate School

Two types of admission are granted: (1) GENERAL ADMISSION TO THE GRADUATE SCHOOL (that is, admission as an "Unclassified Graduate Student") and (2) ADMISSION TO A GRADUATE DEGREE PROGRAM. The requirements are explained in the following paragraphs.

GENERAL ADMISSION TO THE GRADUATE SCHOOL is granted through the Office of the Dean of Admissions. The basic prerequisite for admission to the Graduate School, regardless of the type of admission sought, is the possession of an acceptable Bachelor's degree from a recognized college or university. General admission is granted on the basis of a formal application and satisfactory transcripts of the applicant's previous academic work. These documents should be submitted at least 30 days prior to the proposed enrollment—60 days by applicants outside the United States.

ADMISSION TO A GRADUATE DEGREE PROGRAM is granted through the Office of the Dean of the Graduate School and is restricted to applicants whose undergraduate records and scores on the Aptitude Test of the Graduate Record Examinations indicate probable success in such work.

Procedure for Students Seeking Admission to a Master's or Doctor's Degree Program

All applicants must obtain general admission to the Graduate School before they can be considered for admission to a Master's or Doctor's degree program. If possible, applicants should take the Aptitude Test of the Graduate Record Examinations early enough to have their test scores sent to the Dean of the Graduate School prior to their enrollment.

An applicant who has been granted general admission to the Graduate School but has not taken the Aptitude Test of the Graduate Record Examinations will be permitted to enroll in the Graduate School with the understanding that he will take the Aptitude Test at the first administration of it after his initial enrollment. This policy applies to any enrollment, whether graduate credit is involved or not, and is basically for the protection of the student. It is much to a student's advantage to ascertain as soon as possible whether he has satisfied the requirements for admission to a degree program. Unnecessary postponement of the Aptitude Test may result in a denial of degree credit for work already completed and may jeopardize an applicant's chances of admission to a degree program.

An applicant who has been granted general admission to the Graduate School and who has already taken the Aptitude Test of the Graduate Record Examinations should ask the Educational Testing Service to send his test scores to the Dean of the Graduate School.

As soon as the Graduate Office receives the test scores of an applicant who has been granted general admission, the Dean of the Graduate School will evaluate the record, confer with the head of the student's proposed major department, and inform the applicant whether or not he has been accepted in a degree program. Students should understand, however, that the Educational Testing Service usually requires about a month to process test papers and distribute reports, and that the Dean and department head need some time in which to complete their evaluation of an applicant's record.

Admission to a Second Master's or Doctor's Degree Program

Permission to work toward a second graduate degree of the same level as the first is granted only in exceptional circumstances, and the applicant is subject to all requirements as a new student. No courses used for the first degree will be credited toward a second degree of the same level.

Procedure for Students Not Planning to Work Toward a Degree Here

Students who wish to enroll for courses for some non-degree purpose are required merely to secure general admission to the Graduate School.

Such students may later gain admission to a Master's or Doctor's degree program by petitioning the Dean of the Graduate School and by satisfying the customary requirements for admission to degree work. In general, however, degree credit cannot be expected for any courses completed prior to the student's official admission to a graduate degree program.

The Aptitude Test of the Graduate Record Examinations

The Aptitude Test is an objective-type examination requiring approximately three hours and yielding two scores—Verbal Factor (vocabulary and reading comprehension) and Quantitative Factor (logical and mathematical reasoning).

All of the Graduate Record Examinations, of which the Aptitude Test is merely one, are prepared and scored by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. (It has no connection with Princeton University.) A western office is maintained at 4640 Hollywood Boulevard, Los Angeles 27, California. Applicants from Texas should direct their correspondence to the Princeton office.

The Graduate Record Examinations are administered in at least one center (usually several centers) in each of the 50 states and the District of Columbia, and in many foreign countries. In some of these centers, the tests are administered only once or twice a year; in many others, they are given at least four times a year, usually in January, April, July, and November.

Application blanks and details about the Aptitude Test and examination dates may be obtained from the Testing and Counseling Center of Texas Technological College (which administers the tests in Lubbock), from similar agencies in other colleges and universities, or from the Educational Testing Service.

Each applicant is individually responsible for making arrangements to take the Aptitude Test and for having his scores sent to the Dean of the Graduate School, Texas Technological College, Lubbock, Texas.

The completed application form and the examination fee (currently \$7) must reach the proper office of the Educational Testing Service approximately a month in advance of the test date. Upon receipt of the application and the fee, the Educational Testing Service will mail the applicant a ticket of admission to the examination, specifying the room and the hour at which it will be held.

Applicants should note that at Texas Technological College, the Graduate Record Examinations are administered by the Testing and Counseling Center, not by the Graduate School.

Continuation in the Graduate School

Every student enrolled in the Graduate School, whether he is working toward a degree or not, is required to be diligent in his studies and to cooperate fully with the policies of the institution. The Graduate School reserves the right to place on probation or to drop from its rolls any graduate student who does not maintain a satisfactory academic standing or who fails to conform to the regulations of the College or to the conventions of good citizenship.

Acceptance by the Departments

As indicated under the heading of "Admission to the Graduate School," applicants for admission to graduate degree programs must be accepted by their proposed major departments as well as by the Dean of the Graduate School. Such acceptance is merely provisional, however, and does not constitute admission to candidacy for a degree.

If a student who has been accepted by one department wishes to transfer to another, he is required to present at the Graduate Office a written statement from each department certifying that the transfer is authorized.

Graduate Advisers

The Dean of the Graduate School is the general adviser for all graduate students, but, so far as particular courses are concerned, a student is counseled by the head of his major and minor departments or by other professors designated for such counseling. Advisement in matters pertaining to teachers' certificates is the responsibility of the Director of Teacher Certification.

Eligibility for Enrollment

Members of the Faculty and Staff

Full-time members of the faculty and staff of Texas Technological College may enroll for courses only by special permission of the President of the College. In registering for graduate work, they become subject to the usual regulations of the Graduate School. However, no member of the faculty with a rank above instructor is eligible to receive a graduate degree from Texas Technological College.

Undergraduates Taking Work for Graduate Credit

An undergraduate student who is within 12 hours of graduation and who has at least a B average in his major subject may enroll for courses carrying graduate credit, subject to the approval of the dean of his undergraduate school and the Dean of the Graduate School. This approval must be obtained on special forms at the time of registration. No course taken without this approval may be counted for graduate credit.

An undergraduate who is permitted to enroll for graduate work as indicated above is required to take the Aptitude Test of the Graduate

Record Examinations at the first administration of it after his enrollment for graduate work—if he has not taken it before.

The maximum amount of work that may be scheduled by an undergraduate taking courses for graduate credit is 16 hours in a semester or 6 hours in a summer term, including graduate and undergraduate work. Undergraduates permitted to enroll for graduate work are expected to complete all of their undergraduate requirements within the academic year in which they first enroll for graduate credit.

An undergraduate may not receive credit for more than 12 semester hours of graduate work completed prior to his admission to the Graduate School as an applicant for a graduate degree.

Extra-Curricular Activities

Graduate students are not eligible to hold office in an organization which is primarily for undergraduates or to participate in college-sponsored extra-curricular activities. They are encouraged, however, to participate in honor societies for which they may be qualified. Graduate students who are satisfactorily pursuing full-time programs of graduate work are eligible to serve as officers in organizations of this type.

Rank of Courses

Courses numbered in the 500 series and above are for graduate students. Most of the courses numbered in the 400 series may be taken for graduate credit. In such courses, a graduate student may, at the discretion of his professor, be assigned additional work beyond that required of undergraduates.

Approximately half of the work credited toward a Master's degree is expected to be in courses designated for graduate students. Most of the work credited toward a Doctor's degree should be in courses of this rank. Courses numbered in the 300 series carrying graduate credit will be credited toward an advanced degree very rarely, and only when justified by highly exceptional circumstances.

Amount of Work Permitted

A full graduate schedule is 12 hours in a semester or 6 hours in a summer term. The maximum enrollment in the Graduate School is 16 hours in a semester or 6 hours in a summer term.

For teaching fellows or others employed in part-time positions on the campus, the permissible load will be determined by the Dean and the head of the student's major department.

Full-time employees of the College are limited to 3 hours of graduate work in any term or semester.

Included in a graduate student's total load are extension courses and correspondence courses which he may be taking for the removal of deficiencies.

Registration

General Procedure

Students who have been granted "General Admission to the Graduate School" (see Page 22 of this Bulletin) are expected to register in the Graduate School whether they contemplate degree work or not.

The details of registration are under the jurisdiction of the Registrar, who furnishes to each enrollee complete instructions for all steps in the procedure. Students should follow carefully those instructions and the additional ones listed below.

Departmental Approval of Courses

The student should have his complete schedule of courses made out by an official representative of his major department and then have each individual course approved by a representative of the department offering it. It is the student's responsibility to see that the class tickets which are issued him correspond exactly to the courses listed on his schedule card.

Dean's Approval of Registration

When the approvals mentioned above have been secured and the registration cards have been completely filled out, the student is required to submit his registration cards to the Dean of the Graduate School for approval.

At this stage of the procedure, the student will be asked to state the type of credit he seeks in each course for which he is enrolling, and the proper designation will be stamped on his class tickets for the guidance of his professors.

A graduate student may enroll in certain 300 and 400 courses for (1) Graduate Credit, (2) Undergraduate Credit, or (3) Non-Credit, and in 100 and 200 courses for (1) Undergraduate Credit or (2) Non-Credit. (Enrollment of a graduate student in a 500 course is automatically considered to be for graduate credit.) The designation of the type of credit sought in a course has no necessary relation to the student's plans in connection with a graduate degree.

Once a card has been stamped "Graduate Credit," "Undergraduate Credit," or "Non-Credit," and registration has been completed, changes in the designation of credit can be made only through the Graduate Office, and no such changes can be made after the fourth meeting of the class involved.

The registration cards of all graduate students and of all students enrolling for any graduate credit must be approved by the Dean of the Graduate School before the payment of fees.

Specific Requirements Concerning Registration

Registration in Session of Graduation

Students who began graduate study here after Sept. 1, 1963, are subject to the following regulation, which is designed to facilitate communication and to systematize the supervision of reports, theses, and dissertations:

Every candidate for a graduate degree must be registered in the Graduate School in the long session or the summer session in which his degree is conferred. For graduation in a long session (that is, at the spring commencement—May or June), a student who completes all of his work in the fall semester is not required to register in the succeeding spring semester; for graduation in a summer session (that is, at the August commencement), a student who completes all of his work in the first summer term is not required to register in the second term. Failure to graduate at the expected time necessitates additional registrations as may be necessary.

Registration for Thesis Courses

Registration for a Master's report (Course No. 630) is required at least once; for a Master's thesis (Course No. 631), at least twice; and for a Doctor's dissertation (Course No. 831), at least four times.

At the discretion of the department concerned, a student who is not regularly enrolled in the Graduate School may be required to register for the appropriate thesis course in any term or semester in which he expects to receive assistance from his thesis adviser or committee.

Enrollment for thesis courses is permitted only during a regular registration period. Students away from the campus may, however, register for a thesis course by mail, provided they make arrangements with the Registrar at least 30 days prior to the beginning of a registration period.

Changes in Schedule and Withdrawal

A graduate student who wishes to change a section, to add or drop a course, or to withdraw from the Graduate School is required to make his request at the Graduate Office. A student who quits a course without official withdrawal will receive F on it.

After a schedule has been approved and the fees have been paid, the adding or dropping of a course or the changing of a section will be subject to a charge of \$3 for each change unless the change is made for the convenience of a department or the College.

Prerequisites for a Graduate Major

For a graduate major, an applicant must have completed, or must take as undergraduate leveling work, a minimum of 18 semester hours (including at least 12 hours on the junior or senior level) in his proposed major subject and he must be accepted by the department concerned. Any department may specify additional prerequisites if they are considered necessary and may require an applicant to pass an examination before his acceptance.

Residence

Study leading to a graduate degree involves sustained residence as well as the completion of courses. Residence, which is expressed in terms of weeks, months, or years, is credited for work done on the campus of Texas Technological College and for certain types of courses (theses, field courses, practicums, internships, individual study, or any other type of course) when offered at a place and under circumstances specifically established by the department concerned and approved by the Graduate Council in advance of the offering of the course.

Residence is not credited for work completed by extension. Courses transferred from another graduate school will not reduce the minimum residence for the Master's degree by more than six weeks.

The minimum residence for the Master's degree and the Doctor's degree will be found in the appropriate sections of this Bulletin.

Grades

The grades used in the Graduate School are the same as those used in undergraduate work (A, B, C, D, and F), but graduate credit is allowed only for courses completed with grades of A, B, and C.

For graduate credit, no assigned grade may be raised (unless an error has been made) except by a repetition of the course involved. The substitution of another course for one completed with a low grade is not permitted. If a course is repeated, the last grade is used in computation of the average, even though it may be lower than the original grade.

Work completed at another graduate school with a grade less than B will not be accepted, but grades on transferred work will not raise the grade average on courses completed in this Graduate School.

The Symbols P and I

The symbol P (in progress) is assigned for every enrollment for a Master's report (Course No. 630), Master's thesis (Course No. 631), or Doctor's dissertation (Course No. 831) until the completed document has been approved by the student's adviser or committee and accepted by the Dean of the Graduate School. At that time the professor in charge will file change-of-grade cards replacing the symbol P with letter grades.

P may be given by a professor when a student's work in a research course is not quite finished but is satisfactorily in progress at the end of a semester. This symbol must be replaced by a standard letter grade before credit can be granted for the work.

The symbol I (incomplete) may be given by a professor when a student's work in a regularly organized class has not been completed at the end of a semester and when the failure to complete the work has been solely due to causes beyond the student's control. It is not used as a substitute for F. When I stands for a year without action on the part of the student, it may become F.

Grade Requirement for Graduation

For the Master's degree in a program requiring a report or thesis, the minimum requirement for graduation is an average of B in the major subject and an over-all average of B on all courses comprising the official program for the degree (see Page 32 of this Bulletin). At its discretion, any department may require a B average of students who take a minor in the department.

For a candidate completing his Master's degree work under a non-thesis option, the minimum requirement is a B average in the major and the minor considered separately. (See "Graduation Under a Particular Catalog," Page 30.)

For the Doctor's degree, the minimum requirement for graduation is an average of B in the major and the minor treated separately. For this calculation, all courses completed for graduate credit outside the major are considered to comprise the doctoral minor.

In the calculation of grade averages for graduation or any other purpose, grades on thesis courses are counted only to the extent of the minimum registration requirement; that is, once (3 sem. hrs.) for a Master's report; twice (6 sem. hrs.) for a Master's thesis; and four times (12 sem. hrs.) for a Doctor's dissertation.

Proficiency in English

A student found deficient in English may be required to complete satisfactorily certain specified courses in English usage (without graduate credit) before he is considered for admission to candidacy for a graduate degree.

Statement of Intention to Graduate

A student planning to graduate on a particular date must advise the Graduate Office of his desire at least 12 weeks before that date. He must also file the "Statement of Intention to Graduate" not later than nine weeks prior to his proposed date of graduation. No candidate's name will be placed on the "Tentative List of Graduates" for any commencement unless this statement has been received at the Graduate Office by the specified deadline.

A candidate who fails to graduate at the expected time is required to file a new "Statement of Intention to Graduate" for any subsequent graduation.

The Master's Degree

The requirements set forth in this section are in addition to those listed under the heading of "Policies and Regulations."

Degrees Offered

In the "Program for the Master's Degree" and on the title-approval page of a report or thesis, the exact and official designation of the degree must be used:

Master of Arts
 Master of Business Administration
 Master of Education
 Master of Music Education*
 Master of Science
 Master of Science in Chemical Engineering
 Master of Science in Civil Engineering
 Master of Science in Electrical Engineering
 Master of Science in Home Economics
 Master of Science in Industrial Engineering
 Master of Science in Mechanical Engineering

Prerequisites

Admission to a Master's degree program is dependent upon the applicant's undergraduate record, his scores on the Aptitude Test of the Graduate Record Examinations, and the recommendation of his proposed major department.

A substantial body of undergraduate work in the major subject and considerable breadth of background are essential for graduate study. Therefore, students whose undergraduate programs are seriously deficient in breadth or depth may be required to complete additional preparatory work without graduate credit.

Graduation Under a Particular Catalog

Effective Sept. 1, 1962, all programs for the Master's degree not granted special exception require a Master's thesis (6 semester hours) or a Master's report (3 semester hours).

A student who had begun Master's degree work under a non-thesis option may follow his original plan if — by Sept. 1, 1962 — he had filed at the Graduate Office a degree plan calling for a non-thesis program or if by that date he had completed 6 or more semester hours of acceptable graduate work which he had planned to use in such a program.

* Available September 1, 1965.

On the other hand, with the approval of his major department, a student who is eligible to continue his original plan under the provisions stated above may, if he prefers, change to a program embodying a report or thesis and satisfy the requirements published in this issue of the Bulletin.

Report and Thesis

The Master's report and the Master's thesis are alike in that each is expected (1) to represent independent work by the student, conducted under the supervision of a director, and (2) to be written clearly and concisely in good English, or whatever language may be approved as in the case of a student with a major in Spanish or French.

The thesis usually involves research, an activity which naturally varies considerably from discipline to discipline. The report may or may not be based on research; it normally represents some type of investigation, criticism, or problem solving.

Administratively, the report and the thesis are treated alike. That is, each requires the approval of its director or committee and acceptance by the Dean of the Graduate School.

Available at the Graduate Office, free of charge, is a pamphlet setting forth the requirements for the preparation and submission of a report and a thesis. All manuscripts must conform to the published policies.

Regulations concerning registration for a report and a thesis will be found on Page 27 of this Bulletin.

Basic Programs for the Master's Degree

Students should understand that the basic programs outlined below represent simply the minimum requirements of the Graduate School. All departments have the prerogative of increasing the quantitative requirements for any or all of their majors. In general, programs involving any type of certificate (such as those for teachers, administrators, and counselors) will embody considerably more than the 30-hour minimum set by the Graduate School. The option between a report and a thesis is also a departmental prerogative although the preference of the student will naturally be considered.

The two programs are as follows:

PLAN 1: Required: A minimum of 24 semester hours of graduate course work, exclusive of credit for the Master's thesis. (For details concerning registration for the thesis, see Page 27 of this Bulletin.)

PLAN 2: Required: A minimum of 27 semester hours of graduate course work, exclusive of credit for the Master's report. (For details concerning registration for the report, see Page 27 of this Bulletin.)

Language Requirement

For the Master of Arts and the Master of Science in mathematics and the pure sciences, a knowledge of a foreign language is required. This requirement may be applied to other degrees at the discretion of the department

concerned. A student whose major is one foreign language is required to have a reading knowledge of another language.

To qualify for Admission to Candidacy for the Master's degree, applicants are required to show proficiency in a foreign language acceptable to the major department and the Dean of the Graduate School. There are two basic plans. Departments have the option of following one or both plans.

PLAN I: Students may fulfill the reading knowledge requirement by taking for undergraduate credit, and successfully passing the 231-232 (or 233-234) sequence in the required language. A grade of B or higher is required in the second course of the sequence taken.

PLAN II: The second plan for fulfilling the reading knowledge requirement is by examination. Under this plan the student takes an examination approved by the major department, the Graduate Dean, and the Department of Foreign Languages, which interprets the results. Arrangements for taking these examinations, in French, German, and Russian, can be made at the Testing and Counseling Center which administers the tests for the Educational Testing Service. The examinations are given three or four times each year; the student should consult with the Testing Center for specific dates. The Department of Foreign Languages will continue to administer the examination in Spanish, and any acceptable foreign language other than those listed above.

Major Subject

Every program for a Master's degree must embody a major comprising at least 18 semester hours of graduate work in a subject which has been approved for major work and for which the student has, or completes without graduate credit, the prerequisites as explained on Page 30 of this Bulletin.

Minor

Every program for a Master's degree not granted special exception must embody a minor representing approximately one-fifth to one-fourth of the total program. The minor may be completed in a single department or in several departments, but the courses comprising the minor are subject to the following limitations: (a) they must carry graduate credit; (b) they must be acceptable to the student's major department; and (c) each course (except the specially designed ones numbered 5335) must be approved by the department offering it. This approval is indicated in the degree plan by the signature of the department head (or graduate adviser) concerned. Its purpose is to make sure that a student does not enroll for a course for which he is not prepared.

Program for the Master's Degree

Early in his first semester of graduate study, every one contemplating Master's degree work is required to submit to the Dean of the Graduate School a "Program for the Master's Degree" as prepared by an official representative of the proposed major department and of other departments as indicated under "Minor" in the preceding section.

The forms for the "Program" are available at the Graduate Office.

When the student receives his approved copy of his "Program" from the Graduate Office, he is expected to keep it and use it as the basis of all subsequent enrollments. Substitutions of courses (except the special group numbered 5335) can be made only on the written recommendation of the department or departments concerned and the approval of the Graduate Dean.

Approval of a "Program for the Master's Degree" DOES NOT, however, constitute official admission to Master's degree work or admission to candidacy for a Master's degree. It merely signifies that the proposed program will be acceptable if the student satisfies all of the regulations of the Graduate School and all of the requirements connected with his degree program.

Minimum Residence

The minimum residence for any Master's degree is a full academic year (nine months) of graduate work or its approximate equivalent in five 6-week summer terms. Part-time enrollment is evaluated on a fractional basis.

Transferred and Extension Work

There is no automatic transfer of credit toward a Master's degree, but, in general, work completed in residence at another accredited graduate school may, on the recommendation of the departments concerned, be accepted for as much as 6 semester hours toward a Master's degree. Credit accepted from another graduate school will in no instance reduce the minimum residence by more than six weeks.

A maximum of 6 semester hours of extension work completed through the Division of Extension of Texas Technological College may be credited on the course work for a Master's degree if the student had been officially admitted to the Graduate School (at least as an "Unclassified Student") prior to his enrollment for the extension work. Residence is not credited for extension work.

Not more than 9 semester hours of any combination of extension courses and courses completed elsewhere can be credited toward a Master's degree.

**GRADUATE CREDIT IS NEVER GRANTED FOR COURSES
TAKEN BY CORRESPONDENCE.**

Admission to Candidacy

Every applicant for a Master's degree is required to make formal "Application for Admission to Candidacy for the Master's Degree *as soon as* he has completed 9 to 12 semester hours of the work listed in his "Program for the Master's Degree." This application is submitted to the Dean of the Graduate School on a form obtainable at the Graduate Office.

THE MINIMUM INTERVAL BETWEEN ADMISSION TO CANDIDACY AND GRADUATION IS FOUR MONTHS. Admission to candidacy will be granted at such time as *all* of the following requirements have been met:

- (1) Official admission to Master's degree work has been received.
- (2) At least 9 semester hours of the graduate work required for the Master's degree have been completed.
- (3) All required leveling work has been completed.
- (4) An average grade of B or higher has been maintained in
 - (a) all completed graduate work required for the Master's degree,
 - (b) all work completed for graduate credit in the major or minor subjects.
- (5) Proficiency in English has been acceptably demonstrated—certified by the Department in approving the "Application for Admission to Candidacy."
- (6) Proficiency in a foreign language required for the particular degree has been acceptably demonstrated.
- (7) The general field of the report or thesis has been stated and approved.
- (8) Work to date is acceptable to the departments concerned, as attested by their approval of the "Application for Admission to Candidacy."
- (9) The entire program conforms with the general requirements of the Graduate School and with the requirements of the particular degree.

Time Limit

All work credited toward a Master's degree must be completed within six years. Students whose graduate study here is interrupted by involuntary military service will be granted an extension of time for the period of their military duty, not exceeding five years.

Final Examination

Within the term or semester in which he plans to graduate, at a time specified by his major department, every candidate for a Master's degree is required to undergo a final comprehensive examination in his major field.

The final examination is normally given once each long session and once each summer. It is the student's responsibility to confer with the chairman of his advisory committee or the head of his major department about the time and place of the examination. No reminders will be provided by the departments or the Graduate School.

A student who fails the final examination may repeat it once, but not until after an interval of four months or more.

At the discretion of the department concerned, a student who passes the examination, but does not graduate within 12 months may be required to repeat the examination.

The Doctor's Degree

The requirements set forth in this section are in addition to those listed under "Policies and Regulations."

Majors

Major work leading to the degree of Doctor of Philosophy is offered in the Departments of Chemistry, Chemical Engineering, Civil Engineering, Electrical Engineering, English, Geosciences, Government, History, Industrial Engineering, Mathematics, Mechanical Engineering, Physics, and Psychology. The Doctor of Philosophy degree is also offered in engineering on an interdisciplinary basis. The degree of Doctor of Education is offered with a major in Education.

Admission to Doctoral Study

Admission to doctoral study is restricted to applicants whose backgrounds show definite promise of success on this the highest level of academic endeavor. The formal requirements for admission to the doctoral program are a distinguished record in previous work (undergraduate and graduate) and a high score on the Aptitude Test of the Graduate Record Examinations. Each doctoral department has additional requirements which applicants must satisfy for admission.

Program of Work

Years of Study

A minimum of three years of graduate study beyond the Bachelor's degree is required for the doctorate. Work completed for the Master's degree is considered one of these years if it forms part of a logical sequence in the entire program.

Work completed in the doctoral program of another recognized graduate school will be considered on the recommendation of the departments concerned, but no assurance can be given that such work will reduce the course or residence requirements in this Graduate School. *In no case can transferred credit reduce the minimum residence (see below).*

Doctoral study cannot be calculated solely in terms of credit hours, but the program for the doctorate normally requires the completion of 60 to 80 or more semester hours of work beyond the Bachelor's degree, exclusive of credit for the dissertation. It is expected that most of the work beyond the Master's degree will be in courses open only to graduate students. (For details concerning registration for the dissertation, see Page 27 of this Bulletin.)

Major and Minor

An applicant for the doctorate will devote most of his time to his major subject, but his program must include a minor of at least 18 semester hours beyond the Bachelor's degree in a field other than the major.

In exceptional circumstances and with special approval, minors at variance with this description may be acceptable. The minor field must be stated and approved by the major department and the Dean of the Graduate School.

In addition to any work completed elsewhere in a minor subject, at least 6 semester hours must be completed here in that subject if it is to be considered an official minor.

An applicant for the Ed.D. Degree not having a departmental minor may take as part of his work outside his major those courses which are numbered 5335 but which are not restricted to students in elementary education.

Residence Requirement

These requirements apply to every one beginning doctoral study at Texas Technological College after June 1, 1955, and to those who started earlier than that if they failed to satisfy all requirements with respect to the Graduate Record Examinations by June 1, 1955.

Regardless of the amount of graduate work he may have completed elsewhere, every applicant for the Ed.D. or the Ph.D. Degree is required to complete in residence in this Graduate School at least one year of graduate study beyond the Master's degree or beyond the equivalent of this degree if he proceeds to doctoral work without taking a Master's degree.

This residence may be accomplished in minimum length of time only by the completion of a full schedule of graduate work in each of the two consecutive semesters of a long session. (A full schedule is normally from 12 to 15 semester hours, but, in exceptional circumstances, the Dean may accept a slightly smaller load as full schedule.) A student who holds a teaching or research assistantship or other part-time job closely related to his work toward the doctorate may satisfy the residence requirement at less than full but more than half schedule over a longer period of time including at least three consecutive long session semesters, but only if his plan to do so is approved by the Dean of the Graduate School. No part of this requirement can be satisfied by any type of off-campus enrollment.

Preliminary Examination

As early in his doctoral study as possible, the applicant will undergo a preliminary examination (oral or written or both), administered by the major and minor departments. This examination will serve as the basis of further counseling of the applicant. The major department will file at the Graduate Office a report on this examination and will include a statement

concerning the applicant's proficiency in English composition as determined by the major department on the basis of suitable tests.

Languages and Statistics

As indicated in the preceding section, every applicant for the doctorate is required to demonstrate, early in his program, an adequate command of English composition.

In order to qualify for Admission to Candidacy, applicants for the Ph.D. Degree are required to demonstrate proficiency in a foreign language or languages acceptable to the major and minor departments and the Dean of the Graduate School. The basic requirement is a reading knowledge of two foreign languages. Two departures from this pattern are permissible at the option of the major department: they are (a) higher proficiency in a single language and (b) substitution of some other "tool" subject for one language. To exercise the latter option, a department must recommend, for approval by the Dean of the Graduate School, both the subject concerned and the means by which satisfactory proficiency is to be demonstrated.

There are two alternative procedures for establishing foreign language competence: (1) students may fulfill the reading knowledge requirement by taking for undergraduate credit and successfully passing the 231-232 (or 233-234) sequence in two languages (those seeking to present a high level of competency in a single language will complete the 331-332 sequence) and a grade of B or higher is required in the second course of the sequence taken; (2) the second method of fulfilling the language proficiency requirement is by examination. The student will take an examination approved by the major department, the Graduate Dean, and the Department of Foreign Languages, which interprets the results. Under this plan the student may demonstrate higher proficiency by surpassing an examination threshold score which is higher than that required for basic reading knowledge. Arrangements for taking these examinations, in French, German and Russian, can be made at the Testing and Counseling Center which administers the tests for the Educational Testing Service. The examinations are given three or four times each year; consult with the Testing and Counseling Center for specific dates.

The Department of Foreign Languages will continue to administer the examination in Spanish, and any acceptable foreign language other than those listed above.

Departments may require a specialized examination in their particular disciplines in addition to one of the basic plans. These examinations may be administered and interpreted within the department requiring them; or at the request of the department involved, they may be administered by the Department of Foreign Languages.

In order to qualify for Admission to Candidacy, applicants for the Ed.D. Degree are required to show competency in educational evaluation and educational statistics and also a foreign language if their research requires such competency. The examination in educational statistics is administered by a committee representing the Department of Education.

Advisory Committee

As soon as an applicant has passed the preliminary examination administered by his major and minor departments, an advisory committee will be appointed by the Dean on the recommendation of the departments concerned. This committee will hold meetings as often as necessary with the applicant and will direct his work at all stages. From time to time, the chairman of the committee will file written reports with the Dean and the heads of the departments concerned, indicating the applicant's progress.

Qualifying Examination

The Qualifying Examination for Admission to Candidacy for the Doctor's degree is one of the major features of the doctoral program. An applicant is eligible to attempt this examination only after he has satisfied the following requirements: (1) he must have been officially admitted to the doctoral program; (2) he must have passed the preliminary examination and have been provisionally accepted by his major and minor departments; and (3) he must have completed most of the course work prescribed by his committee.

The Qualifying Examination is prepared and administered by the candidate's advisory committee and any other professors the committee or the Dean may consider necessary. The major portion of the examination is an essay-type test, of at least six hours' duration. It usually includes also an oral examination under the supervision of the committee and any other professors that may be invited to participate.

Procedure When the Examination Is Satisfactory

If the Qualifying Examination is considered satisfactory and the requirements in languages (including English) and/or statistics have been met, the chairman of the advisory committee will send to the Dean, for consideration by the Graduate Council, a formal written recommendation that the applicant be admitted to candidacy for the Doctor's degree.

Procedure When the Examination Is Not Satisfactory

If the Qualifying Examination is not satisfactory, the chairman of the advisory committee will so notify the Dean, in writing. An applicant who does not pass the Qualifying Examination may be permitted to repeat it once, after a lapse of at least a semester or 15 weeks.

Admission to Candidacy

Authority for admitting an applicant to candidacy for a Doctor's degree is vested in the Graduate Council. Upon receipt of a recommendation from the advisory committee, the Dean will submit it to the Graduate Council for action. The Council may approve the committee's recommendation, or it may, after consultation with the committee, suggest additional requirements which the applicant must satisfy.

By written communication, the Dean will transmit the results of the Council's action to the applicant, to the chairman of his advisory committee, and to the heads of the departments concerned.

A student must be admitted to candidacy for the doctorate at least four months prior to his proposed graduation date.

Limitation on the Number of Candidates

To insure proper individual attention to each applicant for the doctorate, the Graduate Council limits the number of applicants that will be admitted to candidacy from any department in any one year (Sept. 1 to Aug. 31) to one candidate for each department staff member who holds an earned doctorate and has full membership on the Graduate Faculty.

Time Limit

All work for the doctorate must be completed within four years after the applicant has been admitted to candidacy.

Intervals Between Examinations

At least three months must intervene between the preliminary examination and the qualifying examination and at least four months between the latter and the final examination.

Dissertation

A dissertation is required of every candidate for the doctorate. Details concerning registration for it will be found on Page 27 of this Bulletin.

The subject of the dissertation must be approved by the advisory committee and the Dean at least four months before the candidate's proposed date of graduation.

The dissertation must demonstrate a mastery of the techniques of research, a thorough understanding of the subject matter and its background, and a high degree of skill in organizing and presenting the material. The dissertation should embody a significant re-evaluation of existing knowledge or some contribution to learning. The work on the dissertation is constantly under the supervision of the advisory committee and any other professors the committee or the Dean may consider necessary.

Available at the Graduate Office, free of charge, is a pamphlet entitled *Instructions for Preparing and Submitting Theses and Dissertations*. All writers and directors of dissertations are expected to have a copy of this pamphlet and follow it carefully.

Three typewritten copies of the dissertation are required by the College. They must be accompanied by two copies of an abstract, *not more than 600 words in length*.

Dissertation Fees

When a doctoral dissertation and its abstract have been approved by a student's advisory committee and accepted by the Dean of the Graduate School, the candidate will pay the College Cashier a "Microfilming and Shipping Charge" of \$25 for the microfilming of the complete dissertation by University Microfilms, Inc., of Ann Arbor, Michigan, and the publication of the abstract in *Dissertation Abstracts*. Other services rendered by University Microfilms, Inc., are explained in the local pamphlet of instructions.

In addition to the fee indicated above, the doctoral candidate will pay to the Texas Tech Press the fee for the binding of the three official type-written copies of the dissertation. In 1965 this fee is \$3 per copy, but like other fees, it is subject to change without notice as circumstances may require. If he wishes to do so, the student may have additional copies of his dissertation bound at the prevailing rate.

Final Examination

A final oral examination, usually over the general field of the dissertation, is required of every candidate for the doctorate. It may be scheduled at any suitable time after the dissertation (not necessarily the final version) has been approved by the advisory committee. The examination is conducted by the advisory committee under the supervision of the Dean or a professor designated to act in his place. Professors other than members of the student's committee may participate in the examination, but they have no vote in determining the outcome. At the conclusion of the examination, the chairman of the advisory committee will send a written notice to the Graduate Office, giving the result of the examination.

Courses

Informational Details

Limitation of Offerings

Not all of the courses listed in this Bulletin are offered every year. A class schedule, published just before the opening of each term or semester, indicates the courses to be available in that term or semester and the hours at which they will meet. The College reserves the right, however, to cancel any scheduled course, as well as to withdraw any program from the list of graduate offerings, if the best interests of the institution require such action.

Indication of Credit

The number of semester hours' credit for each course is shown immediately following its title, usually in this form: (3:2:3). The first digit in parentheses indicates the number of semester hours' credit which the course carries; the second, the number of lecture hours per week; and the third, the number of laboratory hours per week. If the third digit is zero, the course requires no laboratory work. A single number in parentheses indicates the credit in semester hours.

Prerequisites for Courses

Certain general prerequisites apply to all courses listed in this Bulletin. For example, senior standing is the normal prerequisite for enrollment in a 400 course which carries graduate credit, and graduate standing is a prerequisite for enrollment in any course numbered 500 and above.

Enrollment in any course must be approved by the department offering it.

Departments of Instruction

School of Agriculture

Agricultural Economics

Professor Willard F. Williams
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

- | | |
|--|--|
| FOR UNDERGRADUATES AND GRADUATES | 434. Advanced Agricultural Marketing.
(3:3:0) |
| 430. Special Problems in Agricultural
Economics. (3)
May be repeated for credit. | 435. Agricultural Policies and Organiza-
tions. (3:3:0) |
| 431. Livestock Marketing. (3:3:0) | 436. World Trade in Agricultural Prod-
ucts. (3:3:0) |
| 432. Statistical Methods in Agricultural
Research. (3:3:0) | 437. Farm and Ranch Appraisal. (3:2:3) |
| 433. Production Economics. (3:3:0) | 438. Range and Ranch Economics.
(3:3:0) |

439. Agricultural Price Analysis. (3:3:0)
 4311. Agricultural Finance. (3:3:0)
 4312. Mathematical Economics and Econometrics for Agriculture. (3:3:0)
 4313. Agricultural Resource Economics. (3:3:0)
 4314. Advanced Farm Management. (3:2:3)
- FOR GRADUATES
511. Seminar. (1:1:0)
 531. Advanced Production Economics. (3:3:0)
532. Seminar in Agricultural Policy. (3:3:0)
 533. Marketing Problems. (3:3:0)
 534. Research in Agricultural Economics. (3)
 May be repeated for credit.
 535. Contemporary Agricultural Economics. (3:3:0)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

Agricultural Education

Professor T. L. Leach
 Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

- FOR UNDERGRADUATES AND GRADUATES
434. Methods of Teaching Vocational Agriculture in the High School. (3:2:3)
 435. Methods in Supervised Farming and Future Farmer Work. (3:2:3)
- FOR GRADUATES
522. Advanced Methods in High School Vocational Agriculture. (2:2:0)
 523. Advanced Methods in Adult Agricultural Education. (2:2:0)
 524. Advanced Methods in Future Farmer Work. (2:2:0)
 531. Investigation in the Field of Agricultural Education. (3)
 May be repeated for credit.
 535. Problems. (3)
 May be repeated for credit.
 536. Advanced Methods of Teaching Farm Mechanics. (3:3:0)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

Agricultural Engineering

Professor W. L. Ulich
 Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

- FOR UNDERGRADUATES AND GRADUATES
411. Seminar. (1:1:0)
 May be repeated for credit.
 430. Agricultural Engineering Problems. (3)
 May be repeated for credit.
 433. Elements of Tractor Design. (3:2:3)
 434. Farm Electrification Systems. (3:2:3)
 435. Farm Mechanics Problems. (3)
 May be repeated for credit.
 436. Processing and Cotton Gin Engineering. (3:2:3)
437. Design of Farm Irrigation Systems. (3:2:3)
 438. Structural Design of Farm Buildings. (3:2:3)
 439. Functional Design of Farm Buildings. (3:2:3)
 442. Engineering for Soil and Water Conservation. (4:3:3)
 4311. Advanced Agricultural Mechanics. (3:2:2)
- FOR GRADUATES
531. Investigation in Advanced Agricultural Mechanics.

Agronomy and Range Management

Professor A. W. Young
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

Students seeking a Master's degree in the Department of Agronomy and Range Management should consult the Head of the Department about their programs before enrolling for any courses. Major programs are available in Crop Science, Soil Science, and Range Science.

Before being recommended for admission to a Master's degree program with a major in this Department, the student may be requested to take a preliminary examination to determine proficiency in background for graduate work, or may be required to take (without graduate credit) such undergraduate levelling courses as may be designated by the Department.

AGRONOMY

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>425. Seed Technology. (2:1:2)</p> <p>430. Agronomy Problems. (3)
May be repeated for credit.</p> <p>431. Fundamental Principles of Plant Breeding. (3:3:0)</p> <p>433. Cotton Production and Improvement. (3:3:0)</p> <p>434. Soil Conservation and Land Use Planning. (3:2:3)</p> <p>435. Soil Classification. (3:2:3)</p> <p>436. Soil Chemistry. (3:2:3)</p> <p>439. Soil Microbiology. (3:2:3)</p> <p>4311. Soil Fertility. (3:2:3)</p> <p>4313. Weeds and Weed Control. (3:2:2)</p> <p>4314. Soil Physics. (3:2:2)</p> <p>4315. Nutrition of Crop Plants. (3:3:0)</p> | <p>4316. Agricultural Plant Physiology. (3:3:0)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>511. Graduate Seminar. (1:1:0)
May be repeated for credit.</p> <p>532. Experimental Design and Analysis. (3:2:2)</p> <p>533. Pedology. (3:3:0)</p> <p>534. Research. (3)
May be repeated for credit.</p> <p>536. Soil and Plant Relationships. (3:3:0)</p> <p>537. Methods in Plant Breeding. (3:3:0)</p> <p>630. Master's Report. (3)</p> <p>631. Master's Thesis. (3)
Enrollment required at least twice.</p> |
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RANGE MANAGEMENT

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>430. Wildlife Problems. (3)</p> <p>431. Game Management. (3:2:2)</p> <p>432. Range Management Problems. (3)</p> <p>437. Range Management. (3:2:3)</p> <p>438. Advanced Range Management. (3:2:3)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>510. Graduate Seminar. (1:1:0)
May be repeated for credit.</p> | <p>523. Range Research Methods. (2)</p> <p>531. Comparative Synecology. (3:3:0)</p> <p>532. Vegetation Influences. (3:3:0)</p> <p>534. Range Research. (3)
May be repeated for credit.</p> <p>630. Master's Report. (3)</p> <p>631. Master's Thesis. (3)
Enrollment required at least twice.</p> |
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Animal Husbandry

Professor Ralph M. Durham

Professor George F. Ellis*

Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

The Department of Animal Husbandry offers majors in the following three areas:
Animal Breeding, Animal Nutrition, and Meat Science.

FOR UNDERGRADUATES AND GRADUATES	
427. Swine Production. (2:2:0)	533. Techniques in Animal Research. (3)
431. Beef Cattle Production. (3:3:0)	534. Research in Animal Science. (3)
432. Animal Breeding. (3:3:0)	May be repeated for credit.
434. Horse Production. (3:3:0)	536. Biometry. (3:2:2)
435. Dairy Cattle Production. (3:3:0)	537. Advanced Animal Breeding. (3:3:0)
436. Animal Nutrition. (3:3:0)	538. Advanced Animal Nutrition.
437. Livestock Record Systems. (3:3:0)	(3:3:0)
439. Endocrinology. (3:3:0)	539. Physiology of Reproduction.
441. Sheep, Wool, and Mohair Production. (4:3:2)	(3:2:2)
	541. The Science of Meat and Meat Products. (4:3:3)
FOR GRADUATES	
511. Graduate Seminar. (1:1:0)	630. Master's Report. (3)
Enrollment required in each semester of student's residence.	631. Master's Thesis. (3)
	Enrollment required at least twice.

Dairy Industry

Professor J. J. Willingham

Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES	
411. Dairy Seminar. (1:1:0)	441. Butter and Cheese Making. (4:2:4)
May be repeated for credit.	
430. Dairy Industry Problems. (3)	
May be repeated for credit.	
433. Ice Cream and Concentrated Milk. (3:2:3)	
435. Dairy and Food Inspection. (3:2:3)	
437. Creamery Management and Merchandising. (3:3:0)	
FOR GRADUATES	
531. Dairy Industry Research. (3)	
May be repeated for credit.	
535. Dairy Bacteriology Research. (3)	
May be repeated for credit.	
630. Master's Report. (3)	
631. Master's Thesis. (3)	
	Enrollment required at least twice.

Park Administration, Horticulture, and Entomology

Professor E. J. Urbanovsky

Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE**PARK ADMINISTRATION**

FOR UNDERGRADUATES AND GRADUATES	
422. Park Administration. (2:2:0)	
441. Park Planning. (4:1:8)	
442. Park Planning. (4:1:8)	
FOR GRADUATES	
531. Park Administration Research. (3)	
	May be repeated for credit.

* Appointment as Head becomes effective September 1, 1965.

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| 540. Advanced Park Administration.
(3:3:0) | 542. Advanced Park Planning and Design.
(4:1:8) |
| 541. Advanced Park Planning and Design.
(4:1:8) | 630. Master's Report. (3) |
| | 631. Master's Thesis. (3) |
| | Enrollment required at least twice. |

HORTICULTURE

FOR UNDERGRADUATES AND GRADUATES

425. Horticulture Problems. (2)
430. Horticulture Problems. (3)
May be repeated for credit.
431. Pomology. (3:3:0)
432. Advanced Turf. (3:2:3)
435. Vegetable Production. (3:3:0)
436. Advanced Floricultural Science.
(3:2:3)

FOR GRADUATES

511. Horticulture Seminar. (1:1:0)
May be repeated for credit.
531. Horticulture Research. (3)
May be repeated for credit.
532. Horticultural Crop Behavior. (3:3:0)
533. Horticultural Plant Evaluation
Techniques. (3:3:0)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.

ENTOMOLOGY

FOR UNDERGRADUATES AND GRADUATES

334. Insect Morphology. (3:2:3)
335. Insect Taxonomy. (3:3:3)
421. Immature Insects. (2:1:3)
431. Agricultural Compounds. (3:3:0)
432. Insect Ecology. (3:2:3)
433. Insect Natural History. (3:2:2)
441. Insect Toxicology and Physiology
(4:3:3)
4311. Medical Entomology. (3:2:3)
4312. Acarology. (3:2:3)

FOR GRADUATES

521. Advanced Economic Entomology.
(2:2:0)
522. Literature and History of Entomology.
(2:2:0)
523. Advanced Insect Taxonomy. (2:0:6)
531. Entomology Research. (3)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.

School of Arts and Sciences

Biology

Professor E. D. Camp
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND MINORS FOR THE DOCTOR'S DEGREE

Before being recommended for admission to a Master's degree program with a major in this Department, the student may be required to take a preliminary examination which ordinarily includes the work usually required of undergraduates who major in this Department. If the examination reveals serious weaknesses, the student may be required to take (without graduate credit) such courses as may be designated by the Department.

BACTERIOLOGY

FOR UNDERGRADUATES AND GRADUATES

331. General Bacteriology. (3:2:3)
333. Communicable Diseases. (3:3:0)
334. Bacteriology of Foods and Food
Sanitation. (3:2:3)

430. Advanced General Bacteriology
(3:2:3)

431. Problems in Bacteriology. (3:3:0)
432. Immunology and Serology. (3:2:3)
433. Physiology of Bacteria. (3:2:3)
434. Pathogenic Bacteriology. (3:2:3)

- FOR GRADUATES
531. Research in Microbiology. (3:0:9)

532. Selected Topics in Microbiology.
(3:3:0)

BIOLOGY

FOR UNDERGRADUATES AND GRADUATES

331. Heredity. (3:3:0)
332. Teaching of Biology. (3:3:0)
333. Bio-Ecology. (3:2:3)
431. Biological Techniques. (3:0:9)

FOR GRADUATES

511. Seminar. (1:1:0)
512. Advanced Experimental Heredity.
(1:0:3)
532. Population Genetics. (3:2:3)

BOTANY

FOR UNDERGRADUATES AND GRADUATES

331. Plant Physiology. (3:2:3)
322. Plant Pathology. (3:2:3)
339. Plant Anatomy. (3:2:3)
435. Advanced Taxonomy. (3:0:9)
436. Plant Geography. (3:3:0)
437. Problems In Plant Geography.
(3:3:0)
438. Morphology of Fungi. (3:2:3)

FOR GRADUATES

531. Problems in Botany. (3)
May be repeated for credit.

534. Advanced Plant Anatomy. (3:0:9)
535. Field Botany. (3:3:0)
May be repeated for credit.
536. Taxonomy of Lower Green Plants.
(3:2:3)
537. Morphology of The Vascular
Plants. (3:2:3)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.

ENTOMOLOGY

FOR UNDERGRADUATES AND GRADUATES

334. Insect Morphology. (3:2:3)
335. Insect Taxonomy. (3:2:3)
431. Agricultural Compounds. (3:3:0)*
432. Insect Ecology. (3:2:3)
433. Insect Natural History. (3:2:3)
4311. Medical Entomology. (3:2:3)
4312. Acarology. (3:2:3)

FOR GRADUATES

521. Advanced Economic Entomology.
(2:2:0)*
522. Literature and History of Entomology.
(2:2:0)
523. Advanced Insect Taxonomy.
(2:0:6)

ZOOLOGY

FOR UNDERGRADUATES AND GRADUATES

331. Animal Histology. (3:2:4)
332. Comparative Vertebrate Embryology.
(3:2:4)
333. Parasitology. (3:2:3)
336. Comparative Invertebrate Zoology.
(3:2:3)
435. Cytology. (3:2:3)
437. Natural History of The Vertebrates.
(3:2:3)
438. Cellular Physiology. (3:2:3)
439. Comparative Animal Physiology.
(3:2:3)
4312. Advanced Parasitology. (3:2:3)

FOR GRADUATES

531. Problems in Zoology. (3)
May be repeated for credit.
532. Principles and Methods of Systematic Zoology. (3:2:3)
533. Herpetology. (3:2:3)
535. Field Zoology. (3:0:9)
May be repeated for credit.
536. Mammalogy. (3:2:3)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.

* Courses offered in the Department of Park Administration, Horticulture and Entomology, School of Agriculture.

Chemistry

Professor Joe Dennis
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

Each student majoring in this department for an advanced degree must take written preliminary diagnostic examinations to ascertain his comprehension of chemistry. The examinations are based on the undergraduate curriculum. Each student is expected to take examinations in analytical, inorganic, organic, and physical chemistry. Those students who have a special interest in biochemistry will take the aforementioned examinations and one in biochemistry also. These examinations are given during the first week of each semester, according to schedules posted on the departmental bulletin board. Students will have an opportunity to register for such remedial courses as the examinations may show to be necessary.

Special Regulations Concerning the Master's Degree

At least one semester before graduation, every applicant for the Master's degree in this Department must pass a reading examination in a foreign language acceptable to this Department. The examination will be given in accordance with the procedures indicated on Page 31 of this Bulletin.

Special Regulations Concerning the Doctor's Degree

Credit for the research presented in the doctoral dissertation in this Department shall constitute not less than one-sixth nor more than one-third of the total work presented for the degree.

At least 18 semester hours of work must be done outside this Department.

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| 342. Physiological Chemistry. (4:3:3)*
343. Introductory Physical Chemistry.
(4:3:3)*
347-348. Physical Chemistry.
(4:3:3 each)*
353-354. Organic Chemistry.
(5:3:6 each)*
FOR UNDERGRADUATES AND GRADUATES**
420. Chemical Literature. (2:2:0)
431. Qualitative Organic Analysis.
(3:1:6)
432. Structure and Mechanisms of Organic Chemistry. (3:3:0)
435. Inorganic Chemistry. (3:3:0)
436. Biological Chemistry I. (3:2:3)
437. Biological Chemistry II. (3:2:3)
438. Valency and Molecular Structure.
(3:3:0)
4312. Instrumental Analytical Methods.
(3:2:3)
FOR GRADUATES
511-512. Graduate Seminar. (1:1:0 each)
May be repeated for credit.
5117. Selected Topics in Analytical Chemistry. (1:1:0)
May be repeated for credit. | 531-532. Individual Research Problems.
(3 each)
May be repeated for credit.
5301. Advanced Inorganic Chemistry I.
(3:3:0)
5302. Advanced Inorganic Chemistry II.
(3:3:0)
5304. Selected Topics in Inorganic Chemistry. (3:3:0)
May be repeated for credit.
5305. Inorganic Preparations. (3)
5314. Advanced Analytical Chemistry.
(3)
5315. Spectrographic Analysis I. Emission Spectra. (3:2:3)
5316. Spectrographic Analysis II. Absorption Spectra. (3:2:3)
5321. Advanced Organic Chemistry I.
(3:3:0)
5322. Advanced Organic Chemistry II.
(3:3:0)
5325. Selected Topics in Organic Chemistry. (3:3:0)
May be repeated for credit.
5327. Physical Organic Chemistry I.
(3:3:0) |
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* Can be used by graduate students for minor credit only.

** Normally for graduate minor credit only.

5328. Physical Organic Chemistry II. (3:3:0)
 5334. Selected Topics in Biological Chemistry. (3:3:0)
 May be repeated for credit.
 5335. Physical Biochemistry. (3:3:0)
 5342. Advanced Physical Chemistry. (3:3:0)
 5343. Quantum Chemistry. (3:3:0)
 5344. Kinetics of Chemical Reactions. (3:3:0)
 5345. X-Rays and Crystal Structure. (3:3:0)
 5346. Statistical Mechanics for Chemists. (3:3:0)
 5347. Chemical Thermodynamics. (3:3:0)
 5348. Selected Topics in Physical Chemistry. (3:3:0)
 May be repeated for credit.
 631. Master's Thesis. (3)
 Enrollment required at least twice.
 831. Doctor's Dissertation. (3)
 Enrollment required at least four times.

Education and Philosophy

Professor Morris S. Wallace
 Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND MAJORS FOR THE DEGREE OF DOCTOR OF EDUCATION AND MINORS IN EDUCATION FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

The program leading to certification as a counselor in the public schools is a joint enterprise of the Departments of Education and Psychology. Students interested in this program are invited to write to the head of either of these Departments for details.

EDUCATION

FOR UNDERGRADUATES AND GRADUATES

430. History and Philosophy of Education. (3:3:0)
 438. Educational Measurement and evaluation. (3:3:0)
 4331. Foundations of Educational Sociology. (3:3:0)
 4338. Foundations of Special Education. (3:3:0)
 4339. Teaching the Exceptional Child. (3:3:0)
 4344. Children's Literature. (3:3:0)

FOR GRADUATES

5139. Advanced Education Workshops in Teaching and Administration. (1-6)
 May be repeated for a maximum of six hours' credit.
 530. Advanced Educational Psychology. (3:3:0)
 532. Philosophy of Education. (3:3:0)
 533. General Public School Administration. (3:3:0)
 534. Advanced Educational Sociology. (3:3:0)
 536. Elementary School Administration. (3:3:0)
 537. Secondary School Administration. (3:3:0)

538. Administration of Audio-Visual Services. (3:3:0)
 539. Administration of School Business Services. (3:3:0)
 5311. Audio-Visual Education. (3:3:0)
 5312. Supervision in the Elementary School. (3:3:0)
 5313. Supervision in the Secondary School. (3:3:0)
 5316. The Junior College. (3:3:0)
 5317. The Junior High School. (3:3:0)
 5318. Selection and Evaluation of Audio-Visual Materials. (3:3:0)
 5319. Audio-Visual Production. (3:3:0)
 5321. Individual Study in Education. (3:3:0)
 5322. Foundations of Educational Research. (3:3:0)
 5323. Advanced Educational Statistics. (3:3:0)
 5325. Legal Bases of Education. (3:3:0)
 5326. Reading Development in the Elementary School. (3)
 5331. Human Development in Education. (3:3:0)
 5334. Teaching Reading in the Secondary School. (3:3:0)
 5341. Developing Arithmetic Programs in Elementary Education. (3:3:0)

5342. Developing Reading Programs in Elementary Education. (3:3:0)
5343. Developing Natural and Physical Environment Concepts in Elementary Education. (3:3:0)
5344. Developing Language Arts Programs in Elementary Education. (3:3:0)
5345. Developing Social Studies Programs in Elementary Education. (3:3:0)
5346. Advanced Curriculum Development. (3:3:0)
5349. Organizing and Administering the Instructional Improvement Program. (3:3:0)
5351. General Education Seminar. (3:3:0)
5353. Comparative Education. (3:3:0)
5354. Seminar in Educational Sociology. (3:3:0)
5355. Seminar in Elementary Education. (3:3:0)
5356. Seminar in Secondary Education. (3:3:0)
5357. The Administration of the Junior College (3:3:0)
5359. Seminar in Supervision. (3:3:0)
5363. Problems in Audio-Visual Education. (3:3:0)
5364. Seminar in Educational Psychology. (3:3:0)
5366. The Administration of School Staff Personnel. (3:3:0)
5367. School Finance. (3:3:0)
5368. School Housing. (3:3:0)
5369. School Public Relations. (3:3:0)
5371. General Supervision. (3:3:0)
5372. Developing the School Guidance Program. (3:3:0)
5373. Educational Evaluation. (3:3:0)
5382. Guidance and the Classroom Teacher. (3:3:0)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.
661. Internship in Educational Administration. (6)
662. Internship in Educational Administration. (6)
- 731-732. Research. (3 each)
831. Doctor's Dissertation. (3)
Enrollment required at least four times.

PHILOSOPHY

- FOR UNDERGRADUATES AND GRADUATES
331. History of Ancient and Medieval Philosophy. (3:3:0)
332. History of Modern Philosophy. (3:3:0)
333. Development of American Philosophy. (3:3:0)
335. Oriental Philosophies. (3:3:0)
336. Philosophy of Science. (3:3:0)
431. Aesthetics. (3:3:0)
432. Philosophy of Value. (3:3:0)
436. Philosophy of Religion. (3:3:0)
438. Seminar in Philosophical Problems. (3:3:0)
- FOR GRADUATES
535. Basic Issues in Contemporary Philosophy. (3:3:0)

English

Professor Everett A. Gillis
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

Students seeking the Master's degree in English should consult the Head of the Department about their program before enrolling for any courses.

Every applicant must pass a reading examination in a foreign language acceptable to the Department. This examination will be given in accord with the procedures indicated on Page 32 of this Bulletin.

Upon completing his work for the Master's degree or near the conclusion of his first full year of graduate study, the student who plans to work toward the doctorate in English will be given a preliminary comprehensive examination to determine his degree of proficiency.

An applicant for the doctorate in English will select one of eight fields in English literature, American literature, comparative literature, or linguistics as his dissertation

area and include within his specialization four of the other fields of English study, selected with the approval of his advisory committee. The student should consult the Director of Graduate Studies in English about determining an appropriate graduate minor.

FOR UNDERGRADUATES AND GRADUATES*

- 433. Chaucer. (3:3:0)
- 434. Milton and His Age. (3:3:0)
- 438. History of the English Language. (3:3:0)
- 439. American English. (3:3:0)
- 4331. Pre-Shakespearean Drama. (3:3:0)
- 4333. Philosophical Ideas in Literature. (3:3:0)
- 4336. Teaching of English in Secondary Schools. (3:3:0)
- 4337. English Literary History: A Synthesis. (3:3:0)
- 4341. Regional Literature of the United States. (3:3:0)
- 4343. Modern American and European Drama. (3:3:0)
- 4349. Ancient and Medieval Literature. (3:3:0)
- 4355. Modern Continental Literature. (3:3:0)

FOR GRADUATES**

- 530. Studies in Medieval Literature. (3:3:0)
- 531. Studies in Comparative Literature. (3:3:0)
- 532. Teaching of College English. (3:3:0)
- 533. Studies in Renaissance Literature. (3:3:0)
- 534. Old English. (3:3:0)
- 535. Studies in Early Victorian Literature. (3:3:0)
- 538. Studies in Early English Romantics. (3:3:0)
- 539. Studies in the Neo-Classical Age. (3:3:0)

- 5311. Studies in Seventeenth Century Literature. (3:3:0)
- 5312. Studies in Drama. (3:3:0)
- 5313. Studies in Modern European Literature. (3:3:0)
- 5314. Studies in Literary Criticism. (3:3:0)
- 5319. Studies in Shakespeare. (3:3:0)
- 5322. Studies in Modern British Literature. (3:3:0)
- 5323. American Literature to 1865. (3:3:0)
- 5324. American Literature since 1865. (3:3:0)
- 5325. American Novel to 1900. (3:3:0)
- 5326. American Novel since 1900. (3:3:0)
- 5329. Studies in Modern Poetry. (3:3:0)
- 5335. Principles of Language. (3:3:0)
- 5337. Studies in Linguistics. (3:3:0)
- 5351. Studies in Later Victorian Literature. (3:3:0)
- 5381. Studies in Later English Romantics. (3:3:0)
- 5391. Studies in the Age of Johnson. (3:3:0)
- 630. Master's Report. (3)
- 631. Master's Thesis. (3)
Enrollment required at least twice.
- 636. Seminar in Nineteenth Century American Literature. (3:3:0)
- 637. Seminar in Twentieth Century American Literature. (3:3:0)
- 731, 732. Research. (3 each)
- 831. Doctor's Dissertation. (3)
Enrollment required at least four times.

* Normally credit for graduate minors only.

** Graduate courses that are studies or seminars may be repeated for credit with permission of department as topics vary.

Foreign Languages

Professor Harley D. Oberhelman
Head of the Department

MINORS ONLY FOR THE DOCTOR'S DEGREE

FRENCH

MAJORS AND MINORS FOR THE MASTER'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>430. Advanced Grammar, Composition, and Conversation. (3:3:0)</p> <p>433. The Literature of the Nineteenth Century. (3:3:0)</p> <p>434. The Literature of the Nineteenth Century. (3:3:0)</p> <p>435. Readings in French Language and Literature I. (3:3:0)</p> <p>436. Readings in French Language and Literature II. (3:3:0)</p> <p>4311. The Classical Theater. (3:3:0)</p> <p>4312. Eighteenth Century Literature. (3:3:0)</p> <p>4315. A Survey of French Classics I. (3:3:0)</p> | <p>4316. A Survey of French Classics II. (3:3:0)</p> <p>4321. Phonetics and Diction. (3:3:0)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>5312. Studies in French Language and Literature I. (3:3:0)
May be repeated for credit.</p> <p>5313. Studies in French Language and Literature II. (3:3:0)
May be repeated for credit.</p> <p>630. Master's Report. (3)</p> <p>631. Master's Thesis. (3)
Enrollment required at least twice.</p> |
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GERMAN

MAJORS AND MINORS FOR THE MASTER'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>431. Advanced Grammar, Composition, and Conversation. (3:3:0)</p> <p>432. Structure of the German Language. (3:3:0)</p> <p>433. Nineteenth Century Drama. (3:3:0)</p> <p>434. Nineteenth Century Prose and Poetry. (3:3:0)</p> <p>435. Readings in German Language and Literature I. (3:3:0)</p> <p>436. Readings in German Language and Literature II. (3:3:0)</p> <p>4311. Eighteenth Century Literature. (3:3:0)</p> <p>4312. Goethe. (3:3:0)</p> | <p>4315. A Survey of German Literature I. (3:3:0)</p> <p>4316. A Survey of German Literature II. (3:3:0)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>5312. Studies in German Language and Literature I. (3:3:0)
May be repeated for credit.</p> <p>5313. Studies in German Language and Literature II. (3:3:0)
May be repeated for credit.</p> <p>630. Master's Report. (3)</p> <p>631. Master's Thesis. (3)
Enrollment required at least twice.</p> |
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LATIN

MINORS ONLY FOR THE MASTER'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>431. Advanced Composition and Grammar Review. (3:3:0)</p> <p>435. Readings in Latin Literature I. (3:3:0)
May be repeated for credit.</p> | <p>436. Readings in Latin Literature II. (3:3:0)
May be repeated for credit.</p> |
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SPANISH

MAJORS AND MINORS FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

431. Nineteenth Century Prose. (3:3:0)
 432. Nineteenth Century Prose. (3:3:0)
 433. Modern Drama and Poetry. (3:3:0)
 434. Modern Drama and Poetry. (3:3:0)
 436. Advanced Composition and Conversation. (3:3:0)
 4312. The Prose of the Golden Age. (3:3:0)
 4313. The Prose of the Golden Age. (3:3:0)
 4314. The Drama of the Golden Age. (3:3:0)
 4315. The Drama of the Golden Age. (3:3:0)
 4316. A Survey of Spanish Literature. (3:3:0)
 4317. A Survey of Spanish Literature. (3:3:0)
 4318. Readings in Contemporary Spanish Literature. (3:3:0)
 4319. Readings in Contemporary Spanish Literature (3:3:0)
 4321. The Latin American Novel I. (3:3:0)
 4322. The Latin American Novel II. (3:3:0)

4323. The Latin American Short Story. (3:3:0)
 4324. Readings in Spanish American Literature and Civilization. (3:3:0)
 4325. Readings in Spanish American Literature and Civilization. (3:3:0)
 4326. Survey of Spanish American Literature. (3:3:0)
 4327. Survey of Spanish American Literature. (3:3:0)
 4328-4329. Spanish Civilization. (3:3:0 each)
 Offered in alternate summers in Mexico City.

FOR GRADUATES

5312. Studies in Spanish and Spanish American Literature. (3:3:0)
 May be repeated for credit.
 5313. Studies in Spanish and Spanish American Literature. (3:3:0)
 May be repeated for credit.
 5335. Spanish in the Elementary School. (3:3:0)
 541-542. Summer Language Institute. (4:21:25 each)
 630. Master's Report (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

METHODS

FOR UNDERGRADUATES AND GRADUATES

4311. Teachers' Course in Methods of Teaching Foreign Languages. (3:3:0)

FOR GRADUATES

5311. Laboratory Techniques in Foreign Language Teaching. (3:3:0)

Geosciences

Professor R. B. Mattox
 Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND THE DOCTOR'S DEGREE

Departmental Regulations Concerning the Master's Degree

Before being recommended for admission to candidacy for the Master's degree in this Department, the student must satisfy the graduate staff that he is qualified. Students may be required to take written qualifying examinations in one or more of the following subjects: physical geology, historical geology, mineralogy and crystallography, structural geology, paleontology and field methods. Examinations will be given during the first week of each semester and students will have the opportunity to register for the remedial courses which are recommended.

Advanced Physical and Historical Geology (Geology 531-532) is required of all candidates for graduate degrees.

Regulations Concerning the Doctor's Degree

The basic regulations and requirements for the Degree of Doctor of Philosophy determine the policy of this Department. Not more than 12 semester hours for the research presented in the doctoral dissertation will be credited towards fulfillment of the total requirements for the degree. The Department recommends that the requirements for a reading knowledge of foreign languages be fulfilled in two of the following: German, Russian, French.

GEOLOGY

FOR UNDERGRADUATES AND GRADUATES

- 431-432. Optical Mineralogy and Petrology. (3:1:6 each)
 433. Petroleum Geology. (3:3:0)
 434. Petroleum Geology. (3:2:3)
 435. Stratigraphic Paleontology. (3:2:3)
 436. Micropaleontology. (3:1:5)
 437. Sedimentation. (3:3:0)
 439. Vertebrate Paleontology. (3:2:3)
 4314. Principles of Stratigraphy. (3:3:0)
 4315. Paleozoic, Mesozoic, Cenozoic Stratigraphy. (3:3:0)
 4316. Aerial Photo Interpretation. (3:2:3)

FOR GRADUATES

511. Graduate Seminar. (1:1:0)
 Required of all graduate students majoring in this department.
 521. Clay Mineralogy. (2:1:3)
 531-532. Advanced Physical and Historical Geology. (3:3:0 each)
 533. Petrology of Igneous Rocks. (3:3:0)

534. Petrology of Metamorphic Rocks. (3:3:0)

- 535-536. Advanced Work in Specific Fields. (3 each)

5311. Stratigraphic Micropaleontology. (3:3:0)

5312. Economic Geology. (3:2:3)

5324. Advanced Sedimentation. (3:2:3)

5327. Problems in Paleontology. (3:2:3)

5328. Advanced Structural Geology. (3:2:3)

541. X-Ray Diffraction and Analysis. (4:3:4)

542. X-Ray Crystallography. (4:3:4)

563. Advanced Field Geology. (6)

631. Master's Thesis. (3)
 Enrollment required at least twice.

- 731, 732. Research. (3 each)

831. Doctor's Dissertation. (3)
 Enrollment required at least four times.

MINOR CREDIT ONLY FOR THE MASTER'S DEGREE

332. Structural Geology. (3:2:3)

- 335-336. General Paleontology. (3:2:3)

337. Ground Water. (3:3:0)

- Graduate credit with approval of Department Head and Graduate Dean.

363. Field Geology. (6)

GEOCHEMISTRY

FOR UNDERGRADUATES AND GRADUATES

4331. Geochemistry I. (3:3:0)
 4332. Geochemistry II. (3:3:0)

FOR GRADUATES

533. Selected Topics in Geochemistry. (3:3:0)

534. Advanced Problems in Geochemistry. (3:1:6)

GEOPHYSICS

FOR UNDERGRADUATES AND GRADUATES

4321. Earthquake Seismology. (3:2:3)
 4322. The Earth's Gravity Field. (3:3:0)
 4323. Applications in Geophysics. (3:1:6)

FOR GRADUATES

531. Wave Propagation in Layered Media. (3:3:0)

533. Selected Topics in Geophysics. (3:3:0)

534. Advanced Problems in Geophysics. (3:1:6)

MINOR CREDIT ONLY FOR THE MASTER'S DEGREE

3321. Geophysical Methods, Gravity and Magnetic. (3:3:0) 3322. Geophysical Method, Seismic and Electrical. (3:3:0)

GEOGRAPHY

- FOR UNDERGRADUATES AND GRADUATES 332. Practical Meteorology. (3:2:3)
331. General Meteorology. (3:2:3)

Government

Professor J. W. Jackson
Acting Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND THE DOCTOR'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

4321. Local Government. (3:3:0)
4322. State Government. (3:3:0)
4323. Legislation. (3:3:0)
4324. Government and the Economy. (3:3:0)
4325. Political Parties. (3:3:0)
4326. Intergovernmental Relations. (3:3:0)
4331. Ancient and Medieval Political Theory. (3:3:0)
4332. Modern Political Theory. (3:3:0)
4333. Contemporary Political Theory. (3:3:0)
4334. American Political Theory. (3:3:0)
4341. Fiscal Administration. (3:3:0)
4342. Personnel Administration. (3:3:0)
4343. Local Administration. (3:3:0)
4344. Metropolitan Areas. (3:3:0)
4345. Administrative Organization and Management. (3:3:0)
4346. Policy and Administration. (3:3:0)
4351. Constitutional Law, Powers. (3:3:0)
4352. Constitutional Law, Limitations. (3:3:0)
4353. Administrative Law and Regulation. (3:3:0)
4354. Jurisprudence. (3:3:0)
4361. United States Foreign Policy. (3:3:0)
4362. Political Geography. (3:3:0)
4363. International Organization. (3:3:0)
4364. International Law. (3:3:0)
4365. Problems in National Security. (3:3:0)
4371. Teaching Social Science in the High School. (3:3:0)
May be counted as Government or Education.
4372. Government of the Union of Soviet Socialist Republics. (3:3:0)

4373. Governments of Western Europe. (3:3:0)
4374. Government of Mexico. (3:3:0)
4375. Major South American Governments. (3:3:0)
4376. Major Governments of Asia. (3:3:0)
4377. African Governments and Politics. (3:3:0)
4378. Middle Eastern Governments and Politics. (3:3:0)
4379. British Government. (3:3:0)
4381. Teaching Social Science in the High School: (3:3:0)

FOR GRADUATES

531. Readings and Research. Individual Study. (3:3:0)
May be repeated for credit.
532. Seminar in American Government. (3:3:0)
533. Seminar in Political Theory. (3:3:0)
534. Seminar in Public Administration. (3:3:0)
535. Seminar in Public Law. (3:3:0)
536. Seminar in International Relations. (3:3:0)
537. Seminar in Comparative Government and Politics. (3:3:0)
538. Seminar in Parties and Politics. (3:3:0)
539. Seminar in National Security Affairs. (3:3:0)
5321. Advanced American Government and Politics. (3:3:0)
5331. Advanced Political Theory. (3:3:0)
5341. Advanced Public Administration. (3:3:0)
5351. Advanced Constitutional Law. (3:3:0)
5361. Advanced International Relations. (3:3:0)

5371. Advanced Comparative Government. (3:3:0)
 631. Master's Thesis. (3)
 Enrollment required at least twice.
- 731, 732. Research. (3 each)
 831. Doctoral Dissertation. (3)
 Enrollment required at least four times.

Health, Physical Education, and Recreation for Men

Professor R. W. Kireilis
 Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

Unless otherwise specified, all courses are open to both men and women.

FOR UNDERGRADUATES AND GRADUATES

431. Kinesiology. (3:3:0)
 432. Physiology of Exercise. (3:3:0)
 434. Principles of Physical Education. (3:3:0)
 436. Physical Examinations and Corrective Physical Education. (3:3:0)
 437. Measurements in Physical Education. (3:3:0)
 438. Curriculum Development in Physical Education. (3:3:0)
 439. Organization and Administration of Recreational Programs. (3:3:0)
 4321. Methods and Techniques of Driver Instruction. (3:3:2).
 Special fee, \$12.50.
 4323. Organization and Administration of Camps. (3:3:0)
 4326. Safety Education. (3:3:2)

FOR GRADUATES

531. Administration of Physical Education. (3:3:0)
 532. Supervision of Physical Education. (3:3:0)
 533. Facilities for Physical Education. (3:3:0)
 534. Administration of the School Health Program. (3:3:0)
 535. Techniques of Research in Health, Physical Education, and Recreation. (3:3:0)
 536. Problems in Health, Physical Education and Recreation. (3:3:0)
 5322. Organization and Administration of Interscholastic and Intercollegiate Athletic Programs. (3:3:0)
 5324. Organization and Administration of Intramural Sports. (3:3:0)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

Health, Physical Education, and Recreation for Women

Professor Mary B. Dabney
 Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

Unless otherwise specified, all courses are open to both men and women.

FOR UNDERGRADUATES AND GRADUATES

431. Kinesiology. (3:3:0)
 432. Physiology of Exercise. (3:3:0)
 434. Principles of Physical Education. (3:3:0)
 436. Physical Examinations and Corrective Physical Education. (3:3:0)
 437. Measurements in Physical Education. (3:3:0)
 438. Curriculum Development in Physical Education. (3:3:0)

439. Organization and Administration of Recreation Programs. (3:3:0)
 4311. Physical Education for the Junior and Senior High School. (3:3:0)*
 4321. Methods and Techniques of Driver Instruction. (3:3:2)
 Special fee, \$12.50.
 4323. Organization and Administration of Camps. (3:3:0)
 4326. Safety Education. (3:3:2)

* Open to women only.

FOR GRADUATES

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| 531. Administration of Physical Education. (3:3:0)
532. Supervision of Physical Education. (3:3:0)
533. Facilities for Physical Education. (3:3:0)
534. Administration of the School Health Program. (3:3:0) | 535. Techniques of Research in Health, Physical Education, and Recreation. (3:3:0)
536. Problems in Health, Physical Education, and Recreation. (3:3:0)
May be repeated for credit.
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice. |
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History

Professor D. M. Vigness
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND THE DOCTOR'S DEGREE

Departmental Regulations Governing The Doctoral Program

In both his preliminary and qualifying examinations the applicant will be examined in five fields at least two of which shall be in fields other than American. At the discretion of the advisory committee, the qualifying examination in one field may be waived. Fields may be offered from the following:

Early American, Nineteen Century American, Recent American, American Social and Cultural, American Constitutional, American Diplomatic, Southern United States, Frontier and Western American, American Economic, and Latin-American; Classical and Medieval Civilizations, Early Modern European to 1789, Modern European, England and the British Empire, and Afro-Asian.

Applicants for the doctorate in other departments who choose history as a minor must show proficiency in one or more of the above fields.

The applicant will be guided in his program by the graduate adviser of the department until the appointment of the advisory committee.

FOR UNDERGRADUATES AND GRADUATES

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| 430. English Colonial America to 1763. (3:3:0)
431. English Colonial America after 1763. (3:3:0)
432. Constitutional History of the United States to 1865. (3:3:0)
433. Constitutional History of the United States since 1865. (3:3:0)
434. Early National Period in the United States. (3:3:0)
436. Social and Cultural History of the United States to 1865. (3:3:0)
437. Social and Cultural History of the United States since 1865. (3:3:0)
4311. The Old South. (3:3:0)
4312. The South since the Civil War. (3:3:0)
4321. Colonial South America. (3:3:0)
4322. South America since Independence. (3:3:0)
4323. Spanish North America. (3:3:0)
4324. Mexico since Independence. (3:3:0) | 4327. The American Frontier to 1803. (3:3:0)
4328. The Trans-Mississippi West from 1803. (3:3:0)
4329. The Plains Indians. (3:3:0)
4331. History and Ideas of American Science and Scientists. (3:3:0)
4332. History of Theology in America. (3:3:0)
4334. Economic History of the United States to 1865. (3:3:0)
4335. Economic History of the United States since 1865. (3:3:0)
4344. Tudor England. (3:3:0)
4345. Stuart England. (3:3:0)
4346. Twentieth Century Britain. (3:3:0)
4347. Constitutional History of England. (3:3:0)
4349. The British Empire. (3:3:0)
4351. The Near East in Modern Times. (3:3:0)
4354. The Far East. (3:3:0)
4355. Africa. (3:3:0) |
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4359. History of Russia. (3:3:0)
 4361. Classical Civilizations: Greece and Rome. (3:3:0)
 4362. Medieval Civilizations. (3:3:0)
 4363. The Renaissance. (3:3:0)
 4364. Europe, The Age of Absolutism and the Old Regime. (3:3:0)
 4365. The French Revolution and Napoleon. (3:3:0)
 4366. Europe, 1815-1870. (3:3:0)
 4367. Europe, 1870-1918. (3:3:0)
 4368. Europe since 1918. (3:3:0)
 4371. Teaching Social Studies in the High School. (3:3:0)
 4372. The Reformation. (3:3:0)

FOR GRADUATES

(Graduate courses may be repeated for credit as topics vary.)

531. Proseminar in Texas History. (3:3:0)
 534. Historical Methods and Historiography. (3:3:0)
 5311. Studies in Southern History. (3:3:0)
 5312. Studies in Recent United States History. (3:3:0)
 5313. Studies in United States Social and Cultural History. (3:3:0)
 5314. Studies in the Frontier and Western American History. (3:3:0)
 5315. Problems in American History. (3:3:0)
 5316. Studies in Modern European History. (3:3:0)
 5317. Studies in Medieval History. (3:3:0)
 5318. Studies in the Renaissance and Reformation. (3:3:0)
 5319. Studies in Afro-Asian History. (3:3:0)
 5321. Studies in British History. (3:3:0)
 5322. Studies in United States Diplomatic History. (3:3:0)
 5323. Studies in American Constitutional History. (3:3:0)
 5335. History Appreciation for Teachers. (3:3:0)
 631. Master's Thesis. (3)
 Enrollment required at least twice.
 633. Seminar in Southwestern History. (3:3:0)
 634. Seminar in American History. (3:3:0)
 635. Seminar in European History. (3:3:0)
 636. Seminar in Latin American History. (3:3:0)
 731. Research. (3)
 831. Doctoral Dissertation. (3)
 Enrollment required at least four times.

Journalism

Professor Wallace E. Garets
 Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

- 338, 339. Editing. (3:2:3 each)
 411. Special Problems in Journalism. (1)
 May be repeated for credit.
 430. Law of the Press. (3:3:0)
 432. Journalism for the High School Teacher. (3:3:0)
 433. Public Opinion and Propaganda. (3:3:0)
 May be taken for psychology credit.
 436. Public Opinion and Public Issues. (3:3:0)
 4311. The Press in a Democratic Society. (3:3:0)
 4314. Seminar. (3:3:0)

Mathematics

Professor Emmett A. Hazlewood
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND THE DOCTOR'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

430. Synthetic Projective Geometry. (3:3:0)
431. Teaching of Mathematics in the Secondary Schools. (3:3:0)
Only those students working toward teacher certification may use credit in this course toward minimum requirements for the mathematics major.
432. Advanced Differential Equations II. (3:3:0)
- 434, 435. Advanced Calculus. (3:3:0 each)
437. Theory of Numbers. (3:3:0)
438. Solid Analytic Geometry. (3:3:0)
4312. Numerical Mathematical Analysis. (3:3:0)
4313. Probability. (3:3:0)
- 4314, 4315. Mathematical Statistics. (3:3:0 each)
4316. Introductory Point-Set Topology. (3:3:0)
4317. Actuarial Mathematics. (3:3:0)
4319. Elementary Functions of Complex Variables. (3:3:0)
4321. Elementary Modern Algebra. (3:3:0)
4324. Matrix Theory. (3:3:0)
4327. Mathematical Programming. (3:3:0)
4331. Introduction to Difference Equations. (3:3:0)
4332. Selected Topics. (3:3:0)
4391. Vector Analysis. (3:3:0)
4392. Tensor Analysis. (3:3:0)

FOR GRADUATES

- 511, 512. Graduate Seminar. (1:1:0 each)
531. Advanced Problems. (3:3:0)
- 534, 535. Theory of Numbers I, II. (3:3:0 each)
- 536, 537. Modern Algebra. (3:3:0 each)
538. Foundations of Mathematics. (3:3:0)
- 5312, 5313. Theory of Functions of a Complex Variable I, II. (3:3:0 each)
- 5314, 5315. Functions of a Real Variable I, II. (3:3:0 each)
- 5316, 5317. Topology I, II. (3:3:0 each)
- 5321, 5322. Methods of Applied Mathematics I, II. (3:3:0 each)
- 5323, 5324. Theory of Ordinary Differential Equations I, II. (3:3:0 each)
- 5325, 5326. Partial Differential Equations I, II. (3:3:0 each)
- 5331, 5332. Advanced Topics in Analysis I, II. (3:3:0 each)
- 5335, 5336. Advanced Mathematics for Teachers I, II. (3:3:0 each)
- 5341, 5342. Advanced Topics in Algebra I, II. (3:3:0 each)
5351. Advanced Topics in Geometry. (3:3:0)
- 5361, 5362. Advanced Topics in Topology I, II. (3:3:0 each)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.
831. Doctor's Dissertation. (3)
Enrollment required at least four times.

Music

Professor Gene L. Hemmle
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

APPLIED MUSIC

FOR UNDERGRADUATES AND GRADUATES
Piano 425, 426, 435, 436, 445, 446.
(2:0:1, 3:0:1, and 4:0:1)

Voice 425, 426, 435, 436, 445, 446.
(2:0:1, 3:0:1, and 4:0:1)
Organ 425, 426. (2:0:1)

Organ 435, 436, 445, 446. (3:0:1 and 4:0:1)
 Violin 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Violoncello 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Viola 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Double Bass 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Flute 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Oboe 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Clarinet 425, 426, 435 436. (2:0:1 and 3:0:1)
 Bassoon 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Saxophone 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Cornet or Trumpet 425, 426, 435, 436. (2:0:1 and 3:0:1)
 French Horn 425, 426, 435, 436. (2:0:1 and 3:0:1)

Trombone 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Baritone 425, 426, 435, 436. (2:0:1 and 3:0:1)
 Tuba 425, 426, 435, 436. (2:0:1 and 3:0:1)

FOR GRADUATES

Piano 535. (3:0:1)
 Voice 535. (3:0:1)
 Organ 535. (3:0:1)
 Violin 535. (3:0:1)
 Violoncello 535. (3:0:1)
 Viola 535. (3:0:1)
 Double Bass 535. (3:0:1)
 Flute 535. (3:0:1)
 Oboe 535. (3:0:1)
 Clarinet 535. (3:0:1)
 Bassoon 535. (3:0:1)
 Saxophone 535. (3:0:1)
 Cornet or Trumpet 535. (3:0:1)
 French Horn 535. (3:0:1)
 Trombone 535. (3:0:1)
 Baritone 535. (3:0:1)
 Tuba 535. (3:0:1)

MUSIC EDUCATION

FOR UNDERGRADUATES AND GRADUATES
 433. Piano Pedagogy. (3:3:0)
 437. Voice Pedagogy. (3:3:0)
 4317. Choral Conducting. (3:2:2)
 4318. Instrumental Conducting (3:2:2)

FOR GRADUATES

530, 531. Seminar in Music Education. (3:3:0 each)
 532. Choral Music Workshop. (3:3:0)

533. Instrumental Music Workshop. (3:3:0)
 534. Marching Band Direction. (3:3:0)
 537. Instrumental Repertoire. (3:3:0)
 5335. Music for Children. (3:3:0)
 Enrollment limited to graduate students majoring in elementary education.
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

MUSIC LITERATURE

FOR UNDERGRADUATES AND GRADUATES
 431, 432. History of Music. (3:3:0 each)
 4351. Music in the General Culture. (3:3:0)

FOR GRADUATES

531. Seminar in Music Literature. (3:3:0)
 532. Choral Repertoire. (3:3:0)

THEORY

FOR UNDERGRADUATES AND GRADUATES
 427. Instrumentation. (2:2:0)
 435, 436. Modal Counterpoint. (3:3:0 each)

FOR GRADUATES

531. Seminar in Music Theory. (3:3:0)

Physics

Professor H. C. Thomas
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>422. Selected Topics. (2:2:0)
May be repeated for credit.</p> <p>432. Thermodynamics. (3:3:0)</p> <p>434, 435. Mechanics. (3:3:0 each)</p> <p>436. Individual Study of Specified Fields.
(3:3:0 or 3:0:9)
May be repeated for credit.</p> <p>437, 438. Quantum Mechanics. (3:3:0 each)</p> <p>439. Solid-State Physics. (3:3:0)</p> <p>4121. Engineering Physics Seminar.
(1:1:0) (Formerly E. Sem. 412)
May be repeated for credit.</p> <p style="text-align: center;">FOR GRADUATES</p> <p>511, 512. Seminar. (1:1:0 each)
Required of all graduate majors in physics.</p> <p>513. Techniques of Experimental Physics.
(1:0:3)</p> <p>530. Advanced Topics. (3:3:0)
May be repeated for credit.</p> <p>535. Introduction to Statistical Physics.
(3:3:0)</p> <p>536. Advanced Dynamics. (3:3:0)</p> | <p>541, 542. Theoretical Physics.
(4:4:0 each)</p> <p>630. Master's Report. (3)</p> <p>631. Master's Thesis. (3)
Enrollment required at least twice.</p> <p>633, 634. Advanced Quantum Mechanics.
(3:3:0 each)</p> <p>635, 636. Electromagnetic Theory.
(3:3:0 each)</p> <p>637, 638. Structure of Matter.
(3:3:0 each)</p> <p>639. Advanced Statistical Physics.
(3:3:0)</p> <p>733, 734. Advanced Solid State Physics.
(3:3:0 each)</p> <p>735, 736. Atomic and Molecular Spectra.
(3:3:0 each)</p> <p>737, 738. Advanced Topics in Theoretical Physics. (3:3:0 each)</p> <p>739. Individual Study. (3:1:4)</p> <p>7311, 7312. Advanced Nuclear Physics.
(3:3:0 each)</p> <p>831. Doctoral Dissertation.
Enrollment required at least four times.</p> |
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Psychology

Professor Theodore Andreychuk
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

Prior to enrollment in a graduate program in psychology, students should consult the Head of the Department for advice.

Master's Degree Programs

Applicants for the Master's degree may pursue one of three courses of study: (1) General Experimental Psychology, (2) Counseling Psychology, or (3) Clinical Psychology.

In the area of Counseling Psychology the student has a choice of two programs: (a) General Counseling and (b) Rehabilitation Counseling. The latter program is offered in cooperation with the Office of Vocational Rehabilitation of the United States Department of Health, Education, and Welfare. Traineeships are available for qualified students.

The Master's degree program in counseling or clinical requires a one-semester internship in an approved facility.

Conducted jointly with the Department of Education is a program leading to certification as a counselor in the public schools. Students interested in this program are invited to write to the head of either department.

Doctor's Degree Programs

A doctoral program is offered which may emphasize one of several areas of interest. Among the several options are general experimental, learning, physiological and comparative, counseling, rehabilitation counseling, and clinical psychology. Doctoral students who emphasize counseling or clinical psychology in their programs will be expected to complete a year of internship in an approved facility.

FOR UNDERGRADUATES AND GRADUATES

432. Personnel Testing. (3:2:3)
Fee \$2.
434. Introduction to Social Psychology. (3:3:0)
435. Abnormal Psychology. (3:3:0)
436. Personality Development. (3:3:0)
437. Experimental Psychology. (3:2:3)
439. Industrial Psychology. (3:3:0)
4314. The Human Element in Engineering. (3:3:0)
4316. History of Psychology. (3:3:0)
4317. The Psychology of Learning. (3:3:0)
4318. Industrial Training (3:3:0)
4319. Human Learning. (3:3:0)
4321. Interviewing Principles and Practice. (3:3:0)
4326. Individual Problems Course. (3)
4327. Physiological Psychology. (3:3:0)

FOR GRADUATES

532. Problems in Psychology. (3)
534. Practicum in Psychological Testing. (3)
539. Occupational Information (3:3:0)
5311. Projective Techniques I. (3:3:0)
5312. Projective Technique II. (3:3:0)
5313. Advanced Projective Techniques. (3:3:0)
5314. Tests and Measurements. (3:3:0)
5316. Introduction to Adjustment Counseling and Psychotherapy. (3:3:0)
5317. Techniques of Counseling: Career Guidance. (3:3:0)
5318. Practicum in Techniques of Counseling. (3:2:3)
5323. Group Counseling and Psychotherapy. (3:3:0)
5324. Seminar in Personality Theory. (3:3:0)
5325. Case Studies in Vocational Rehabilitation. (3:3:0)

5326. Medical Aspects of Rehabilitation. (3:3:0)
5327. The Psychology of Disability. (3:3:0)
5334. Advanced Counseling Psychology. (3:3:0)
5336. Advanced Child Psychology. (3:3:0)
5337. Play Therapy. (3:3:0)
5341. Experimental Design and Quantitative Methods in Psychology. (3:3:0)
5342. Advanced Statistical Methods. (3:3:0)
5345. Research Seminar in Clinical and Counseling Psychology. (3:3:0)
5351. Advanced Experimental Psychology and Psychodynamics. (3:3:0)
5352. Seminar in Learning Theory. (3:3:0)
5353. Seminar in Physiological Psychology. (3:3:0)
5354. Seminar in Perception. (3:3:0)
5355. Seminar in Comparative Psychology. (3:3:0)
5356. Motivation. (3:3:0)
5358. Electrophysiological Techniques. (3:3:0)
5359. Advanced General Psychology. (3:3:0)
5361. Advanced Practicum in Counseling and Clinical Psychology (3:1:0)
- 5362, 5363. Internship in Counseling and Clinical Psychology. (3:3:0 each)
561. Proseminar I. (6:6:0)
562. Proseminar II. (6:6:0)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.
- 731, 732. Research. (3 each)
831. Doctoral Dissertation. (3)
Enrollment required at least four times.

Sociology and Anthropology

Professor W. G. Steglich
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND MINORS ONLY FOR THE DOCTOR'S DEGREE

SOCIOLOGY

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>432. Introduction to Health and Welfare Services. (3:3:0)</p> <p>433. Criminology. (3:3:0)</p> <p>435. Collective Behavior and Social Movements. (3:3:0)</p> <p>436. Contemporary Sociological Theories. (3:3:0)</p> <p>437. Social Change. (3:3:0)</p> <p>438. Population Problems. (3:3:0)</p> <p>439. Methods of Sociological Research. (3:3:0)</p> <p>4311. The Sociology of the Person. (3:3:0)</p> <p>4312. The Urban Community. (3:3:0)</p> <p>4313. American Minority Problems. (3:3:0)</p> <p>4314. Social Stratification. (3:3:0)</p> | <p>4315. The Sociology of Religion. (3:3:0)</p> <p>4316. Development of Sociological Theory. (3:3:0)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>531. Sociological Theory. (3:3:0)
May be repeated once for credit.</p> <p>533. Seminar in Contemporary Sociological Theory. (3:3:0)</p> <p>534. Seminar in Sociological Research Methods. (3:3:0)</p> <p>535. Seminar in Social Disorganization. (3:3:0)</p> <p>536. Seminar in the Sociological Uses of Historical Data. (3:3:0)</p> <p>537. Seminar in Demography. (3:3:0)</p> <p>631. Master's Thesis. (3)</p> <p>Enrollment required at least twice.</p> |
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ANTHROPOLOGY

MINORS ONLY FOR THE MASTER'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>430. Cultures and Peoples of the Southwest. (3:3:0)</p> <p>431. Field Archaeology. (3:3:0)</p> <p>432. Man and the Supernatural. (3:3:0)</p> <p>438. Culture and Personality. (3:3:0)</p> <p>439. Peoples and Cultures of Oceania. (3:3:0)</p> <p>4311. Anthropological Linguistics. (3:3:0)</p> <p>4313. Peoples of North America. (3:3:0)</p> <p>4314. Prehistory of Meso and South America. (3:3:0)</p> | <p>4315. Prehistory of North America. (3:3:0)</p> <p>4316. Peoples of Meso and South America. (3:3:0)</p> <p>4321. Individual Problems in Anthropology. (3:3:0)</p> <p>460. Introduction to Field Research in Prehistory. (6)</p> <p>461. Archaeology of Mexico. (6)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>531. Anthropological Theory. (3:3:0)</p> <p>5335. Origins of Social Customs and Institutions. (3:3:0)</p> |
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Speech

Professor P. Merville Larson
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND MINORS ONLY FOR THE DOCTOR'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>430. Advanced Public Speaking. (3:3:0)</p> <p>431. Creative Dramatics. (3:3:0)</p> <p>433. Introduction to Hearing Problems. (3:3:0)</p> | <p>434. Principles of Audiometry. (3:3:0)</p> <p>435. Interpretative Reading. (3:3:0)</p> <p>436. Radio and Television Program Planning and Management. (3:2:3)</p> <p>437. Persuasion. (3:3:0)</p> |
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439. Methods in Teaching Speech. (3:3:0)
 4311. Stage Directing Methods. (3:2:3)
 4318. Functional Speech Disorders. (3:3:0)
 4319. Organic Speech Disorders. (3:3:0)
 4321-4322. Supervised Clinical Practice in Speech Correction. (3 each)
 4323-4324. Supervised Clinical Practice in Audiology and Aural Rehabilitation. (3 each)
 4325. Directing School Speech Activities. (3:2:3)
 4351. History of Speech. (3:3:0)
 4352. History of the Theater. (3:3:0)
- FOR GRADUATES
531. Studies and Problems in Speech. (3:3:0)
 535. Pathology of the Hard-of-Hearing. (3:3:0)
 536. Speech Pathology. (3:3:0)
 538. Educational Television. (3:3:0)
 5311. Advanced Organic Speech Disorders. (3:3:2)
 5312. Stuttering—Theories and Therapies. (3:3:2)
 5314. Advanced Audiology. (3:3:2)
 5315. Advanced Discussion, Debate and Conference Methods. (3:3:0)
 5316. Dramatic Criticism. (3:3:0)
 5317. Studies in Modern Theater. (3:3:0)
 5318. Stage Lighting. (3:3:0)
 5319. Scene Design. (3:3:0)
 5321. Theater Costume Design. (3:3:0)
 5322. Studies in Production of Pre-modern Drama. (3:3:0)
 5335. Basic Speech for Elementary Teachers. (3:3:0)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

School of Business Administration

Business Administration

539. Research Methods in Business. (3:3:0)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

Accounting

Professor Reginald Rushing
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

430. Income Tax Accounting. (3:3:0)
 431. Advanced Income Tax Accounting. (3:3:0)
 432. Governmental Accounting. (3:3:0)
 433. Petroleum Accounting. (3:3:0)
 434. Advanced Accounting I. (3:3:0)
 435. Advanced Accounting II. (3:3:0)
 436. Accounting Systems. (3:3:0)
 437. Principles of Auditing. (3:3:0)
 438. Advanced Auditing. (3:3:0)
 439. Budgeting. (3:3:0)
 4313. Advanced Cost Accounting. (3:3:0)
 443. An Introduction to Data Processing, Computers, Programming Techniques. (4:3:3)
 444. Large Scale Tape Controlled Computers and Programming Techniques. (4:3:3)

FOR GRADUATES

531. Controllership (3:3:0)
 532. Internship. (3:3:0)
 533. Current Accounting Theory. (3:3:0)
 534. Seminar. (3:3:0)
 535. Seminar in Accounting. (3:3:0)
 536. CPA Review I. (3:3:0)
 537. CPA Review II. (3:3:0)
 538. Advanced Corporation Accounting. (3:3:0)
 539. Seminar in Federal Taxes. (3:3:0)
 5311. Advanced Accounting Problems I. (3:3:0)
 5312. Advanced Accounting Problems II. (3:3:0)
 5313. Advanced Accounting Theory and Practice. (3:3:0)
 *Master's Report. (3)
 *Master's Thesis. (3)
 Enrollment required at least twice.

* See Business Administration (above) for course numbers.

Business Education and Secretarial Administration

Professor W. R. Pasewark

Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

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| FOR UNDERGRADUATES AND GRADUATES | 537. Research and Improvement of Instruction in Office Procedures. (3:3:0) |
| 432. Methods of Teaching Business Subjects. I. (3:3:0) | 538. Research and Improvement of Instruction in Shorthand. (3:3:0) |
| 433. Methods of Teaching Business Subjects II. (3:3:0) | 539. Research and Improvement of Instruction in Typwriting. (3:3:0) |
| FOR GRADUATES | 5331. Problems in Business Education. (3:3:0) |
| 530. Foundations of Business Education. (3:3:0) | *Master's Report. (3) |
| 535. Seminar in Business Education. (3:3:0) | *Master's Thesis. (3) |
| May be repeated for credit. | Enrollment required at least twice. |
| 536. Research and Improvement of Instruction in Bookkeeping. (3:3:0) | |

Economics

Professor R. L. Rouse

Head of the Department

**MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND MINORS ONLY FOR THE DOCTOR'S DEGREE**

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| FOR UNDERGRADUATES AND GRADUATES | FOR GRADUATES |
| 430. Development of Economic Doctrines. (3:3:0) | 531. Economic Research. (3:3:0) |
| 431. Contemporary Economic Doctrines. (3:3:0) | 532. Advanced Micro-Economic Analysis. (3:3:0) |
| 432. Foreign Market Surveys. (3:3:0) | 533. Advanced Macro-Economic Analysis. (3:3:0) |
| 433. International Economic Relations. (3:3:0) | 534. Seminar in Contemporary Economic Problems. (3:3:0) |
| 435. Transportation Economics. (3:3:0) | 535. Seminar in Economic Policy. (3:3:0) |
| 437. Current Economic Problems. (3:3:0) | 5335. Human Geography. (3:3:0) |
| 4311. Advanced Economic Theory. (3:3:0) | *Master's Report. (3) |
| 4312. Theories of Depressions. (3:3:0) | 631. Master's Thesis. (3) |
| | Enrollment required at least twice. |

Finance

Professor R. L. Rouse

Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

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| FOR UNDERGRADUATES AND GRADUATES | 435. Property Insurance. (3:3:0) |
| 431. The Federal Reserve System. (3:3:0) | 437. Casualty Insurance. (3:3:0) |
| 432. Real Estate. (3:3:0) | 438. Bank Administration. (3:3:0) |
| 433. Corporate Financial Problems and Cases. (3:3:0) | 439. Real Estate Appraisal. (3:3:0) |
| 434. Investments. (3:3:0) | FOR GRADUATES |
| | 531. Current Financial Problems. (3:3:0) |

* See Business Administration (Page 63) for course numbers.

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| 532. Seminar in Business Financial Policy.
(3:3:0) | 535. Seminar in Current Banking Problems. (3:3:0) |
| 533. Seminar in Investment Analysis.
(3:3:0) | *Master's Report. (3) |
| 534. Seminar. (3:3:0) | *Master's Thesis. (3) |
| | Enrollment required at least twice. |

BUSINESS LAW

FOR UNDERGRADUATES AND GRADUATES

4311. CPA Law Review. (3:3:0)

Management

Professor F. L. Mize
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

431. Wage Administration. (3:3:0)
432. Administrative Policies. (3:3:0)
433. Recent Labor Legislation
(3:3:0)
434. Advanced Personnel Management.
(3:3:0)
435. Employee Supervision. (3:3:0)
436. Systems and Procedures. (3:3:0)
442. Industrial Management. (3:3:2)

FOR GRADUATES

511. Individual Problems. (1:1:0)
524. Seminar in Management. (2:2:0)
531. Current Problems in Management.
(3:3:0)
532. Research in Management. (3:3:0)
534. Seminar in Management. (3:3:0)
*Master's Report. (3)
*Master's Thesis. (3)
Enrollment required at least twice.

Marketing

Professor J. A. Ryan
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

426. Index Numbers. (2:2:0)
431. Industrial Marketing. (3:3:0)
433. Marketing Problems. (3:3:0)
434. Wholesaling. (3:3:0)
435. Business Cycles and Forecasts.
(3:3:0)
436. Marketing Research and Analysis.
(3:3:0)
437. Advanced Business Statistics.
(3:3:0)
438. Sales Promotion, Retail Advertising,
and Display. (3:3:0)
439. Sales Management. (3:3:0)
4311. Advertising Practices. (3:3:0)
4312. Advanced Advertising Practices.
(3:1:4)
4315. Retail Buying. (3:3:0)

4316. Advertising Administration.
(3:3:0)
4319. Internship. (3:1:5)

FOR GRADUATES

531. Advanced Marketing Problems.
(3:3:0)
532. Advanced Marketing Research.
(3:3:0)
533. Marketing Thought and Theory.
(3:3:0)
534. Seminar in Marketing. (3:3:0)
535. Statistical Decision Making. (3:3:0)
536. Individual Study in Marketing I.
(3:3:0)
537. Individual Study in Marketing II.
(3:3:0)
*Master's Thesis. (3)
Enrollment required at least twice.

* See Business Administration (Page 63) for course numbers.

School of Engineering

The graduate courses offered by the School of Engineering are specifically designed for students interested in achieving the degree of Master of Science in Chemical, Civil, Electrical, Industrial, or Mechanical Engineering, and/or the degree of Doctor of Philosophy, with a conventional major in any of the principal engineering disciplines. Also available is a complex of interdisciplinary courses leading to the doctorate. In the latter, a flexible variety of options is available, and permits a measure of specialization in one of the conventional engineering fields, as well as breadth achieved through pursuit of two additional interdisciplinary programs chosen from such areas as systems engineering, nuclear engineering, aerospace, electronics, transport phenomena, engineering mechanics, thermal science, materials science, operations research, mathematics, and biomedical and bioengineering studies.

Architecture and Allied Arts

Professor N. E. Barrick
Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

ARCHITECTURE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>323. History of Modern Architecture. (2:2:0)</p> <p>420. Professional Practice. (2:2:0)</p> <p>423. Life Drawing II. (2:0:6)
May be repeated for credit.</p> <p>430. History of Early American Architecture. (3:3:0)</p> | <p>432. History of Renaissance Architecture. (3:3:0)</p> <p>4316-4317. Architectural Sculpture. (3:1:6 each)</p> <p>435. Advanced Architectural Working Drawings. (3:0:9)</p> <p>436. City Planning. (3:1:6)</p> |
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ALLIED ARTS

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>421. Art Workshop. (2:0:6)
May be repeated for credit.</p> <p>433-434. Commercial Design II. (3:0:9 each)</p> <p>4311-4312. Ceramics. (3:0:9 each)</p> | <p>4318-4319. History of Painting and Sculpture. (3:3:0 each)</p> <p>4351. Art in Elementary Education. (3:1:6)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>5335. Art in the Modern World. (3:3:0)</p> |
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Chemical Engineering

Professor Arnold J. Gully
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND THE DOCTOR'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>4241-4242. Unit Operations Laboratory. (2:0:6 each)</p> <p>4121. Chemical Engineering Seminar. (1:1:0)</p> <p>4311-4312. Chemical Engineering III-IV. (3:3:0 each)</p> | <p>4321-4322. Chemical Engineering Thermodynamics. (3:3:0 each)</p> <p>4323. Chemical Reaction Engineering. (3:3:0)</p> <p>4331. Special Problems in Chemical Engineering. (3:3:0)</p> <p>4332. Special Experimental Problems in Chemical Engineering. (3:0:9)</p> |
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4341. Unit Processes. (3:3:0)
 4343. Engineering Experimentation.
 (3:3:0)
 4352. Process Design. (3:3:0)
 4353. Instrumentation. (3:2:3)
 4354. Chemical Engineering Plant Design.
 (3:1:6)
 4371. Nuclear Engineering. (3:3:0)

FOR GRADUATES

5121. Graduate Seminar. (1:1:0)
 5311. Transport Phenomena—Heat Trans-
 mission. (3:3:0)
 5312. Transport Phenomena—Fluid Dy-
 namics. (3:3:0)
 5313. Transport Phenomena—Diffusion
 Processes. (3:3:0)
 5314. Process Dynamics and Automatic
 Control. (3:3:0)
 5321. Advanced Chemical Engineering
 Thermodynamics. (3:3:0)
 5322. Equilibrium Systems. (3:3:0)
 5331. Special Problems in Chemical Engi-
 neering. (3:3:0)
 May be repeated for credit.
5332. Experimental Studies in Chemical
 Engineering. (3:0:9)
 May be repeated for credit.
 5341. Distillation. (3:3:0)
 5343. Reaction Kinetics. (3:3:0)
 5348. Organic Syntheses. (3:3:0)
 5351. Chemical Engineering Design.
 (3:1:6)
 5371-5372. Principles of Nuclear Engi-
 neering. (3:3:0 each)
 5373-5374. Nuclear Chemical Engineer-
 ing. (3:3:0 each)
 5378. Reactor Shielding. (3:3:0)
 5379. Nuclear Reactor Instrumentation
 and Control. (3:3:0)
 5381-5382. Nuclear Radiations Labora-
 tory. (3:2:6 each)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.
 731. Research. (3)
 732. Research. (3)
 831. Doctor's Dissertation. (3)
 Enrollment required at least four
 times.

Civil Engineering

Professor K. R. Marmion
 Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

4261. Transportation and Traffic Engi-
 neering. (2:1:3)
 4321. Soil Engineering. (3:3:0)
 4337. Cost Estimating. (3:3:0)
 4339. Law and Ethics in Engineering.
 (3:3:0)
 4342. Structural Design, II. (3:2:3)
 4344. Reinforced Concrete Structures II.
 (3:3:0)
 4351. Intermediate Hydromechanics.
 (3:3:0)
 4353. Elements of Hydraulic Engineering.
 (3:3:0)
 4355. Ground Water Hydrology.
 (3:3:0)
 4362. Highway Engineering II.
 (3:3:0)
5311. Advanced Mechanics of Solids.
 (3:3:0)
 5313. Theory of Elastic Stability. (3:3:0)
 5314. Theory of Plates and Shells. (3:3:0)
 5316. Theory of Elasticity. (3:3:0)
 5321. Advanced Soil Engineering. (3:3:0)
 5331, 5332. Advanced Work in Specific
 Fields. (1 to 6)
 5342. Advanced Plastic Design. (3:3:0)
 5343. Advanced Structural Analysis.
 (3:3:0)
 5344. Advanced Reinforced Concrete De-
 sign. (3:3:0)
 5346. Design of Structures for Dynamic
 Loads. (3:3:0)
 5351. Open Channel Hydraulics. (3:3:0)
 5353. Water Resources Engineering.
 (3:3:0)
 5355. Flow in Porous Media. (3:3:0)
 5356. Earth Dams. (3:3:0)
 5371. Advanced Water and Waste Treat-
 ment. (3:2:3)
 630. Master's Report. (3)

FOR GRADUATES

5121. Advanced Soil Engineering Labora-
 tory. (1:0:3)
 5337. Construction Management. (2:2:0)

631. Master's Thesis. (3)
Enrollment required at least twice.
- 731, 732. Research. (3 each)
May be repeated for credit

831. Doctor's Dissertation. (3)
Enrollment required at least four times.

Electrical Engineering

Professor H. A. Spuhler
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

4311. Analog and Digital Computation. (3:3:0)
4317. Electronics III. (3:3:0)
4318. Physical Electronics. (3:3:0)
4321. Passive Network Synthesis. (3:3:0)
4322. Topological Network Analysis. (3:3:0)
4333. Experimental Laboratory II. (3:0:9)
4343. Energy Transmission. (3:3:0)
4351. Energy Conversion I. (3:3:0)
4352. Energy Conversion II. (3:3:0)
4353. Feedback Control Systems. (3:3:0)
4354. Acoustics. (3:3:0)
4355. Nonlinear Feedback Systems. (3:3:0)
4361. Introduction to Information Theory and Noise. (3:3:0)
5318. Pulse and Timing Circuits. (3:3:0)
5319. Electronic Circuits and Systems. (3:3:0)
5321. Digital Systems. (3:3:0)
- 5322-5323. Advanced Network Theory I and II. (3:3:0 each)
5325. Information Theory. (3:3:0)
5326. Network Applications of Linear Graph Theory. (3:3:0)
5327. Multistage Decision Processes. (3:3:0)
5328. Statistical Theory of Communications. (3:3:0)
5331. Theoretical Investigations in Engineering Applications. (3:3:0)
5332. Experimental Investigations in Engineering Applications. (3:0:9)
- 5341-5342. Advanced Electromagnetic Theory I and II. (3:3:0 each)
5343. Radio Propagation. (3:3:0)
5344. Antennas and Radiating Systems. (3:3:0)

FOR GRADUATES

5311. Stability of Nonlinear Systems. (3:3:0)
5312. Optimal and Adaptive Control Systems. (3:3:0)
- 5313-5314. Solid-State Electronics I and II. (3:3:0 each)
5315. Sampled Data and Digital Control Systems. (3:3:0)
5317. Advanced Transients. (3:3:0)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.
- 731, 732. Research. (3 each)
831. Doctor's Dissertation. (3)
Enrollment required at least four times.

Industrial Engineering

Professor R. A. Dudek
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE AND THE DOCTOR'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

417. Industrial Statistics Problem Laboratory. (1:0:3)
421. Materials Handling. (2:2:0)
439. Analysis of Industrial Operations. (3:3:0)
4121. Industrial Engineering Seminar. (1:1:0)
4221. Special Problems in Industrial Engineering. (2:2:0)
4311. Automatic Data Processing Systems. (3:3:0)

4331. Individual Studies in Industrial Engineering. (3:3:0)
May be repeated for credit.
4332. Special Experimental Problems in Industrial Engineering. (3:0:9)
May be repeated for credit.
4334. Work Analysis and Design III. (3:2:3)
4341. Work Control II. (3:3:0)
4351. Production Design II. (3:2:3)
4361. Industrial Engineering Design. (3:3:0)

FOR GRADUATES

512. Industrial Engineering Graduate Seminar. (1:1:0)
532. Standard Data Systems. (3:2:3)
535. Engineering Controls for Industrial Safety. (3:3:0)
536. Dynamics of Engineering Economy. (3:3:0)
538. Engineering Aspects of Wage Policies. (3:3:0)
- 5111, 5212, 5213, 5214. Industrial Engineering Case Analysis. (1:2 each)
5301. Advanced Work Analysis and Design I. (3:2:3)
5302. Advanced Work Analysis and Design II. (3:2:3)
5303. Advanced Work Analysis and Design III. (3:2:3)
- 5307, 5308. Advanced Production Control. (3:3:0 each)
- 5311, 5312. Analysis Techniques for Management. (3:3:0 each)
- 5314, 5315. Analysis Techniques for Work Systems. (3:3:0 each)
5316. Statistical Reliability Analysis. (3:3:0)
5317. Advanced Industrial Statistics. (3:3:0)
5318. Selected Topics in Advanced Statistics. (3:3:0)
May be repeated for credit.
- 5321, 5322. Decision Theory and Management Science. (3:2:3 each)
- 5351, 5352. Advanced Production Design. (3:2:3 each)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.
- 731, 732. Research. (3 each)
831. Doctor's Dissertation. (3)
Enrollment required at least four times.

Mechanical Engineering

Professor L. J. Powers
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE
AND THE DOCTOR'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

4121. Mechanical Engineering Seminar. (1)
May be repeated for credit.
4131. Engineering Reports. (1:1:0)
May be repeated for credit.
- 4212, 4213. Thermodynamics. (2:2:0 each)
- 4216, 4217. Design, I, II. (2:1:3 each)
- 4312, 4313. Mechanical Engineering Laboratory, I, II. (3:1:6 each)
4314. Fluid Dynamics. (3:3:0)
4315. Heat and Mass Transfer. (3:3:0)
4316. Dynamics. (3:3:0)
4331. Special Problems in Mechanical Engineering. (3)
May be repeated for credit.

FOR GRADUATES

5312. Dynamics II. (3:3:0)
(Formerly Mechanical Vibrations)
5313. Dynamics III. (3:3:0)
5314. Stress Analysis I. (3:2:3)
5321. Thermodynamics I. (3:3:0)
5322. Thermodynamics II. (3:3:0)
5324. Heat Transmission I. (3:3:0)
5325. Heat Transmission II. (3:3:0)
5326. Heat Transmission III. (3:3:0)
5327. Aerodynamics I. (3:3:0)
5328. Aerodynamics II. (3:3:0)
5329. Aerodynamics III. (3:3:0)
5331. Theoretical Studies in Advanced Topics. (3:3:0)
May be repeated for credit.
5332. Experimental Studies in Advanced Topics. (3:1:6)
May be repeated for credit.
5333. Design I. (3:2:3)
5341. Metallurgy I. (3:3:0)
630. Master's Report. (3)

631. Master's Thesis. (3)
Enrollment required at least twice.
- 731, 732. Research. (3 each)
May be repeated for credit.

831. Doctoral Dissertation. (3)
Enrollment required at least four times.

Petroleum Engineering

Professor W. L. Ducker
Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>413. Natural Gas Laboratory. (1:0:3)</p> <p>416. Reservoir Engineering Laboratory.
(1:0:3)</p> <p>420. Petroleum Property Evaluation and
Management. (2:1:3)</p> <p>430. Special Natural Gas and Production
Problems. (3:3:0)</p> | <p>433. Reservoir Engineering. (3:3:0)</p> <p>434. Natural Gas Engineering. (3:3:0)</p> <p>435. Advanced Natural Gas Engineering.
(3:3:0)</p> <p>436. Advanced Reservoir Engineering.
(3:3:0)</p> |
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School of Home Economics

The School of Home Economics offers majors and minors for the Master's degree as indicated, and a general minor for the Doctor of Education degree.

Applied Arts

Professor B. C. Lockhart
Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>411. Special Problems. (1:0:2)
May be repeated for credit.</p> <p>431. Silk Screen. (3:1:4)</p> <p>432. Sculpture. (3:1:4)</p> <p>433. Advanced Interior Design. (3:1:4)</p> <p>434. Metalwork. (3:1:4)</p> <p>435. Jewelry. (3:1:4)</p> <p>436. Art in Secondary Education.
(3:2:2)</p> <p>437. Current Practices in Secondary Art
Education. (3:1:4)</p> <p>439. Experience Training in Applied
Arts. (3:1:6)
May be repeated for credit.</p> | <p>4321. Sculpture Problems. (3:1:4)</p> <p>4351. Jewelry Problems. (3:1:4)</p> <p style="text-align: center;">FOR GRADUATES</p> <p>511. Advanced Applied Arts Unit.
(1:0:2)
May be repeated for credit.</p> <p>531. Special Problems. (3:1:4)
May be repeated for credit.</p> <p>537. Art for Exceptional Children.
(3:1:4)</p> <p>538. Vocational Arts Orientation and
Evaluation in Rehabilitation Coun-
seling. (3:1:4)</p> <p>5335. Theory and Practice of Art for
Elementary Teachers. (3:1:4)</p> |
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Clothing and Textiles

Professor Martha Gene Shelden
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

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| <p>FOR UNDERGRADUATES AND GRADUATES</p> <p>411. Special Problems. (1:0:3)
May be repeated for 2 or 3 hours'
credit.</p> | <p>431. Textile Testing and Analysis.
(3:1:4)</p> <p>432. Dress Design through Draping.
(3:1:4)</p> |
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433. History and Philosophy of Dress. (3:3:0)
 436. Flat Pattern Design. (3:1:4)
 437. Demonstration Techniques in Clothing. (3:3:0)
 438. Historic Textiles. (3:3:0)
- FOR GRADUATES
511. Advanced Clothing Problems. (1:0:3)
 May be repeated for credit.
 518. Seminar. (1:1:0)
531. Special Problems in Clothing and Textiles. (3:1:4)
 May be repeated for credit.
 534. Custom Tailoring. (3:1:4)
 535. Advanced Problems in Upholstery, Draperies, and Other Household Fabrics. (3:1:4)
 5335. Textiles for Elementary Teachers. (3:3:0)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

Food and Nutrition

Professor Mina W. Lamb
 Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

- FOR UNDERGRADUATES AND GRADUATES
411. Problems in Food and Nutrition. (1:1:0)
 May be repeated for credit.
 421. Advanced Food Production Management. (2:1:3)
 422. Food Technology. (2:1:2)
 425. Food Demonstrations. (2:1:2)
 431. Nutrition in Disease. (3:2:3)
 432. Advanced Human Nutrition. (3:3:0)
 436. Experimental Methods with Food. (3:1:6)
 439. Food Economics. (3:1:4)
- FOR GRADUATES
515. Special Aspects of Food and Nutrition. (1:0:3)
531. Research in Food and Nutrition. (3:1:6)
 May be repeated for credit.
 533. Seminar in Food and Nutrition. (3:3:0)
 May be repeated for credit.
 534. Advanced Problems in Human Nutrition and Foods. (3:3:0)
 May be repeated for credit.
 5335. Principles and Applications of Nutrition for Elementary Teachers. (3:3:0)
 630. Master's Report. (3)
 631. Master's Thesis. (3)
 Enrollment required at least twice.

Home and Family Life

Associate Professor Estelle H. Wallace
 Acting Head of the Department

MINORS ONLY FOR THE MASTER'S DEGREE

CHILD DEVELOPMENT AND FAMILY RELATIONS

- FOR UNDERGRADUATES AND GRADUATES
433. Family Relations. (3:3:0)
 435. Student Teaching in Preschool. (3)
 436. Community and Professional Responsibilities to Children and Families. (3:2:2)
 438. Exceptional Children in the Family. (3:2:3)
- FOR GRADUATES
439. Family Life in the Middle and Later Years. (3:3:0)
534. Special Topics in Child Development. (3:3:0)
 5336. Advanced Interpersonal and Family Relations. (3:3:0)

HOME MANAGEMENT

FOR UNDERGRADUATES AND GRADUATES

431. Advanced Housing for the Family.
(3:1:4)
432. Home Management Residence. (3)
433. Advanced Household Equipment.
(3:1:4)
435. Advanced Consumer Problems.
(3:3:0)

FOR GRADUATES

511. Studies in Home Management.
(1:1:0)
531. Advanced Home Management.
(3:3:0)

Home Economics Education

Professor L. Ann Buntin
Head of the Department

MAJORS AND MINORS FOR THE MASTER'S DEGREE

FOR UNDERGRADUATES AND GRADUATES

426. Problems in Student Teaching.
(2:0:4)
432. Methods of Teaching Home Economics. (3:3:0)
434. Current Issues and Developments in Home Economics Education. (3:3:0)
436. Home, School and Community Experiences in Home Economics Education. (3:3:0)
461. Student Teaching in Home Economics. (6:0:18)

FOR GRADUATES

514. Specific Problems in Teaching Home Economics. (1:1:0)
May be repeated for credit.

531. Administration and Supervision of Home Economics Education.
(3:3:0)
532. Curriculum Development in Home Economics. (3:3:0)
533. Evaluation in Home Economics.
(3:3:0)
534. Techniques of Research in Home Economics. (3:3:0)
536. Problems. (3:3:0)
May be repeated for credit.
537. Techniques of Supervision in Home Economics. (3:3:0)
630. Master's Report. (3)
631. Master's Thesis. (3)
Enrollment required at least twice.