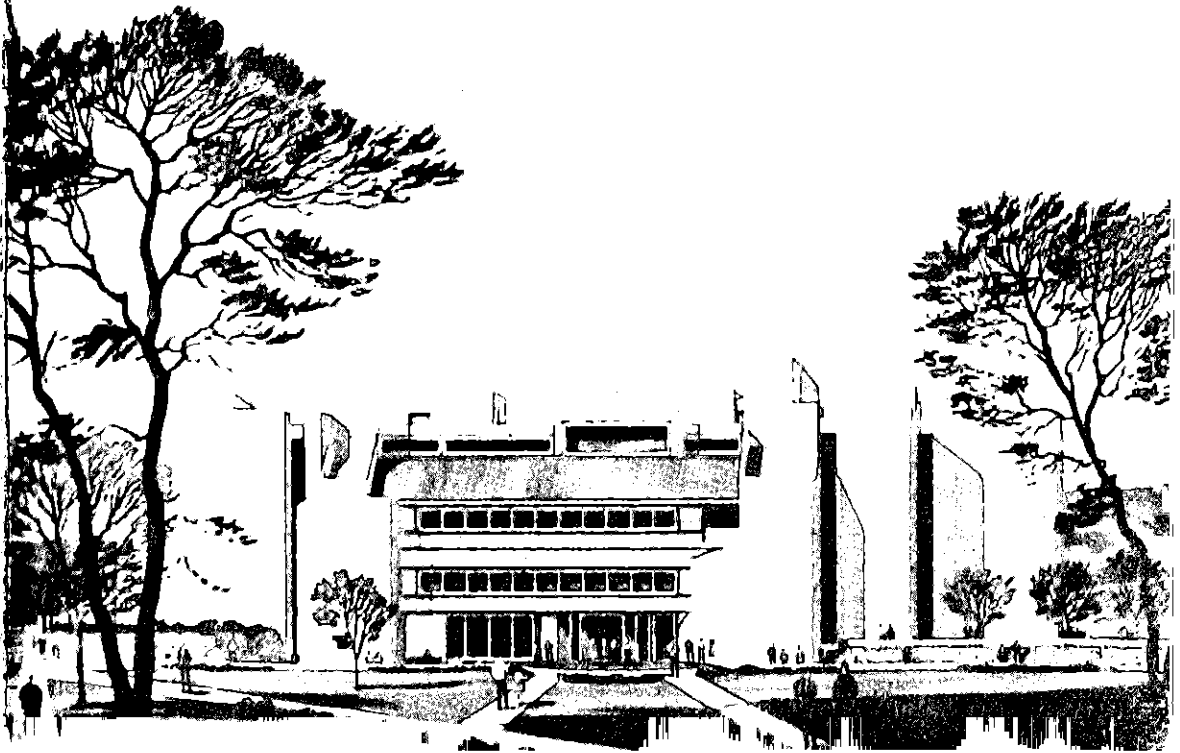


*The University of Texas  
at El Paso*

BULLETIN

CATALOG ISSUE - 1968-69 SESSIONS



THE UNIVERSITY OF TEXAS

AT EL PASO

1968-69

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COVER DRAWING: *Architect's Sketch of THE LIBRARY*

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Campus News Bureau and Mass Communications Photo Department

CATALOG

*The University of Texas at El Paso*

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SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS

TEXAS ASSOCIATION OF COLLEGES

TEXAS ASSOCIATION OF GRADUATE SCHOOLS

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BUSINESS

EDUCATION

ENGINEERING

LIBERAL ARTS

SCIENCES

GRADUATE STUDY

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*Published quarterly by* THE UNIVERSITY OF TEXAS AT EL PASO

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OCTOBER - DECEMBER, 1968

*Number* 6804

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Second Class Postage Paid at El Paso, Texas

# CALENDAR FOR FALL SEMESTER — 1968

SEPTEMBER							OCTOBER					NOVEMBER							DECEMBER									
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
1	2	3	4	5	6	7			1	2	3	4	5							1	2	1	2	3	4	5	6	7
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	
29	30						27	28	29	30	31			24	25	26	27	<del>28</del>	<del>29</del>	<del>30</del>	29	30	31					

## AUGUST

12—*Monday*. Last day for new students to submit applications for admission without penalty\* to Fall Semester.

## SEPTEMBER

6—*Friday*. Achievement Examinations in Chemistry for incoming Freshmen.

9—*Monday*. General Faculty Meeting — Magoffin Auditorium, 3:30 p.m.

9—*Monday*. Freshmen Orientation and Guidance Activities.

9-13—*Monday through Friday*. Registration Activities.

10—*Tuesday*. Proficiency, placement, & advanced standing examinations.

16—*Monday*. Classes begin.

20—*Friday*. Last day for adding courses.

## NOVEMBER

5—*Tuesday*. Mid-semester reports.

16—*Saturday*. Homecoming — Classes dismissed.

19—*Tuesday*. Last day courses can be dropped without prior approval of the student's academic dean.

28-30—*Thursday through Saturday*. Thanksgiving Holidays.

## DECEMBER

11—*Wednesday*. Last day for new students to submit applications for admission without penalty\* to Spring Semester.

23-January 4—*Monday through Saturday*. Christmas Vacation.

## JANUARY

# 1969

6—*Monday*. Classes resume.

13—*Monday*. Final grades for January degree candidates due in Registrar's Office.

13-21—*Monday through Tuesday*. Final examinations for first semester.

27—*Monday*. Freshmen Orientation and Guidance Activities.

27-31—*Monday through Friday*. Registration Activities.

28—*Tuesday*. Proficiency, placement, & advanced standing examinations.

## FEBRUARY

3—*Monday*. Classes begin.

7—*Friday*. Last day for adding classes.

## MARCH

21—*Friday*. Mid-semester reports.

# CALENDAR FOR SPRING SEMESTER — 1969

## APRIL

8—*Tuesday*. Last day courses can be dropped without prior approval of the student's academic dean.

2-7—*Wednesday through Monday inclusive*. Spring vacation.

## MAY

5—*Monday*. Last day for new students to submit applications for admission without penalty\* to first term of Summer Session.

19—*Monday*. Final grades for May degree candidates due in Registrar's Office.

19-27—*Monday through Tuesday*. Final examinations.

31—*Saturday*. Commencement.



## SUMMER SESSION

### JUNE

2—*Monday*. Achievement Examinations in Chemistry for incoming Freshmen.

5-July 17—*FIRST TERM*.

6—*Friday*. Proficiency, placement, & advanced standing examinations.

### JULY

4—*Friday*. Independence Day.

16-17—*Tuesday and Wednesday*. Final Examinations.

18-August 29—*SECOND TERM*.

20—*Friday*. Proficiency, placement, & advanced standing examinations.

21—*Monday*. Classes begin.

### AUGUST

28-29—*Tuesday and Wednesday*. Final Examinations.

\*Students who miss the last day deadline must report in person to the Registrar's Office.

JANUARY							FEBRUARY							MARCH							APRIL												
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S						
				1	2	3	4			2	3	4	5	6	7	8			2	3	4	5	6	7	8				1	2	3	4	5
5	6	7	8	9	10	11	9	10	11	12	13	14	15	9	10	11	12	13	14	15	6	7	8	9	10	11	12						
12	13	14	15	16	17	18	16	17	18	19	20	21	22	16	17	18	19	20	21	22	13	14	15	16	17	18	19						
19	20	21	22	23	24	25	23	24	25	26	27	28	23	24	25	26	27	28	29	20	21	22	23	24	25	26							
26	27	28	29	30	31	29	30	30	31	27	28	29	30																				

MAY							JUNE							JULY							AUGUST						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2	3	1	2	3	4	5	6	7			1	2	3	4	5						1	2
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
25	26	27	28	29	30	31	29	30	27	28	29	30	31	24	25	26	27	28	29	30	31						

Board of Regents of The University of Texas

FRANK C. ERWIN, JR., *Chairman*

JACK S. JOSEY, *Vice-Chairman*

BETTY ANNE THEDFORD, *Secretary*



*Chancellor of The University of Texas System*

HARRY H. RANSOM, Ph.D.

# THE UNIVERSITY OF TEXAS AT EL PASO

## OFFICERS OF ADMINISTRATION

### GENERAL

- JOSEPH MALCHUS RAY, *President*, 1960  
B.A., M.A., Ph.D., The University of Texas at Austin
- ROBERT MILTON LEECH, *Vice President*, 1949  
B.F.A., M.F.A., Ph.D., The University of Texas at Austin
- CLYDE JOYE WINGFIELD, *Vice President*, 1964  
B.S., M.S., East Texas State University; Ph.D., Syracuse University
- HALBERT GARVICE ST. CLAIR, *Business Manager*, 1960  
B.B.A., The University of Texas at Austin. Certified Public Accountant
- CLARENCE JOE CERVENKA, *Registrar and Director of Admissions*, 1952  
B.S., M.Ed., Texas A. & M. University
- BAXTER POLK, *Librarian*, 1936  
B.A., Hardin-Simmons University; B.S. in L.S., University of Oklahoma;  
M.S. in L.S., Columbia University
- GEORGE COURTNEY McCARTY, *Director of Athletics*, 1953  
B.S., M.A., New Mexico State University
- JIMMY REEVES WALKER, *Dean of Students*, 1958  
B.A., M.A., The University of Texas at El Paso;  
Ed.D., Oklahoma State University
- BRYAN STEELE JONES, *Assistant to the President*, 1956  
B.A., University of Arkansas; M.A., The University of Texas at El Paso
- KENNETH L. CARPENTER, *Assistant to the President*, 1964
- JOY M. RILEY, *Administrative Assistant to the President*, 1964

### SCHOOL AND DIVISION

- LONNIE LEE ABERNETHY, *Dean of the School of Engineering*, 1963  
B. Cer. E., North Carolina State College;  
M.Sc., Ph.D., The Ohio State University. Registered Professional Engineer
- EDMUND BENEDICT COLEMAN, *Dean of the Graduate School*, 1965  
B.S., University of South Carolina; M.A., Ph.D., Johns Hopkins University
- LEWIS F. HATCH, *Dean of the School of Science*, 1967  
B.S., Washington State College; M.S., Ph.D., Purdue University
- JOHN WOOLFORD MCFARLAND, *Dean of the School of Education*, 1966  
B.A., M.A., Ed.D., The University of Texas at Austin
- JOHN MARVIN RICHARDS, *Dean of the School of Business Administration*, 1962  
B.A., University of Kansas; M.S., Emporia State College;  
Ph.D., Louisiana State University
- RAY SMALL, *Dean of the School of Liberal Arts*, 1961  
B.A., West Texas State University;  
M.A., Ph.D., The University of Texas at Austin

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Date indicates year of original appointment.

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OTHER ADMINISTRATIVE OFFICERS

- EARL WYNN ANDERSON, *Assistant Director of Development*, 1966  
B.A., The University of Texas at El Paso.
- LUVENIA EVERETT ARNOLD, *Assistant Registrar*, 1940  
B.A., The University of Texas at El Paso.
- JAMES BYRON BACON, *Contract Administrator of Schellenger Research Laboratories*, 1964. B.S., The University of Texas at El Paso
- KENNETH E. BEASLEY, *Director of the Bureau of Public Affairs*, 1967  
B.A., M.A., Ph.D., University of Kansas
- CLEMENT A. BEHRA, JR., *Manager, Bookstore*, 1967  
B.S., Kent State University
- BARBARA DELL BLAIR, *Acquisitions Librarian*, 1958  
B.A., The University of Texas at El Paso; M.L.S., University of Washington
- LAWRENCE PHILLIPS BLANCHARD, *Assistant Dean of the School of Business Administration*, 1959. B.A., LL.B., The University of Texas at Austin
- JACK D. BOWLES, *Director of Counseling Service*, 1965  
B.A., The University of Texas at El Paso; M.A., Texas Technological College
- WALLACE HAWN BRUCKER, *Head of Library Circulation Department*, 1967  
B.S., United States Military Academy
- RICHARD E. CANFIELD, *Associate Business Manager*, 1966  
B.S., Centenary College of Louisiana
- THOMAS M. CHISM, *Director of Student Activities*, 1966  
B.A., Carson Newman College;  
B.D., Southwestern Baptist Theological Seminary; M.A., Phillips University
- GAYLE WILLIAM COYLE, *Assistant Director of Financial Aid and Placement*, 1967  
B.A., Central State College; M.A., The University of Texas at El Paso
- MARY RITA DAVIS CROWSON, *Manager, Supply & Duplicating Service*, 1961
- GEORGE R. DAVIS, *College Physician*, 1965  
B.A., M.B., M.D., The University of Minnesota
- J. ED DAVIS, JR., *Manager, Printing Department*, 1955
- JESSE EDWARD DUGGAN, *Chief of Library Technical Services*, 1964  
B.A., M.L.S., The University of Texas at Austin
- ROBERT WALTER ENGLISH, *Assistant Director of Physical Plant*, 1961  
B.S., Mississippi State University
- JOHN T. EVANS, *Director of Financial Aid and Placement*, 1966  
B.A., Washington State University
- REX ERVIN GERALD, *Director of Museum*, 1958  
B.A., University of Arizona; M.A., University of Pennsylvania
- YVONNE E. GREEAR, *Reference Librarian*, 1964  
B.F.A., M.L.S., The University of Texas at Austin
- EUGENE WENDELL GREEN, *Director of Personnel*, 1965  
B.S., University of Maryland; M.Litt., University of Pittsburgh
- JOHN EDWARD GUZMAN, *Director of Intramurals*, 1965  
B.A., Santa Fe College
- LAWRENCE S. HAMILTON, *Assistant Dean of Students*, 1967  
B.A., New Mexico Highlands University;  
M.A., The University of Texas at El Paso



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THE UNIVERSITY OF TEXAS AT EL PASO

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- LEONARD K. HAMILTON, *Purchasing Agent*, 1960  
B.S., Stephen F. Austin College
- WADE JAMES HARTRICK, *Assistant Dean of the School of Liberal Arts*, 1944  
B.A., Texas Technological College;  
M.B.A., Ph.D., The University of Texas at Austin
- CARL HERTZOG, *Director of the Press*, 1948  
Litt.D., Baylor University
- MARVIN R. HOLLENSHEAD, *Director of Physical Plant*, 1960  
B.A., Trinity University; M.A., The University of Texas at Austin
- JOSEPH S. LAMBERT, *Director of Schellenger Research Laboratories*, 1966  
B.S.E.E., University of Pittsburgh;  
M.S.E.E., M.S. Physics; Ph.D., University of Michigan
- JAMES T. LINDOP, *Assistant Director of Admissions*, 1963  
B.A., The University of Texas at El Paso
- JUNE MARQUEZ, *Assistant to the Business Manager*, 1949
- LEON CLAIRE METZ, *University Archivist*, 1967
- EDDIE L. MULLENS, *Sports Information Director*, 1962
- HARRY JAMES O'BRIEN, *Assistant to the Director of Office of Institutional Studies*, 1966. B.A., M.Ed., Northeastern University
- JANE W. PECK, *Supervisor of Health Service*, 1959  
R.N., University of Cincinnati School of Nursing and Health
- LOUISE FLETCHER RESLEY, *Assistant Dean of Students*, 1940  
B.A., The University of Texas at El Paso;  
M.A., The University of Texas at Austin
- JOHN MARVIN RICHARDS, *Director of Bureau of Business and Economic Research*, 1962  
B.A., University of Kansas; M.S., Emporia State College;  
Ph.D., Louisiana State University
- ROBERT LOUIS SCHUMAKER, *Director of Computation Center*, 1946  
B.S., The University of Texas at El Paso; M.S., University of Arizona
- FRANK SCOTT, *Periodicals Librarian*, 1956  
B.B.A., The University of Texas at El Paso
- WILLIAM N. TIDWELL, *Auditor*, 1964  
B.B.A., The University of Texas at El Paso
- GEORGE CAMBRIDGE TOMPKINS, *Director of Extension Service*, 1958  
B.S., M.S., University of Illinois
- DALE WALKER, *Director of News and Information*, 1966  
B.A., The University of Texas at El Paso
- WILLIAM HAMMOND WAUGH, JR., *Executive Assistant in Department of Music*, 1966. B.S., United States Military Academy
- EDWARD EARL WEIR, *Assistant to the Librarian*, 1963
- 

RESIDENCE HALLS

- DANIEL LEE LAZENBERRY, JR., *Director*, Burges Hall  
MRS. THELMA KARN, *Director*, Hudspeth Hall  
MRS. AVIS M. HILL, *Director*, Benedict Hall  
MR. WAYNE C. VANDENBURG, *Director*, Miners Hall  
MRS. MAY STUART, *Director*, Worrell Hall  
MRS. CECILE WALLER, *Director*, Bell Hall  
MRS. JESSIE LEE CAMPBELL, *Assistant Director*, Bell Hall

## THE FACULTY

- LONNIE LEE ABERNETHY, *Professor of Engineering*, 1963  
B. Cer. E. North Carolina State College; M.Sc., Ph.D., The Ohio State University.  
Registered Professional Engineer
- RANDALL WILLIAM ACKLEY, *Assistant Professor of English*, 1967  
B.A., University of Minnesota
- MRS. PATRICIA ADKINS, *Assistant Professor of Drama and Speech*, 1965  
B.A., The University of Texas at El Paso; M.A., Texas Woman's University;  
Ph.D., University of Colorado
- MRS. MARY LOUISE ZANDER AHO, *Assistant Professor of Education*, 1963  
B.S.E., University of Florida; M.A., The University of Texas at El Paso
- HAROLD EDWIN ALEXANDER, *Professor of Chemistry*, 1955  
B.S., The University of Texas at El Paso;  
M.A., Ph.D., The University of Texas at Austin
- ALBERT A. AMADOR, *Assistant Professor of Chemistry*, 1966  
B.A., University of New Mexico; Ph.D., New Mexico Highlands University
- EVAN HAYWOOD ANTONE, *Instructor in English*, 1967  
B.A., M.A., The University of Texas at El Paso
- JOHN CLEVELAND ARNOLD, *Instructor in Art*, 1965  
B.A., University of Minnesota; M.F.A., Arizona State University
- GLORIA C. ASTIAZARAN, *Assistant Professor of Modern Languages*, 1967  
B.A., M.A., Ph.D., University of Arizona
- MICHAEL EVAN AUSTIN, *Associate Professor of Electrical Engineering*, 1963  
B.S.E.E., M.S.E.E., Ph.D., The University of Texas at Austin
- FREDERICK HOMER BAILEY, *Assistant Professor of Mathematics*, 1963  
B.S., New Mexico State University; M.A., University of Colorado
- JACK SEARCY BAILEY, *Assistant Professor of Spanish*, 1963  
B.A., The University of Texas at El Paso; M.A., University of Arizona
- KENNETH KYLE BAILEY, *Professor of History*, 1960  
B.A., M.A., Ph.D., Vanderbilt University
- HOWARD WOOSTER BALDWIN, *Instructor in Modern Languages*, 1965  
B.S., Rutgers University; M.A., The University of Texas at El Paso
- STANLEY EUGENE BALL, *Assistant Professor of Mathematics*, 1964  
B.S., University of Wyoming; M.S., University of Arizona
- WILLIAM GERALD BARBER, *Associate Professor of Education*, 1967  
B.S., M.S., East Texas State University; Ed.D., University of Houston
- RONALD G. BARDING, *Assistant Professor of Sociology*, 1967  
B.S., M.S., Central Michigan University
- THOMAS GROCARD BARNES, *Professor of Physics*, 1938  
B.A., ScD. (Hon.), Hardin-Simmons University; M.S., Brown University
- GUIDO ALAN BARRIENTOS, *Associate Professor of Psychology*, 1963  
B.A., Universidad de San Carlos (Guatemala); M.A., Ph.D., University of Kansas
- GORDON C. BASSETT, *Assistant Professor of Military Science*, 1965  
B.M.E., The University of Minnesota; Captain, United States Army
- CHARLES R. BATH, *Assistant Professor of Political Science*, 1966  
B.A., University of Nevada; M.A., Tulane University
- ALLEN O. BAYLOR, *Professor of Economics*, 1965  
B.A., American College; License en Droit mention Econ., Teheran University;  
Doctorate es Science Math., Lausanne University;  
Doctorate P.A., Ph.D., University of Southern California
- KENNETH E. BEASLEY, *Professor of Political Science*, 1967  
B.A., M.A., Ph.D., University of Kansas

- RALPH PORTER BENTZ, *Associate Professor of Mathematics*, 1952  
B.S., Pennsylvania State Teachers College; M.Ed., Pennsylvania State College;  
Ph.D., Peabody College
- ANTON HELMER BERKMAN, *Emeritus Professor of Biological Sciences*, 1927  
B.A., M.A., The University of Texas at Austin; Ph.D., University of Chicago
- PHILIP HIGLEY BETHUNE, *Instructor in Political Science*, 1967  
B.S., United States Military Academy; M.A., Southern Methodist University
- CALEB ARUNDEL BEVANS, *Professor of Modern Languages*, 1950  
B.S., Northwestern University; M.A., Ph.D., University of Chicago
- SACHINDRANARAYAN BHADURI, *Associate Professor of Mechanical Engineering*, 1963  
B.M.E., Jadavpur University (India); B.A., Calcutta University (India);  
M.S. in M.E., State University of Iowa; M.E.S., Johns Hopkins University;  
Ph.D., Colorado State University
- MRS. SALLY M. BISHOP, *Instructor in Art*, 1967  
B.F.A., M.F.A., Wichita State University
- LELAH BLACK, *Associate Professor of Business Administration*, 1946  
B.Ed., Western Illinois State Teachers College; M.A., University of Iowa
- LAWRENCE PHILLIPS BLANCHARD, *Associate Professor of Business Administration*, 1959  
B.A., LL.B., The University of Texas at Austin
- EDWARD L. BLANSITT, JR., *Associate Professor of English*, 1967  
Ph.D., The University of Texas at Austin
- MICHAEL HENRY BLUE, *Associate Professor of Physics*, 1964  
B.S., Colorado State University; Ph.D., University of Washington
- MAX CARLTON BOLEN, *Professor of Physics*, 1965  
B.A., Wabash College; M.S., Purdue University; Ph.D., Texas A. & M. University
- TOMMY J. BOLEY, *Instructor in English*, 1967  
B.B.A., M.A., North Texas State University
- LANIS LOY BOSWORTH, *Associate Professor of Psychology*, 1950  
B.B.A., M.A., Ph.D., The University of Texas at Austin
- GERALD R. BOVARD, *Assistant Professor of Business Administration*, 1964  
B.S., Grove City College; M.L.Ind., University of Pittsburgh; C.P.A.
- DONALD E. BOWEN, *Assistant Professor of Physics*, 1966  
B.A., M.A., Texas Christian University; Ph.D., The University of Texas at Austin
- JACK DeLOYE BOWLES, *Instructor in Psychology*, 1965  
B.A., The University of Texas at El Paso; M.A., Texas Technological College
- DELMAR L. BOYER, *Professor of Mathematics*, 1965  
B.A., Kansas Wesleyan University; M.A., Ph.D., The University of Kansas
- HALDEEN BRADY, *Professor of English*, 1946  
B.A., East Texas State Teachers College; M.A., The University of Texas at Austin;  
Ph.D., New York University
- MICHAEL BRAND, *Associate Professor of Economics*, 1958  
B.A., University of Washington; M.A., University of Colorado
- FRED MEZA BREWER, *Assistant Professor of Spanish*, 1955  
B.A., University of New Mexico; M.A., The University of Texas at El Paso
- SAMUEL JOHN BRIENT, JR., *Associate Professor of Physics*, 1962  
B.S., Ph.D., The University of Texas at Austin
- RALPH CLEMENS BRIGGS, *Associate Professor of Music*, 1950  
B.Mus., M.M., Cincinnati Conservatory of Music
- JOHN MORGAN BROADDUS, JR., *Instructor in History*, 1954  
B.A., M.A., The University of Texas at El Paso
- GARY LEE BUCK, *Assistant Professor of Sociology*, 1967  
B.A., M.A., University of Arizona

FACULTY

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- MRS. FLORENCE BUCKNER, *Assistant Professor of Business Administration*, 1947  
 B.A., Sul Ross State College; Certified Public Accountant
- JOSEPH RANDALL BURCHARD, *Associate Professor of Business Administration*, 1967  
 B.A., Maryville College; Ph.D., Chicago University
- WILLIAM ANO BURGETT, *Instructor in Mathematics*, 1958  
 B.S., U. S. Naval Academy; M.S., Purdue University
- ROBERT NORTHCUTT BURLINGAME, *Professor of English*, 1954  
 B.A., M.A., University of New Mexico; Ph.D., Brown University
- RICHARD WEBSTER BURNS, *Professor of Education*, 1952  
 B.A., Iowa State Teachers College; M.S., Ph.D., State University of Iowa
- WILLIAM RALPH CABANESS, JR., *Associate Professor of Chemistry*, 1965  
 B.A., M.A., Ph.D., The University of Texas at Austin
- WILLIAM MCENTYRE CALHOUN, *Instructor in English*, 1961  
 A.B., B.S., Jacksonville State College; M.A., George Peabody College
- LEONARD CARDENAS, JR., *Associate Professor of Political Science*, 1962  
 B.S., M.A., St. Louis University; Ph.D., The University of Texas at Austin
- HUGH FREDERICK CARDON, *Assistant Professor of Music*, 1963  
 B.M., M.A., The University of Texas at El Paso
- THOMAS PELHAM CARTER, *Professor of Education and Sociology*, 1967  
 B.A., The University of California; Ph.D., The University of Texas at Austin
- CLARENCE JOE CERVENKA, *Associate Professor of Engineering Graphics*, 1952  
 B.S., M.Ed., Texas A. & M. University
- MRS. MARJORIE CERVENKA, *Instructor in English*, 1966  
 B.A., M.A., The University of Texas at El Paso
- PETER STANLEY CHRAPLIWY, *Associate Professor of Biology*, 1960  
 A.B., M.A., University of Kansas; Ph.D., University of Illinois
- CHESTER C. CHRISTIAN, JR., *Associate Professor of Modern Languages*, 1963  
 B.A., M.A., The University of Texas at Austin; M.A., The University of Texas at El Paso; Ph.D., The University of Texas at Austin
- MARION CLINE, JR., *Associate Professor of Education*, 1962  
 B.S., University of New Mexico; M.A., New Mexico Highlands University; Ed.D., University of Southern California
- CAROLYN COCHRAN, *Instructor in English*, 1967  
 B.A., Beaver College; M.A., The University of Texas at Austin
- EDMUND BENEDICT COLEMAN, *Professor of Psychology*, 1965  
 B.S., University of South Carolina; M.A., Ph.D., Johns Hopkins University
- RALPH MONROE COLEMAN, *Professor of Engineering Graphics*, 1946  
 B.S., M.S., North Texas State College
- MRS. MARY LILLIAN COLLINGWOOD, *Assistant Professor of English*, 1947  
 B.A., The University of Texas at El Paso; M.A., University of Michigan
- BENNY WESLEY COLLINS, *Associate Professor of Health and Physical Education*, 1950  
 B.A., The University of Texas at El Paso; M.S., University of Utah
- J. ROBERT COLTHARP, *Associate Professor of Civil Engineering*, 1961  
 B.S., M.S., The University of Texas at Austin; Registered Professional Engineer
- MRS. LURLINE HUGHES COLTHARP, *Associate Professor of English*, 1954  
 B.A., M.A., Ph.D., The University of Texas at Austin
- ELLEN WINIFRED COOGLER, *Assistant Professor of Art*, 1944  
 B.S., Sul Ross State College; M.A., Teachers College, Columbia University
- THOMAS I. COOK, *H. Y. Benedict Professor of Political Science*, 1966  
 B.S., London School of Economics; Ph.D., Columbia University
- CLARENCE HENRY COOPER, *Assistant Professor of Physics*, 1959  
 B.S., The University of Texas at El Paso; M.S., Vanderbilt University

FACULTY

- MARY EDITH CORN, *Instructor in English*, 1967  
A.B., Southwestern Missouri State College; A.M., University of Missouri
- MRS. KATHLEEN CRAIGO, *Assistant Professor of Physical Education*, 1945  
B.A., M.A., North Texas State University
- CECIL CLEMENT CRAWFORD, *Emeritus Professor of Philosophy*, 1953  
B.A., M.A., Ph.D., Washington University
- JOHN KELLOGG CREIGHTON, *Assistant Professor of History*, 1966  
B.A., M.A., Ph.D., Colorado University
- RALPH BORDEN CULP, *Professor of Drama and Speech*, 1965  
B.A., M.A., Southern Methodist University; Ph.D., Cornell University
- EVERETT EDWARD DAVIS, *Assistant Professor of Education*, 1965  
B.A., The University of Colorado; M.A., Colorado State Teachers College
- VELMA LOU DAVIS, *Assistant Professor of Education*, 1963  
B.S., New Mexico State University; M.Ed., University of the Philippines
- MRS. LOLA B. DAWKINS, *Associate Professor of Business Administration*, 1965  
B.B.A., The University of Texas at El Paso;  
M.B.A., Ph.D., The University of Texas at Austin
- JAMES FRANCIS DAY, *Professor of Education*, 1955  
B.S., M.S., Utah State University; Ed.D., Stanford University
- JAMES M. DAY, *Associate Professor of English*, 1967  
B.A., M.A., The University of Texas at Austin; Ph.D., Baylor University
- EUGENE ALAN DEAN, *Associate Professor of Physics*, 1958  
B.S., The University of Texas at El Paso; M.S., New Mexico State University
- ALLEN EDWARD DEPACTER, *Associate Professor of Art*, 1967  
B.F.A., M.F.A., Texas Christian University;  
Ph.D., The University of Texas at Austin
- JAMES VINCENT DEVINE, *Assistant Professor of Psychology*, 1967  
B.S., M.S., University of New Mexico
- ROBERT L. DOBBS, *Head Football Coach*, 1964  
B.S., United States Military Academy
- JACK ALLEN DOWDY, *Associate Professor of Mechanical Engineering*, 1964  
A.A., Wharton Jr. College; B.S.M.E., Southern Methodist University;  
M.S.M.E., Oklahoma State University; Ph.D., The University of Texas at Austin
- MRS. MARY ELEANOR DUKE, *Associate Professor of Biology*, 1947  
B.A., The University of Texas at El Paso;  
M.A., Ph.D., The University of Texas at Austin
- PHILIP DURIEZ, *Associate Professor of Economics*, 1962  
B.A., New Mexico Western College; M.A., Baylor University;  
Ph.D., Louisiana State University
- KENNETH SCOTT EDWARDS, *Professor of Mechanical Engineering*, 1965  
B.M.E., Cornell University; M.A.E., Yale University;  
Fulbright Scholar, The University of Paris; Ph.D., Cornell University
- FRANCIS ALAN EHMANN, *Assistant Professor of English*, 1950  
B.A., The University of Texas at El Paso; M.A., Harvard University
- HENRY PHILIP EHRLINGER, *Associate Professor of Metallurgical Engineering*, 1959  
B.S., E.M., University of Wisconsin; Registered Professional Engineer
- EUCENE C. EICHER, *Instructor in Music*, 1963
- OLAV ELLING EIDBO, *Professor of Music*, 1950  
B.A., Concordia College; M.A., The University of Texas at El Paso;  
Ph.D., University of North Dakota
- CURTIS E. EKLUND, *Associate Professor of Biology*, 1966  
B.A., M.A., Ph.D., The University of Texas at Austin

FACULTY

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- ROBERT MORLEY ESCH, *Instructor in English*, 1965  
 B.A., Southern Methodist University; M.A., The University of Wisconsin
- CHARLES LARIMORE ETHERIDGE, SR., *Assistant Professor of Drama and Speech*, 1963  
 B.S., M.A., Sul Ross State College
- RALPH WALDO EWTON, JR., *Assistant Professor of Modern Languages*, 1966  
 B.A., M.A., Ph.D., Rice University
- FLOYD EMMETT FARQUEAR, *Emeritus Professor of Education*, 1942  
 B.S., Miami University; M.A., University of Chicago;  
 Ed.D., The University of Texas at Austin
- JOHN T. FARRARO, *Instructor in Chemistry*, 1964  
 B.S., The University of Texas at El Paso
- PAUL E. FENLON, *Professor of Economics*, 1967  
 B.S., College of the Holy Cross; A.B., University of Illinois;  
 M.A., Ph.D., University of Florida
- WILLIAM HENRY FISHER, *Associate Professor of Education*, 1961  
 B.A., M.Ed., University of Washington; Ed.D., Columbia University
- JOE W. FITZPATRICK, *Assistant Professor of Mathematics*, 1966  
 B.S., Baylor University; M.A., The University of Texas at Austin
- MRS. JANIE R. FLYNT, *Assistant Professor of Business Administration*, 1966  
 B.B.A., The University of Texas at El Paso;  
 M.B.A., Texas Technological College; C.P.A.
- ALONZO NEIL FOSTER, *Professor of Education*, 1951  
 B.S., Southwest Texas State Teachers College; M.A., University of Missouri;  
 Ed.D., Colorado State College of Education.
- REX ELWYN FOX, *Assistant Professor of Mathematics*, 1961  
 B.S., Texas Agricultural and Mechanical University; M.Ed., Southwest Texas State
- DONALD KEITH FREELAND, *Assistant Professor of Business Administration*, 1949  
 B.S., Austin College; M.B.A., North Texas State College
- FRANCIS LEE FUGATE, *Assistant Professor of English*, 1949  
 B.A., B.J., University of Missouri
- WAYNE EDISON FULLER, *Professor of History*, 1955  
 B.A., University of Colorado; M.A., University of Denver;  
 Ph.D., University of California
- RAYMOND EARL FULTON, *Assistant Football Coach*, 1967  
 B.A., Wichita State University
- CLARKE HENDERSON GARNSEY, *Professor of Art*, 1966  
 B.S., M.S., Ph.D., Western Reserve University
- REX ERVIN GERALD, *Assistant Professor of Sociology*, 1958  
 B.A., University of Arizona; M.A., University of Pennsylvania
- WALTER L. GEYER, *Assistant Director of Bands*, 1967  
 B.M., The University of Texas at Austin; M.M., University of Michigan
- GLENN A. GIBSON, *Associate Professor of Electrical Engineering*, 1966  
 B.S.E.E., University of Kansas; M.S.E.E., M.A., Ph.D., Arizona State University
- ARTHUR S. GIFFORD, *Assistant Professor of Business Administration*, 1967  
 B.S., M.B.A., University of Arkansas
- CHARLES HERMAN GLADMAN, *Associate Professor of Mathematics*, 1948  
 B.S., M.A., Ohio State University
- MRS. LYNETTE CLARDON, *Assistant Professor of Health and Physical Education*, 1951  
 B.A., M.A., The University of Texas at El Paso
- BERNARD A. GOLDBERG, *Instructor in English*, 1967  
 B.S., The University of Texas at Austin
- PAUL WERSHUB GOODMAN, *Assistant Professor of Sociology*, 1957  
 B.A., M.S., Syracuse University; Ph.D., University of Colorado

FACULTY

- E. WILLIAM GOURD, JR., *Assistant Professor of Drama and Speech*, 1964  
 B.A., University of Connecticut; M.F.A., Ohio University
- JOSEPH B. GRAVES, *Assistant Professor of Political Science*, 1964  
 B.A., L.L.B., Vanderbilt University; M.P.A., Harvard University
- JERRY A. GRIFFIN, *Instructor in Sociology*, 1967  
 B.A., M.A., Wichita State University
- PAUL E. GROSSER, *Assistant Professor of Political Science*, 1966  
 B.S., Cannon College; M.S., Pennsylvania State University
- JOHN HERBERT HADDOX, *Professor of Philosophy*, 1957  
 B.A., M.A., Ph.D., University of Notre Dame
- JERRY B. HALE, *Assistant Basketball Coach*, 1966  
 B.S., M.S., Oklahoma State University
- MRS. ELEANOR GREET HALL, *Instructor in English*, 1960  
 B.A., M.A., The University of Texas at El Paso
- LAWRENCE S. HAMILTON, *Assistant Professor of Education*, 1967  
 B.A., New Mexico Highlands University; M.A., The University of Texas at El Paso
- JESSE APLEY HANCOCK, *Professor of Chemistry*, 1941  
 B.S., M.S., Gonzaga University; Ph.D., University of Colorado
- JULE ANN HANSEN, *Instructor in Mathematics*, 1961  
 B.S., University of Wisconsin
- DONALD HOWARD HARDIN, *Associate Professor of Health and Physical Education*, 1962  
 B.A., M.A., Iowa State Teachers College; Ph.D., The University of Iowa
- HAROLD F. HARDING, *H. Y. Benedict Professor of Speech*, 1966  
 M.A., Ph.D., Cornell University
- ROBERTA HARKEY, *Instructor in Mathematics*, 1967  
 M.S., University of New Mexico
- WILLIAM HARPER, *Assistant Professor of Military Science*, 1967  
 B.A., Trinity University; Major, U. S. Army
- ARTHUR HORNE HARRIS, *Associate Professor of Biology*, 1965  
 B.A., M.A., Ph.D., University of New Mexico
- WILLIAM HAROLD HARRIS, *Associate Professor of Health and Physical Education*, 1963  
 B.S., M.E., University of Missouri; M.A., Columbia University;  
 Ed.D., University of Kentucky
- WILTZ HARRISON, *Professor of Art*, 1948  
 B.A., The University of Texas at El Paso; M.A., University of Denver
- WADE JAMES HARTTRICK, *Professor of Business Administration*, 1944  
 B.A., Texas Technological College;  
 M.B.A., Ph.D., The University of Texas at Austin
- DONALD LEE HASKINS, *Instructor in Health and P. E., and Head Basketball Coach*, 1961  
 B.S., West Texas State College
- PAUL CLIFFORD HASSLER, JR., *Professor of Civil Engineering*, 1948  
 B.S., Grove City College; M.S., University of New Mexico.  
 Registered Professional Engineer
- LEWIS F. HATCH, *Professor of Chemistry*, 1967  
 B.S., Washington State College; M.S., Ph.D., Purdue University
- LINDA ELIZABETH HAUGHTON, *Assistant Professor of Modern Languages*, 1962  
 B.A., The University of Texas at El Paso; M.A., University of Arizona
- RICHARD EUGENE HENDERSON, *Associate Professor of Music*, 1952  
 B.A., College of Puget Sound; M.M., Florida State University
- WILLIAM GARTH HENDERSON, *Professor of Civil Engineering*, 1965  
 B.S.C.E., M.S.C.E., University of Oklahoma; Ph.D., Oklahoma State University
- MRS. MARY FRANCES BAKER HERNANDEZ, *Assistant Professor of English*, 1967  
 B.S., M.S., Purdue University; M.A., Ph.D., University of New Mexico

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- MRS. JULIA HERRERA, *Instructor in Modern Languages*, 1966  
B.A., The University of Texas at El Paso
- CARL HERTZOG, *Special Lecturer and Director of Texas Western Press*, 1948  
Litt. D., Baylor University
- VIRGIL HICKS, *Professor of Radio and Television*, 1945  
B.A., The University of Texas at El Paso; M.A., University of Southern California
- JOHN MOORE HILLS, *Professor of Geology*, 1967  
B.S., Lafayette College; Ph.D., University of Chicago
- HAROLD L. HILLYER, *Associate Professor of Music*, 1962  
B.M.E., University of Wichita; M.M., University of Southern California
- PHILIP HIMELSTEIN, *Professor of Psychology and Education*, 1965  
B.A., M.A., New York University; Ph.D., The University of Texas at Austin
- JERRY MARTIN HOFFER, *Assistant Professor of Geology*, 1965  
BA., M.A., State University of Iowa; Ph.D., Washington State University
- JOHN ANTHONY HOVEL, JR., *Assistant Professor of Political Science*, 1958  
B.A., M.A., University of Wisconsin
- JERRY D. HUNTER, *Assistant Professor of Biology*, 1966  
M.A., Hardin-Simmons University; M.S., Ph.D., Texas A. & M. University
- LAWRENCE HUNTLEY, *Assistant Professor of Mathematics*, 1964  
B.A., M.A., Kansas State Teachers College
- MRS. ILSE HEDWIG IRWIN, *Instructor in Modern Languages*, 1965  
B.A., Kansas University; M.A., University of Colorado
- PHILIP E. ISETT, *Instructor in History*, 1967  
B.A., M.A., The University of Texas at Austin
- CARL THOMAS JACKSON, *Associate Professor of History*, 1962  
A.B., University of New Mexico; Ph.D., University of California, Los Angeles
- HOWARD M. JACKSON, *Instructor in Geology*, 1963  
B.S., The University of Texas at El Paso
- DILMUS DELANO JAMES, *Assistant Professor of Economics*, 1958  
B.A., M.A., The University of Texas at Austin
- JOSEPH HOPKINS JAMES, *Associate Professor of English*, 1938  
B.A., M.A., University of Alabama
- LOREN GENE JANZEN, *Instructor in Art*, 1967  
B.F.A., M.F.A., Wichita State University
- HALVARD B. JOHNSON, *Instructor in English*, 1964  
B.A., Ohio Wesleyan University; M.A., University of Chicago
- MRS. CLARICE MATTHEWS JONES, *Assistant Professor of Speech*, 1946  
B.S., West Texas State University; M.A., Texas State College for Women
- STEPHEN JUSTICE, *Instructor in English*, 1962  
B.A., M.A., North Texas State University
- YASUHIDE KAWASHIMA, *Instructor in History*, 1966  
LL.B., LL.M., Keio University, Japan;  
B.A., M.A., Ph.D., University of California, Santa Barbara
- DONALD PAUL KEDZIE, *Professor of Metallurgical Engineering*, 1967  
B.S., University of Houston; M.S., Ph.D., University of Wisconsin
- CAROLYN KENNESON, *Instructor in Music*, 1964  
B.M., North Texas State College; M.M., The University of Texas at Austin
- MRS. PAULINE KISKA, *Instructor in English*, 1966  
A.B., Bradley University; M.A., The University of Texas at El Paso
- EDWIN JOHN KNAPP, *Professor of Physics*, 1931  
Ph.B., Ph.D., University of Wisconsin
- GEORGE WILSON KNAPP, *Assistant Football Coach*, 1967  
B.S., University of New Mexico; M.S., Eastern New Mexico University



FACULTY

- OLIVER HOLMES KNIGHT, JR., *Professor of History*, 1967  
 B.A., M.A., University of Oklahoma; Ph.D., University of Wisconsin
- CLARK SHUMWAY KNOWLTON, *Professor of Sociology*, 1962  
 B.A., M.A., Brigham Young University; Ph.D., Vanderbilt University
- DANICE MAE KRESS, *Instructor in Music*, 1967  
 B.M., The University of Texas at El Paso
- ORVILLE CLEON KRUSCHWITZ, *Assistant Professor of Mathematics*, 1956  
 A.B., Ohio Wesleyan University; M.A., George Peabody College
- EUGENE KUZIRIAN, *Instructor in History*, 1967  
 A.B., University of California; M.A., Fresno State College
- WILLIAM R. LACEY, *Assistant Professor of English*, 1966  
 B.S., M.A., Mississippi State College; Ph.D., Louisiana State University
- JOSEPH S. LAMBERT, *Professor of Electrical Engineering*, 1966  
 B.S.E.E., University of Pittsburgh; M.S.E.E., M.S., Physics;  
 Ph.D., University of Michigan
- JACK PORTER LANDRUM, *Assistant Professor of Education*, 1966  
 B.S., Stanford University; M.S., Ed.D., The University of Texas at Austin
- LEON F. LAVOIE, *Professor of Military Science*, 1964  
 B.S., M.A., University of Maryland; M.A., The University of Texas at El Paso;  
 Colonel, U. S. Army
- MRS. GWENDOLYN H. LAWRENCE, *Instructor in Education*, 1967  
 B.S., M.A., The University of Texas at El Paso
- JUAN OTTO LAWSON, *Assistant Professor of Physics*, 1967  
 B.S., Virginia State College; M.S., Ph.D., Howard University
- JOSEPH LEE LEACH, *Professor of English*, 1947  
 B.A., Southern Methodist University; Ph.D., Yale University
- ROBERT C. LEE, *Assistant Football Coach*, 1968  
 B.S., M.S., University of Utah
- ROBERT MILTON LEECH, *Professor of Drama and Speech*, 1949  
 B.F.A., M.F.A., Ph.D., The University of Texas at Austin
- DAVID V. LEMONE, *Associate Professor of Geology*, 1964  
 B.S., New Mexico Institute of Mining and Technology;  
 M.S., University of Arizona; Ph.D., Michigan State University
- EDWARD ALMAND LEONARD, *Assistant Professor of Political Science*, 1965  
 B.A., Oglethorpe University; M.A., Ph.D., Emory University
- LEONARD SIDNEY LEVITT, *Professor of Chemistry*, 1965  
 B.S., Pennsylvania State University; B.A., University of Pennsylvania;  
 M.A., Haverford College; Ph.D., Temple University
- JOHN M. LEVOSKY, *Associate Professor of Mechanical Engineering*, 1967  
 B.S., Lamar State College; M.S., Ph.D., Oklahoma State University
- RALPH A. LIGUORI, *Assistant Professor of Mathematics*, 1963  
 B.S., University of New Mexico; M.A., University of Illinois
- WINSTON DALE LLOYD, *Associate Professor of Chemistry*, 1962  
 B.S., Florida State University; Ph.D., University of Washington
- MRS. MONA H. LOPER, *Assistant Professor of Health and Physical Education*, 1957  
 B.S., Texas Christian University
- EARL M. P. LOVEJOY, *Associate Professor of Geology*, 1965  
 B.S., Rutgers University; M.S., Colorado School of Mines;  
 Ph.D., University of Arizona
- MRS. FRANCES E. LOWRANCE, *Assistant Professor of Education*, 1963  
 A.B., Indiana University; M.Ed., Texas Technological College
- WILLIAM C. LUCKER, *Assistant Professor of Psychology*, 1967  
 B.A., The University of Texas at El Paso

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- WILLIAM NOEL McANULTY, *Professor of Geology*, 1964  
 B.S., M.S., University of Oklahoma; Ph.D., The University of Texas at Austin
- GEORGE COURTNEY McCARTY, *Associate Professor of Health and Physical Education*, 1953. B.S., M.A., New Mexico State University
- ROBERT CLARENCE McDONALD, JR., *Instructor in Mathematics*, 1963  
 B.S., United States Military Academy; M.S., University of Southern California
- JOHN WOOLFORD McFARLAND, *Professor of Education*, 1966  
 B.A., M.A., Ed.D., The University of Texas at Austin
- ROBERT GERALD McINTYRE, *Professor of Mathematics*, 1965  
 B.S., U. S. Naval Academy; Ph.D., University of Oklahoma
- OSCAR HARRY McMAHAN, *Professor of Physics*, 1943  
 B.S., Oklahoma Agricultural and Mechanical College; M.S., University of Arizona
- JOHN HAMILTON McNEELY, *Professor of History*, 1946  
 B.A., American University; M.A., George Washington University;  
 Ph.D., The University of Texas at Austin
- DENNIS FRANCIS MACEK, *Instructor in English*, 1966  
 B.A., Marquette University; M.A., The University of Arizona
- MRS. ELIZABETH CRYMES MANNING, *Assistant Professor of Biology*, 1960  
 B.S., M.A., The University of Texas at Austin
- BERNARD MARTIN-WILLIAMS, *Assistant Professor of Mathematics*, 1967  
 B.A., M.A., Cambridge University
- ROBERT JOSEPH MASSEY, *Professor of Art*, 1953  
 B.A., Oklahoma Agricultural & Mechanical College; M.F.A., Syracuse University;  
 Ph.D., The University of Texas at Austin
- GERALD G. MAXWELL, *Assistant Professor of Mechanical Engineering*, 1966  
 B.S., M.S., The University of Texas at El Paso
- JACK HOUSTON MEADOWS, *Professor of Education*, 1954  
 B.S., M.A., Sam Houston State College; Ed.D., Texas Technological College
- ARTIE LOU METCALF, *Associate Professor of Biology*, 1962  
 B.S., Kansas State University; M.A., Ph.D., University of Kansas
- MRS. JEAN HEININGER MICULKA, *Assistant Professor of Drama and Speech*, 1961  
 B.A., The University of Texas at El Paso; M.A., Northwestern University
- VLADIK ADOLPH MICULKA, *Assistant Professor of Mathematics*, 1955  
 B.S., Southwest Texas State Teachers College; M.S., Texas Technological College
- JOHN JUDY MIDDACH, *Professor of Journalism*, 1948  
 B.J., University of Missouri; M.A., The University of Texas at El Paso
- NACIM D. MILEDI, *Instructor in Chemistry*, 1957  
 B.S., The University of Texas at El Paso
- GEORGE E. MILLER, *Assistant Professor of Education*, 1967  
 B.A., B.S., M.Ed., The University of Texas at El Paso
- GERALD REUBUSH MILLER, *Associate Professor of Psychology*, 1965  
 B.A., Ph.D., Johns Hopkins University
- ROSS MOORE, *Instructor in Physical Education*, 1940  
 B.A., The University of Texas at El Paso
- JAMES KENNETH MORTENSEN, *Assistant Professor of English*, 1966  
 B.A., M.A., University of Minnesota
- MRS. FLORENCE WAYMOUTH MUNN, *Instructor in Education*, 1964  
 B.A., M.A., The University of Texas at Austin
- SAMUEL DALE MYRES, *Professor of Political Science*, 1955  
 B.A., M.A., Southern Methodist University;  
 Ph.D., The University of Texas at Austin; LL.D., Trinity University

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- MRS. ANA MARIA V. DE NAVAR, *Instructor in Modern Languages*, 1965  
 B.S., M.S., Universidad Nacional Autonoma de Mexico;  
 M.A., The University of Texas at El Paso
- WELDON CLINTON NEILL, *Assistant Professor of Economics*, 1966  
 B.A., M.A., The University of Texas at Austin
- CLYDE RUSSELL NICHOLS, *Professor of Electrical Engineering*, 1961  
 B.S.E.E., M.S.E.E., Texas Agricultural and Mechanical University.  
 Registered Professional Engineer
- DAVID ALLEN NUSZ, *Assistant Football Coach*, 1965  
 B.S., University of Maryland
- JAMES E. NYMANN, *Associate Professor of Mathematics*, 1967  
 B.A., State College of Iowa; M.S., Ph.D., University of Arizona
- HONG-SIOE OEY, *Assistant Professor of Civil Engineering*, 1967  
 B.C.E., Bandung Institute of Technology, Indonesia;  
 M.C.E., Ph.D., University of Oklahoma
- DAVID KEVIN O'NEILL, *Assistant Professor of Philosophy*, 1967  
 A.B., Georgetown University; M.A., Ph.D., Yale University
- ALFREDO ORTEGA, *Instructor in Modern Languages*, 1967  
 B.A., M.A., The University of Texas at El Paso
- RAYMOND EDGAR PAST, *Professor of English and Education*, 1952  
 A.B., University of Pennsylvania; M.A., Ph.D., The University of Texas at Austin
- ARRYL S. PAUL, *Instructor in Music*, 1966  
 B.M., Drury College; M.M., Wichita University
- LUIS PEREZ, *Instructor in Journalism*, 1966  
 B.A., The University of Texas at El Paso
- JAMES H. PETERSON, *Assistant Professor of Sociology*, 1967  
 B.A., University of Minnesota; M.A., Texas A & I College;  
 Ph.D., University of Oklahoma
- ROBERT L. PETERSON, *Assistant Professor of Political Science*, 1967  
 B.A., M.A., State University of Iowa; Ph.D., The Pennsylvania State University
- EUGENE OLIVER PORTER, *Professor of History*, 1940  
 B.A., Ohio Wesleyan College; M.A., Ph.D., Ohio State University
- JOHN POTEET, *Assistant Professor of Health and Physical Education*, 1967  
 B.S., M.S., Baylor University
- NADINE HALE PRESTWOOD, *Instructor in Education*, 1966  
 B.A., M.A., M.Ed., The University of Texas at El Paso
- JESUS ROBERTO PROVENCIO, *Instructor in Mathematics*, 1966  
 B.S., The University of Texas at El Paso
- RALPH HARPER PRYOR, *Instructor in Mathematics*, 1961  
 B.S., Michigan State University; M.S., Johns Hopkins University
- CHARLES ALEXANDER PUCKETT, *Professor Emeritus of Education*, 1927  
 B.A., The University of Texas at Austin; M.A., Harvard University
- MRS. JOAN PHELAN QUARM, *Assistant Professor of English*, 1957  
 B.A., Reading University (England); M.A., San Francisco State College
- HOWARD EDMUND QUINN, *Professor Emeritus of Geology*, 1924  
 E.M., M.S., University of Minnesota; Ph.D., Harvard University
- SAMUEL A. RAMIREZ, *Instructor in Biology*, 1966  
 B.A., The University of Texas at El Paso; M.S., Texas Technological College
- JOSEPH MALCHUS RAY, *H. Y. Benedict Professor of Political Science*, 1960  
 B.A., M.A., Ph.D., The University of Texas at Austin
- JAMES BLANCHETTE REEVES, *Professor of Biology*, 1955  
 B.S., M.S., Louisiana State University; Ph.D., The University of Texas at Austin

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- MRS. LOUISE FLETCHER RESLEY, *Assistant Professor of Mathematics*, 1940  
 B.A., The University of Texas at El Paso; M.A., The University of Texas at Austin
- JACOB GEORGE REYNOLDS, *Assistant Professor of Business Administration*, 1962  
 B.S., United States Military Academy; M.B.A., University of North Carolina
- LEO B. REYNOLDS, *Associate Professor of Music*, 1967  
 B.M., Bethany College; B.M., M.M., Yale University
- JOHN MARVIN RICHARDS, *Professor of Economics*, 1962  
 B.A., University of Kansas; M.S., Emporia State College;  
 Ph.D., Louisiana State University
- ROBERT EDWARD RICHESON, JR., *Associate Professor of English*, 1962  
 B.A., M.A., University of Virginia; Ph.D., Boston University
- JOSEPH CHARLES RINTELEN, JR., *Professor of Metallurgical Engineering*, 1949  
 B.S., Brooklyn Polytechnic Institute; M.S., Cornell University;  
 Ph.D., Duke University
- WILLIAM HENRY RIVERA, *Associate Professor of Chemistry*, 1962  
 B.S., Ph.D., University of Louisville
- RAYMOND C. ROBAK, *Assistant Professor of Economics*, 1967  
 B.S., M.S., The University of Texas at Austin
- FERMIN RODRIGUEZ, *Instructor in Modern Languages*, 1965  
 B.A., Colorado State College; M.A., The University of Texas at El Paso
- JULIAN BAKER ROEBUCK, *Professor of Sociology*, 1965  
 B.A., Atlantic Christian College; M.A., Duke University;  
 Ph.D., University of Maryland
- BRUNO J. ROLAK, *Instructor in History*, 1966  
 B.S., M.A., Indiana University
- PATRICK ROMANELL, *H. Y. Benedict Professor of Philosophy*, 1965  
 B.A., Brooklyn College; M.A., Ph.D., Columbia University
- ALBERT CHARLES RONKE, *Instructor in Drama and Speech*, 1966  
 B.A., M.A., Bowling Green State University
- CARL L. ROSEN, *Professor of Education*, 1967  
 B.A., Brooklyn College of City of New York;  
 B.S., M.A., Ph.D., University of Minnesota
- WALTER R. ROSER, *Associate Professor of Metallurgical Engineering*, 1966  
 B.S., The University of Texas at El Paso; M.S., University of California;  
 Ph.D., University of Arizona
- PALMA LYNN ROSS, *Instructor in Mathematics*, 1965  
 B.S., The University of Texas at El Paso; M.S., New Mexico State University
- WILLIAM M. ROSS, *Instructor in Electrical Engineering*, 1966  
 B.S.E.E., The University of Texas at El Paso
- DAVID BERNARD ROZENDAL, *Assistant Professor of Civil Engineering*, 1960  
 B.S., South Dakota School of Mines and Technology; M.S., University of Minnesota
- EDGAR THOMAS RUFF, *Professor of Modern Languages*, 1945  
 B.A., M.A., Northwestern University; Ph.D., The University of Texas at Austin
- WILLIAM MAURICE RUSSELL, *Associate Professor of Modern Languages*, 1964  
 A.B., Birmingham-Southern College; M.A., Ph.D., University of North Carolina
- EDWARD JOHN SANDERS, *Assistant Professor of Business Administration*, 1963  
 B.C.S., Drake University; M.S., Texas College of Arts and Industries; C.P.A.
- SUBBIAH SANKARAN, *Assistant Professor of Philosophy*, 1967  
 B.S., University of Madras (India); M.A., University of Delhi (India);  
 M.A., Washington University
- JOHN PAUL SCARBROUGH, *Associate Professor of Education*, 1964  
 B.A., New Mexico Highlands University; Ed.D., University of New Mexico
- LOUIS C. SCHAEGLER, *Instructor in English*, 1967  
 A.B., Wabash College; A.M., Duke University

FACULTY

- ROBERT LOUIS SCHUMAKER, *Associate Professor of Physics*, 1946  
B.S., The University of Texas at El Paso; M.S., University of Arizona
- MRS. EMMA GUERRA SCRUGGS, *Assistant Professor of Modern Languages*, 1962  
Ph.D., Ed.D., University of Havana (Cuba)
- JOSEPH WALLACE SCRUGGS, *Assistant Professor of Chemistry*, 1946  
B.S., Texas Agricultural and Mechanical University;  
M.A., The University of Texas at Austin
- MRS. HANNAH B. SELIG, *Lecturer in Education*, 1967  
B.S., New Jersey State Teachers College; M.A., Columbia University
- JOHN McCARTY SHARP, *Professor of Modern Languages*, 1949  
B.A., Westminster College; M.A., Ph.D., University of Chicago
- KENNETH BRUCE SHOVER, *Associate Professor of History*, 1962  
B.A., M.A., University of Kansas City; Ph.D., University of California
- J. EDGAR SIMMONS, *Assistant Professor of English*, 1966  
B.S., M.A., Columbia University
- HAROLD SCHULTZ SLUSHER, *Assistant Professor of Physics*, 1957  
B.A., University of Tennessee; M.S., University of Oklahoma
- RAY SMALL, *Professor of English*, 1961  
B.A., West Texas State University; M.A., Ph.D., The University of Texas at Austin
- CHARLES A. SMITH, JR., *Instructor in Modern Languages*, 1966  
B.A., M.A., University of New Mexico
- DONALD J. SMITH, *Assistant Professor of Military Science*, 1967  
B.S., Eastern Kentucky State College; Captain, U. S. Army
- MRS. GRACE KNOX SMITH, *Assistant Professor of English*, 1953  
B.A., M.A., The University of Texas at El Paso
- JACK SMITH, *Associate Professor of Electrical Engineering*, 1964  
B.S., M.S., Ph.D., University of Arizona
- JOSEPH SOMOZA, *Instructor in English*, 1966  
B.A., University of Cincinnati; M.A., Roosevelt University
- CHARLES F. SPRINGSTEAD, *Instructor in English*, 1965  
B.A., Stanford University
- CHARLES LELAND SONNICHSEN, *H. Y. Benedict Professor of English*, 1931  
B.A., University of Minnesota; M.A., Ph.D., Harvard University
- TONY JASON STAFFORD, *Assistant Professor of English*, 1964  
B.A., Wake Forrest College; M.A., The University of Texas at El Paso;  
Ph.D., Louisiana State University
- CHARLES R. STANLEY, *Instructor in Music*, 1966  
B.S., Anderson College; M.S., Southern Baptist Seminary
- MRS. ICLE JEAN STEVENS, *Instructor in Education*, 1966  
B.A., University of Nebraska; M.A., University of Denver
- WOODROW W. STEWART, *Instructor in Military Science*, 1965  
Sergeant Major, U. S. Army
- ELLWYN REED STODDARD, *Associate Professor of Sociology*, 1965  
B.A., Utah State University; M.A., Brigham Young University;  
Ph.D., Michigan State University
- WILLIAM SAMUEL STRAIN, *Professor of Geology*, 1937  
B.S., West Texas State University; M.S., University of Oklahoma;  
Ph.D., The University of Texas at Austin
- MELVIN POTTER STRAUS, *Professor of Political Science*, 1961  
B.S., M.A., Ph.D., University of Illinois
- REX WALLACE STRICKLAND, *Emeritus Professor of History*, 1936  
B.A., Austin College; M.A., Southern Methodist University;  
Ph.D., The University of Texas at Austin

FACULTY

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- CHARLES R. STRONG, *Assistant Professor of Business Administration*, 1967  
B.S., M.S., Oklahoma State University
- MRS. DOROTHY JEAN STROUD, *Instructor in English*, 1965  
B.A., University of Chicago; M.A., University of Missouri
- VESTER D. SWINGLE, *Assistant Professor of Music*, 1967  
B.M., Oklahoma Baptist University; M.M., University of Iowa
- ROBERT LEWIS TAPPAN, *Associate Professor of Modern Languages*, 1954  
B.A., M.A., The University of Texas at El Paso; Ph.D., Tulane University
- HELEN M. TEMPLE, *Assistant Professor of English*, 1967  
B.S., St. Francis College; M.A., University of Notre Dame;  
Ph.D., Fordham University
- LYNN WILLIAM THAYER, *Assistant Professor of Music*, 1959  
B.M., University of Michigan; M.Ed. University of Pittsburgh
- EUGENE McRAE THOMAS, *Emeritus Professor of Metallurgical Engineering*, 1930  
B.S., E.M., The University of Texas at El Paso; M.S., Massachusetts Institute  
of Technology; Registered Professional Engineer
- ENCEBERT A. THORMODSCAARD, *Professor of Music*, 1949  
B.A., Concordia College; M.A., Ed.D., Teachers College, Columbia University
- MRS. EDYTHE LUCILLE THREADCILL, *Instructor in Mathematics*, 1946  
B.A., The University of Texas at El Paso
- WILBERT HELDE TIMMONS, *Professor of History*, 1949  
B.A., Park College; M.A., University of Chicago;  
Ph.D., The University of Texas at Austin
- GEORGE CAMBRIDGE TOMPKINS, *Assistant Professor of Business Administration*, 1958  
B.S., M.S., University of Illinois
- JAMES HENRY TUCKER, *Assistant Professor of Drama and Speech*, 1957  
B.S., University of Alabama; M.F.A., The University of Texas at Austin
- MRS. ELEANORE HERNDON TULLEY, *Assistant Professor of Biology*, 1958  
B.S., New Mexico State University; M.S., Iowa State College
- WAYNE A. VANDENBURG, *Track Coach*, 1966  
B.S., M.S., University of New Mexico
- LEE VAN ZANT, *Assistant Professor of Economics*, 1964  
B.A., Arkansas State Teachers College; Ph.D., The University of Texas at Austin
- MRS. EMILY HOLMES VOWELL, *Instructor in Geology*, 1955  
B.S., The University of Texas at El Paso; M.S., University of Oklahoma
- MRS. MARIE WADDELL, *Assistant Professor of English*, 1954  
B.A., Howard Payne College; M.A., Scarritt College
- HILMAR ERNEST WAGNER, *Assistant Professor of Education*, 1966  
B.S., Texas Technological College; M.S., Sul Ross State College;  
Ed.D., North Texas State University
- CARL WALKER, *Associate Professor of Education*, 1965  
B.A., M.A., University of Missouri; Ed.D., University of New Mexico
- JIMMY REEVES WALKER, *Associate Professor of Health and Physical Education*, 1958  
B.A., M.A., The University of Texas at El Paso; Ed.D., Oklahoma State University
- MRS. ROBERTA WALKER, *Instructor in English*, 1964  
B.A., M.A., The University of Texas at El Paso
- JOHN LEROY WALLER, *Professor Emeritus of History*, 1931  
B.S., University of Oklahoma; M.A., University of Colorado;  
Ph.D., The University of Texas at Austin
- ROBERT GRAVEM WEBB, *Professor of Biology*, 1962  
B.S., M.S., University of Oklahoma; Ph.D., University of Kansas
- WILLIAM FLETCHER WEBB, *Associate Professor of Modern Languages*, 1945  
B.A., M.A., The University of Texas at Austin

- JOHN OLIVER WEST, *Professor of English*, 1963  
B.A., Mississippi College; M.A., Texas Technological College;  
Ph.D., The University of Texas at Austin
- JOHN AUBREY WHITACRE, JR., *Associate Professor of Mechanical Engineering*, 1959  
B.S., M.S., Texas Agricultural and Mechanical University.  
Registered Professional Engineer
- JON MANCHIP WHITE, *Associate Professor of English*, 1967  
B.A., Saint Catherine's College (England);  
M.A., University of Cambridge (England)
- RANDOLPH HOWARD WHITWORTH, *Associate Professor of Psychology*, 1960  
B.S., Ph.D., The University of Texas at Austin
- JESSE R. WILBORN, *Instructor in Military Science*, 1967  
Master Sergeant, U. S. Army
- DOWELL H. WILLIAMS, *Assistant Professor of Education*, 1967  
B.B.A., University of Texas at Austin; M.A., New Mexico State University
- JOHN SIMEON WILLIAMS, *Associate Professor of Biology*, 1961  
B.S., Texas Agricultural and Mechanical University;  
M.A., University of Missouri; Ph.D., University of Nebraska
- THEODORE OTTO WINDT, *Associate Professor of Drama and Speech*, 1965  
B.S., Texas Lutheran College; M.A., Bowling Green State University;  
Ph.D., Ohio State University
- GIFFORD WENDEL WINGATE, *Professor of Drama and Speech*, 1964  
B.A., M.A., New York State College for Teachers; Ph.D., Cornell University
- JAMES WILLIAM WHALEN, *Professor of Chemistry*, 1968  
A.B., M.S., Ph.D., University of Oklahoma
- CLYDE JOYE WINGFIELD, *Professor of Political Science*, 1964  
B.S., M.S., East Texas State University; Ph.D., Syracuse University
- JAMES ALLEN WOOD, *Assistant Professor of Drama and Speech*, 1966  
M.A., Willamette University; Ph.D., Cornell University
- CALVIN E. WOODS, *Professor of Civil Engineering*, 1964  
B.S.C.E., University of Houston; M.S.C.E., University of Colorado;  
Ph.D., The University of Texas at Austin; Registered Professional Engineer
- JANET YERBY, *Instructor in Drama and Speech*, 1966  
B.A., The University of Texas at El Paso; M.A., Bowling Green State University
- PHILIP WAYNE YOUNG, *Associate Professor of Civil Engineering*, 1957  
B.S.C.E., The University of Texas at El Paso; M.E.S.E., Texas Agricultural  
and Mechanical University. Registered Professional Engineer





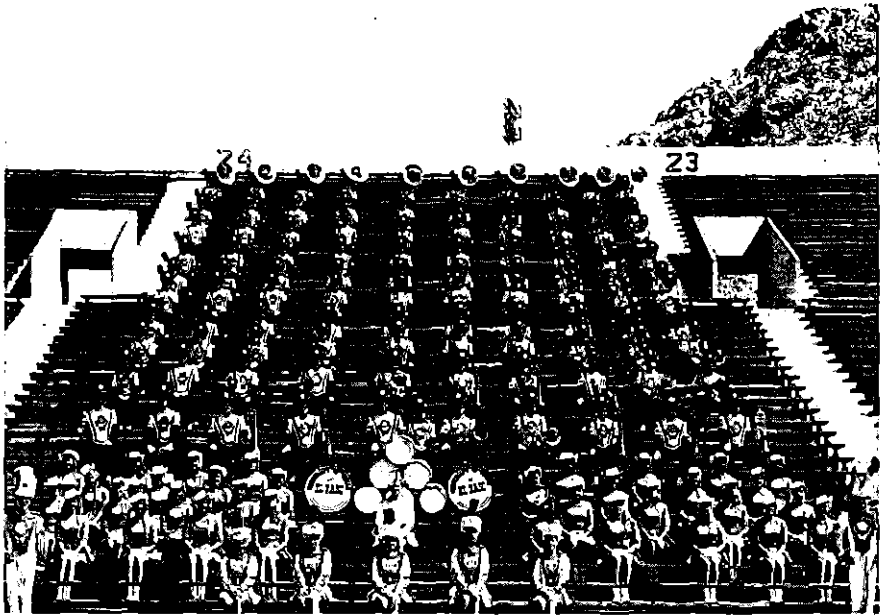


## PURPOSE OF THE INSTITUTION

Through teaching, research and public service, THE UNIVERSITY OF TEXAS AT EL PASO seeks to equip men and women for the professions and for constructive living, and to offer them the opportunity to explore various fields of knowledge freely in an atmosphere of respect for the rights and responsibilities of scholarship and citizenship. It endeavors, through the tools of learning, to develop breadth of mind, tolerance of spirit, and strength of character.

## A UNIQUE INSTITUTION

The University of Texas at El Paso differs in many ways from other collegiate institutions and offers experiences and opportunities which cannot be duplicated elsewhere. Its unusual Bhutanese architecture and its setting in the rough and rocky foothills of a southern spur of the Rockies give the campus a special feeling. Even more important is its location just across the Río Grande from Juárez, Mexico. The two towns, the largest on the Mexican border, have a combined population of well over three-



quarters of a million. Spanish is almost as familiar to El Pasoans as English, and the grace and charm of Latin ways add flavor to life on the north bank. Mexican food, Mexican music and art, Mexican artifacts, all add zest and color to the pattern of living. At the same time Mexican life is profoundly influenced by the proximity of the Anglo metropolis. More than any other city in the United States El Paso is an international community and its people have an unparalleled opportunity to participate in the life of two nations.

Perhaps because of their remoteness from other large cities, El Paso and Juárez have evolved a way of life, pleasantly tinged with the folkways of long ago, which sets them apart from other cities. The Mexican national holidays interest Americans and Latins alike. At Christmas and New Years *luminarias* outline houses and walks. *Chile con queso* and other Mexican delicacies are served at all parties. Mexican folk dances and the music of *típica* orchestras are standard items of entertainment. Historical societies in both cities keep alive the knowledge of bygone times.

Conscious of its special opportunities, the University has reached into Latin America, sending staff members to the north-Mexican universities and to Colombia and Venezuela, bringing students from these areas to the El Paso campus. Significant strides are being made in setting up programs to prepare teachers of Spanish-speaking students and to improve the quality of instruction in both countries.

The El Paso Valley is a historic place. Relics of prehistoric Indian cultures are plentiful in the region. Spaniards visited the Pass as early as 1571

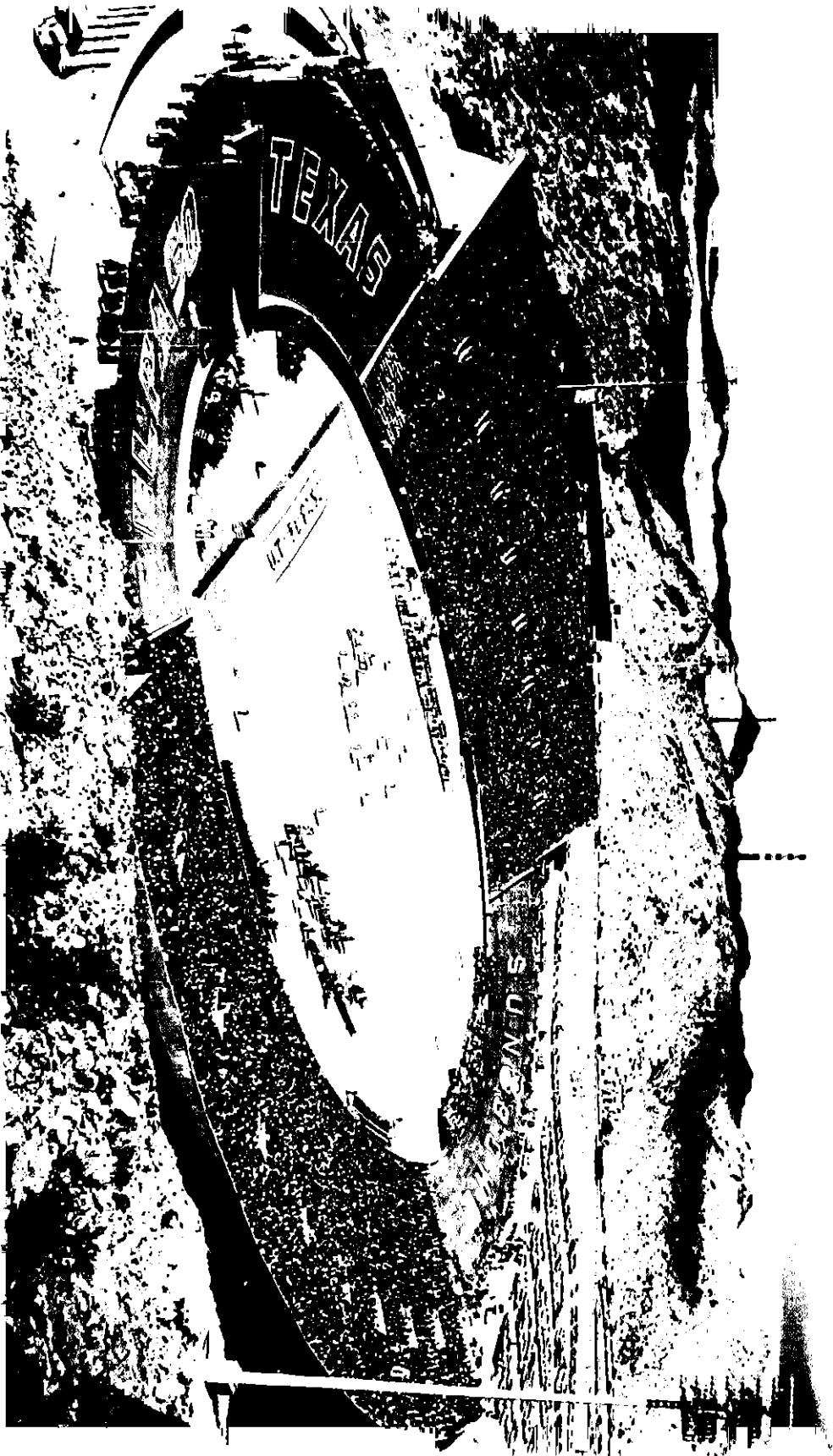
and the *Camino Real* – the Royal Road of Spain from Mexico City to Santa Fe – traversed the area after 1598, the year of the first colonizing expedition. The first settlement by Europeans on the Mexican side was made in the 1650's. A century and more ago Anglo trappers and traders came to the old Spanish town and brought it to the attention of the English-speaking world.

Important events occurred here during the Mexican and Civil Wars, but El Paso actually came into its own with the advent of the railroads in 1881. Thereafter it was known in lands far away as a wide-open frontier community with its full quota of gamblers, girls, and gunmen. After 1900 the citizens organized to make their city a clean and decent place and to transform it into a center of commerce, industry, and growing cultural maturity.

Their descendants are proud today of their Art Museum, housing a portion of the great Kress Collection, of their symphony orchestra, their theatre guilds, artists' and writers' societies, concert organizations, and study groups. At the same time the National Frontier Program in Juárez is transforming the cultural climate on the other side of the International Boundary. The Chamizal settlement is improving immensely the appearance of the border area and is promoting international good will as well.

The University itself sponsors a University-Community Opera Guild and a ballet group which offers two major productions each year in addition to its work with the opera presentations. A chamber-music society, a concert





band, and recitals of all kinds are organized for campus presentation, along with lectures and symposia by local and visiting specialists.

Science plays its part along with the creative arts on and off the campus. The largest guided-missile school in the world now occupies the old cavalry post at Fort Bliss and a vast complex of training facilities and firing ranges stretches northward for 200 miles from El Paso, attracting some of the world's finest scientific minds. A cooperative Student Trainee Program is currently in operation at White Sands Missile Range and trainees at the Missile School are fitting into the graduate program of the University. The Schellenger Research Laboratories handle important government research contracts involving many millions of dollars.

No school in the country is more fortunately located for training in business, industry, and sciences. There is much to attract the geologist, the paleontologist, the ethnologist, and the archaeologist. A large custom smelter, a modern electrolytic copper refinery, a cement plant, three oil refineries, and several brick plants are in operation near the University, along with manufactories of lime, tile, and other non-metallics, and plants for cotton processing, textile manufacturing, and the packing of meat and vegetables.

## THE SCHOOL AND ITS BACKGROUND

The need for technically trained students was responsible for the founding of The University of Texas at El Paso. The Texas Legislature created it in 1913 as the Texas School of Mines and Metallurgy and placed it under control of the Board of Regents of The University of Texas. The City of El Paso furnished a campus and classrooms — formerly the home of the El Paso Military Institute — and the school functioned there from September, 1914, until the buildings were destroyed by fire in 1916. A new campus, with buildings designed in Bhutanese style, was laid out in the present picturesque location when the Legislature appropriated \$100,000 for buildings. In 1919 the School of Mines became a branch of The University of Texas. In 1927 Arts courses were added to the curriculum. In 1931 the Texas College of Mines and Metallurgy began operating under its own president. In 1940 the Master of Arts degree was approved. And in 1949 the name was changed to Texas Western College in recognition of the steady broadening and deepening of the college program. In 1966 the Board of Regents authorized the use of "The University of Texas at El Paso" as the institution's primary name. The name became official in March, 1967.

The institution now offers thirteen degrees, a range of courses from Art to Zoology, a full program of intramural and intercollegiate athletics, a wide assortment of student activities, plus library, laboratory, classroom, and recreational facilities to go with them.



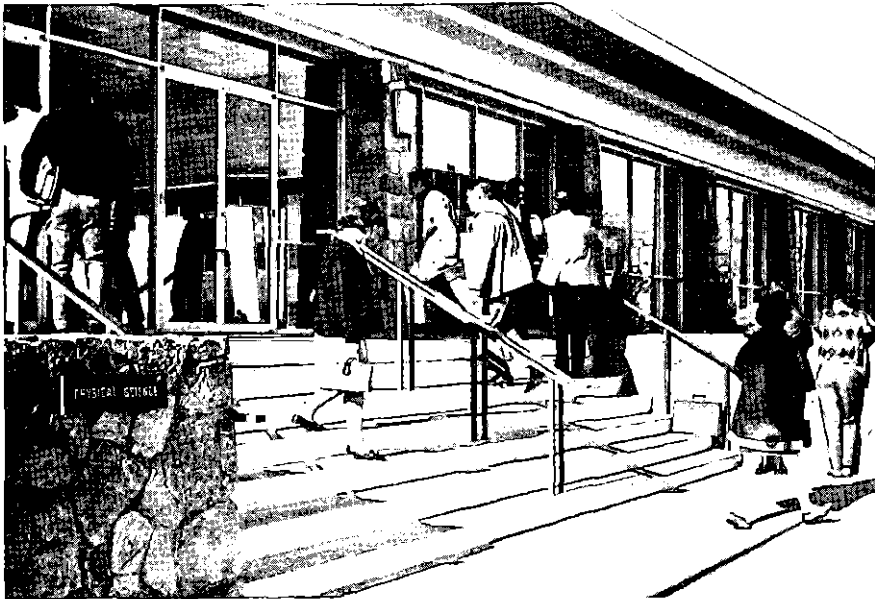
## HOW TO ENTER THE UNIVERSITY OF TEXAS AT EL PASO

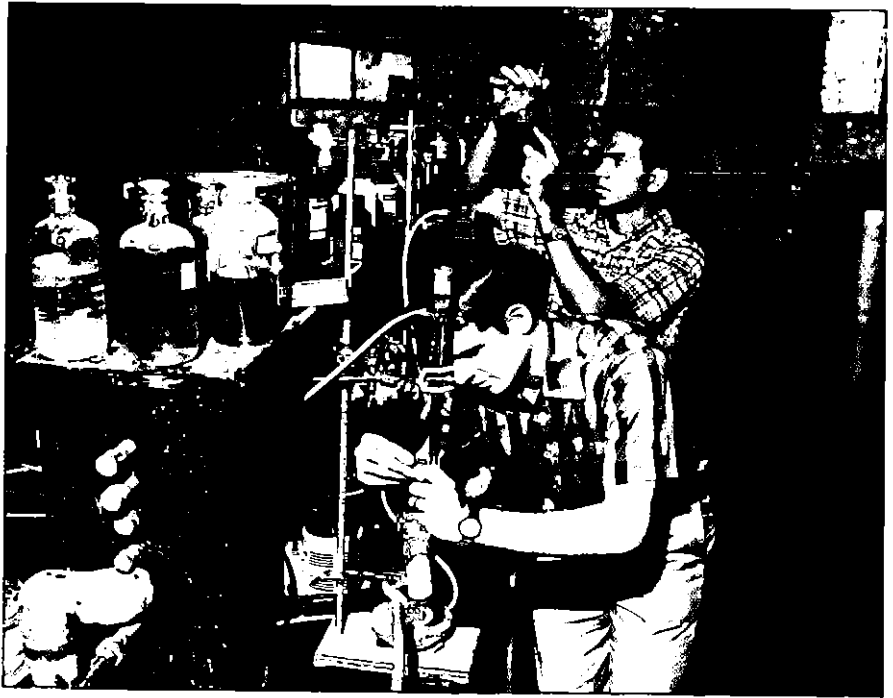
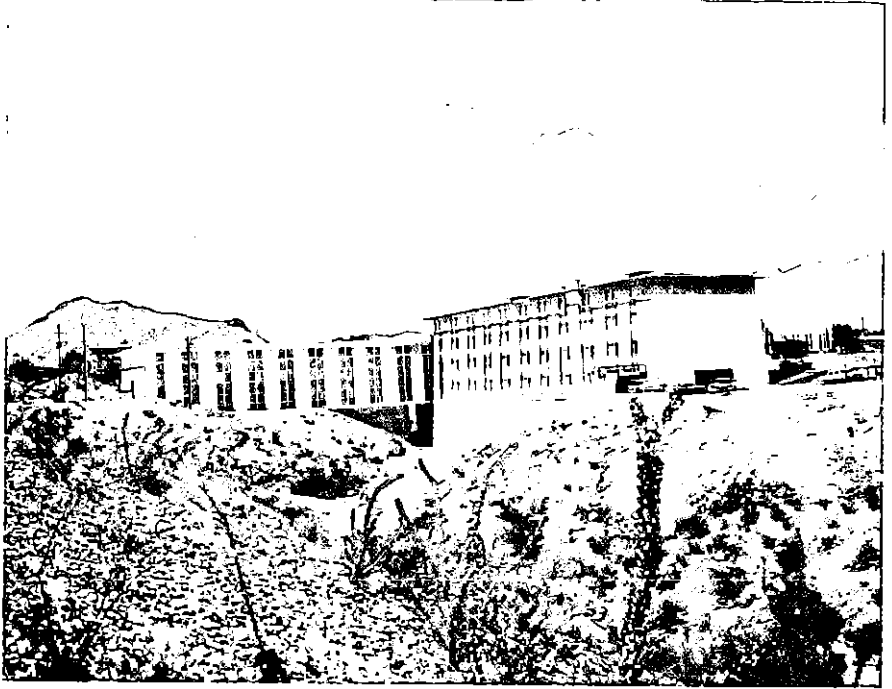
You may enter The University of Texas at El Paso if you are a person of good moral character with sixteen acceptable units from an accredited high school and with minimum test scores as outlined in the section on admission requirements. If you are a mature adult it may be possible to qualify for admission under the Individual Approval program, even though you do not have a high school diploma. You may also enter as a transfer from another college. Admission requirements, including procedures for foreign students, are explained in greater detail later in this bulletin.

If you are a freshman, write the Registrar, The University of Texas at El Paso, for an application form and ask your high-school principal to mail the Registrar a complete transcript of your high-school work. If you are a transfer student, be sure a complete transcript is sent from the college you attended last.

Beginning students must submit scores for the College Entrance Examination Board Scholastic Aptitude Test. You can learn from your high-school principal when the examinations will be given. A physical examination is required of all full-time students. The Registrar will provide blanks for you to take to your doctor.

When you receive your application form for admission, fill it out and mail it to the Registrar. If you meet the entrance requirements, he will send you a notice of acceptance.







All students whose homes are not in El Paso are required to live in dormitories on the campus as long as rooms are available. To reserve a place, send a twenty-five dollar deposit to the Housing Office at the University.

Your teachers and the staff of the University will make every effort to help you plan your work and get you off to a good start, beginning with the Freshman Guidance and Orientation Activities, which you are required to attend if you are a beginning freshman or a transfer student with less than 30 semester hours. Assemblies and personal conferences will be arranged to acquaint you with the campus and its activities.



### *Endowments, Services, Activities*



THE LIBRARY is the heart of the University. It contains a rapidly expanding collection of books, periodicals, microfilms, records, and documents. Over 250,000 volumes are housed in its stacks. It regularly receives over 2,100 periodicals and about twenty-three newspapers. Microfilm files include a complete run of the El Paso *Herald-Post* and *Times*, The New York *Times*, The London *Times* and other important papers; the Juárez and Parral Archives, and other valuable local and regional documents.

The nucleus of the rare-book collection has been provided by Dr. John H. McNeely, a member of the History faculty whose special interest is in



Mexico and the Southwest. The collection named for him has been augmented by gifts from other friends of the University. Commonwealth Foundation has made contributions for the purchase of research materials in the Liberal Arts, and further acquisitions have come from the University Excellence Fund.

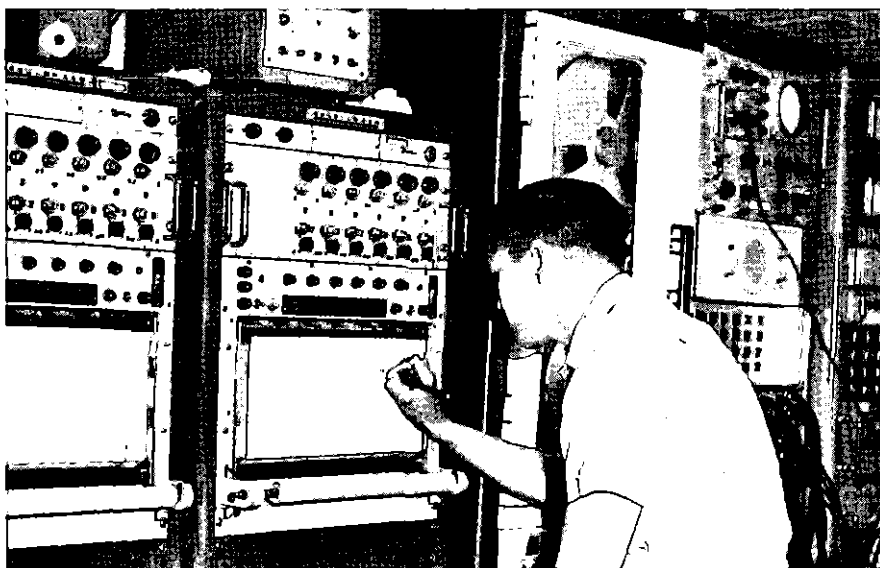
Inter-library loan arrangements are in effect with other university and state libraries and with the Library of Congress. The institution holds a membership in the Bibliographical Center for Research in Denver.

An extensive addition to the Library and remodeling of the entire facility have increased its capacity and effectiveness enormously.

**THE SCHELLENGER RESEARCH LABORATORIES (SRL)**, created in 1953 under the will of Mrs. Emma L. Schellenger as a memorial to her husband, Newton C. Schellenger, is intended to promote and encourage research in electricity. The original laboratory has expanded into eight research and development centers on the campus: The Electronic Research Center, Data Analysis Center, Environmental Test Center, Acoustic Research Center, Optical and Mechanical Test Center, Special Projects Center, Data Recording Center, and Thin Films Center.

More than 125 faculty and staff members and students work part or full time in the Laboratories. Employment with SRL provides students with both financial support and valuable technical training, in many cases continuing on through the Master's degree program.

SRL scientists have investigated virtually every aspect of every parameter of the atmosphere from the earth's surface through the high atmos-



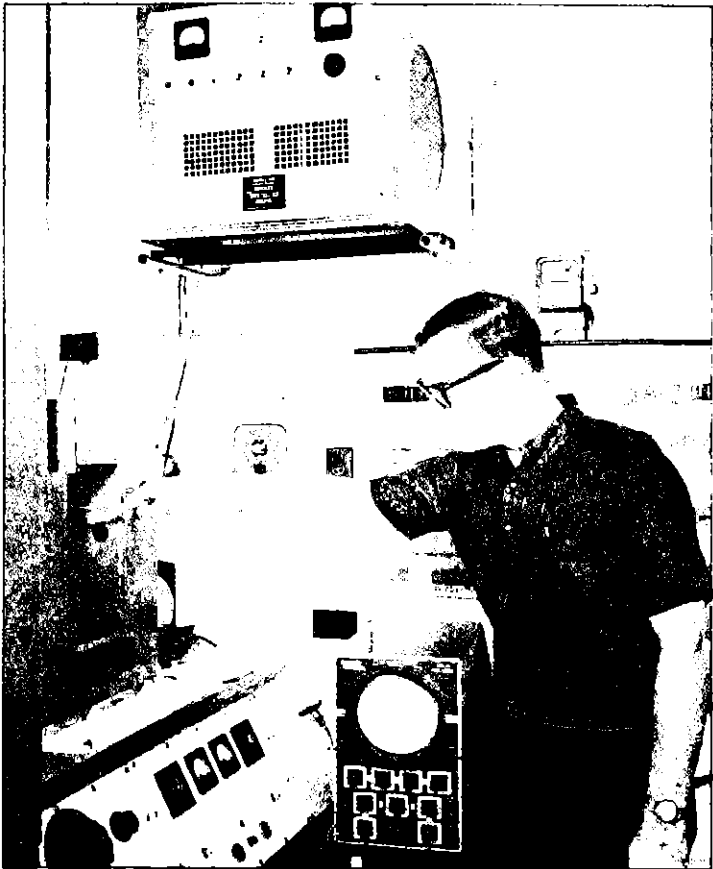
phere, and have developed a variety of specialized instruments for measuring and testing these parameters; some of these instruments are being considered for patents. Studies in the life sciences have included cardiac, dental, and orthopedic research. SRL personnel have journeyed to Antarctica, Hawaii, Puerto Rico, and all over the continental United States for research purposes.

SRL is open to proposals in various fields of the physical sciences, engineering, mathematics, the life sciences, and allied areas, and is able to offer administrative and technical support to all areas of research at The University of Texas at El Paso.

THE EL PASO CENTENNIAL MUSEUM was erected in 1936 with funds allocated by the Commission of Control for the Texas Centennial Celebration. It is devoted to the preservation, documentation, and exhibition of objects and ideas pertaining to the human and natural history of the El Paso del Norte region. Collections include pottery, stone tools, and shell jewelry from the prehistoric ruins of Casas Grandes, Chihuahua; mineral and rock specimens from regional and extra-regional mines; dinosaur bones from the Big Bend; fossil remains from local Ice Age deposits.

In 1959 the first Mexican Archaeological Research Project was initiated by Museum personnel and search has gone forward since for Indian and Spanish sites known to have been occupied in early historic times. An exciting result of these researches, supervised by Director Rex E. Gerald, was the identification in the field of the original location of the Spanish garrison which was later moved to San Elizario, Texas.





In 1967 Museum archaeologists participated in the Expedition to the Sacred Well of the Maya at Chichen, Itza, Yucatan, where underwater excavations uncovered bones of sacrificial victims, and gold, jade, copper, wood, and textile ornaments which accompanied the offerings to the Rain God in the Well.

In order to present information about the present as well as the past the Museum has constructed a small planetarium in which lectures are given by arrangement. Special exhibits and lectures may be prepared upon request to the Director.

THE JOHN W. KIDD MEMORIAL SEISMIC OBSERVATORY is in continuous year-round operation. The station is equipped with a Benioff vertical seismograph and two Benioff horizontal seismographs with complete component recorders for study of both short-period and long-period seismic waves. The records are used for research studies of earthquakes and related phenomena.

THE COUNSELING SERVICE, directed by Mr. J. D. Bowles, offers a complete program in aptitude testing and vocational counseling. It is available to students who wish to understand their personal problems and plan for their life work. Special tests such as the Graduate Record Examination are administered by the Counseling Service.

THE EXTENSION SERVICE OF THE UNIVERSITY OF TEXAS AT EL PASO presents short courses or programs to answer community needs for training outside the regular channels of instruction. Although college credit is not granted for extension work, certificates from the University are presented to those who complete the courses.

THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH was set up on the campus in September, 1963, with Dr. John M. Richards in charge. Its object is to maintain a continuous survey of the El Paso economy, to conduct and supervise special studies of interest to the University and the community, and to build up a repository of statistical and analytical information. A monthly report is issued and special papers based on economic research are published from time to time.

BUREAU OF PUBLIC AFFAIRS undertakes organized research both basic and applied concerning public administration and other public affairs interests. The Bureau also performs routine reporting, advising and consulting activities in response to state and local government needs in the southwest. Where special circumstances warrant the Bureau may contract with local, state and federal governmental agencies to perform problem



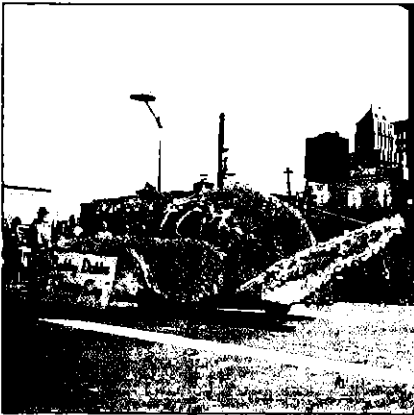
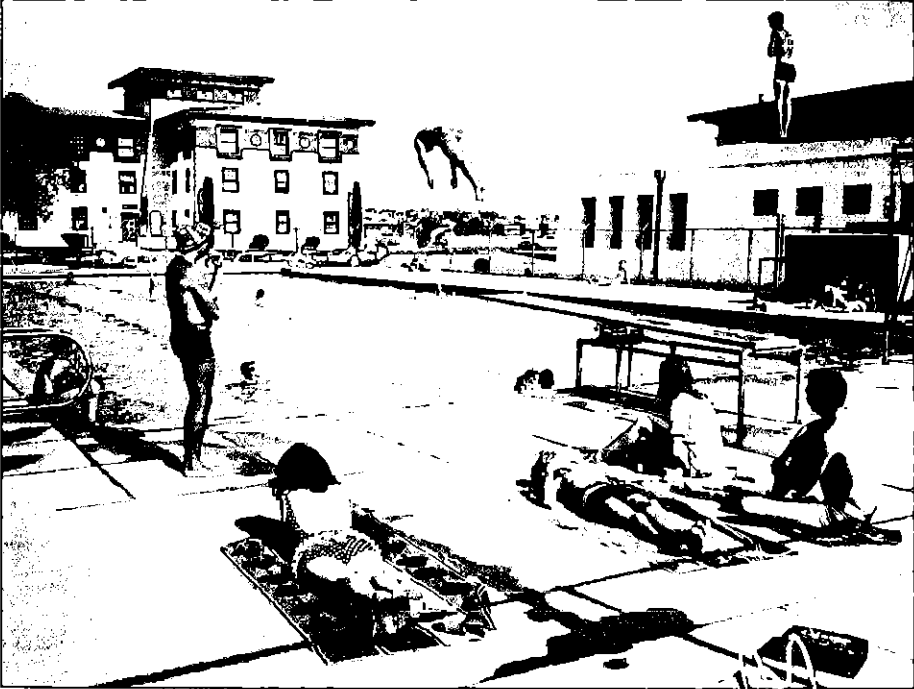
solving research and provide appropriate consulting services. Non credit public service training for public officials is from time to time offered by the Bureau staff.

THE TEXAS WESTERN PRESS, with Dr. S. D. Myres as editor and Carl Hertzog as designer and typographer, publishes books and monographs of regional and general interest. A series of Southwestern Studies, issued quarterly, is under way, and manuscripts dealing with the Border region and Mexico, written by faculty members and others, are considered for publication by the Publications Board.

THE VETERANS ADMINISTRATION has approved The University of Texas at El Paso as a training center for those eligible for veterans' benefits. *Questions about admission, credit, and programs of study should be addressed to the Registrar.*

FOREIGN STUDENTS should contact the Registrar for information about their special problems. The Foreign Student Advisor will be available for counseling on all phases of University life after the student's arrival on the campus.







STUDENT SERVICES, in The Union, include a book store, snack bar, meeting rooms, and recreational facilities.

Plays, lectures, and musical performances are presented in Magoffin Auditorium — an air-conditioned building with big-theater stage facilities and modern sound equipment seating 1,600.

Housing for out-of-town students is provided by six modern and conveniently located dormitories with a capacity of 450 students. Hawthorne House, a private residence hall for men and women, is adjacent to the campus and under University supervision. Meals are served in the dining hall between the two women's dormitories.

Sixty apartments for married students were completed and occupied in the summer of 1963.

Athletic events are held in the Memorial Gymnasium and in the 30,000-seat Sun Bowl.

STATION KVOF-FM (frequency-modulation radio) and KVOF (closed-circuit television) are owned by the University and staffed entirely by students. KVOF-FM provides daily broadcasting service to city and county schools and to listeners resident on the campus. Remote broadcasting lines for relaying University programs are maintained to El Paso's commercial stations.

The *Television Center* is one of the most complete educational plants in the country. Using two RCA I. O. studio cameras, a vidicon film chain and videotape, students write, direct and produce their own programs as part of their course work.





## *Endowments & Memorial Funds*



The University of Texas at El Paso is indebted to the generosity of private citizens for many fine endowments. These permanent funds, invested under trusteeship of The University of Texas Board of Regents, provide scholarships, purchase library books, underwrite important research, and in many ways enrich the educational experience. The University makes grateful acknowledgement for the following permanent funds.

**GRACE ANN BEAL PERMANENT MEMORIAL FUND** – Established in memory of Grace Ann Beal by her sister, Miss Virginia Beal, and by friends. The income from this fund provides scholarship aid to pre-medical students and to students of nursing.

**C. D. BELDING PERMANENT MEMORIAL FUND** – Founded by Mrs. C. D. Belding in memory of her late husband, this fund's income provides scholarships for students majoring in Physical Education.

**FRANK B. COTTON ESTATE FUND** – Founded by trustees of the estate of Frank B. Cotton, a Massachusetts manufacturer and West Texas real estate investor, the estate's income has provided the University with the Cotton Memorial Building, has afforded scholarship aid to students, and continues to contribute vitally to the excellence program.

**DELTA KAPPA GAMMA – YVETTE C. ROSENTHAL PERMANENT ENDOWMENT** – This endowment, established by the Delta Kappa Gamma Society in honor of a past president, provides scholarship assistance to teachers who are pursuing advanced degrees in Education.

**FESSINGER MEMORIAL LECTURE FUND** – Created by Mr. and Mrs. Moses D. Springer in memory of Mrs. Springer's parents, Reuben and Leona Fessinger, this fund will be used to bring nationally recognized lecturers in Chemistry to The University of Texas at El Paso.

**ROBERT L. GOFF LECTURE FUND** – Established by a bequest of the late Robert L. Goff, a prominent El Paso businessman, the lecture fund is used to underwrite bringing distinguished lecturers and consultants to the institution.

**DAVIS AND BERTHA GREEN PERMANENT ENDOWMENT** – The gift of Davis and Bertha Green, this endowment provides scholarships for students majoring in the Sciences.

**PERCIVAL HENDERSON PERMANENT ENDOWMENT** – The income from the personal bequest of Percival Henderson provides scholarships for students of Engineering.

**LUCY CLAIRE HOARD PERMANENT MEMORIAL FUND** – This fund, established by Kappa Chapter, Delta Kappa Gamma, affords scholarship aid to a woman student majoring in Education.

**LEASURE MEMORIAL LIBRARY FUND** – A tribute to the late James L. Leasure (1952), an alumnus of the University and to his father, L. Vere Leasure who was a member of the original (1916) graduating class of the Texas State School of Mines and Metallurgy, this endowment fund is used to buy books for the University library.

**ELIZABETH CRAM POLK MEMORIAL ENDOWMENT** – Established in memory of the wife of University Librarian Baxter Polk, this endowment is used to purchase books for the library. Mrs. Polk died in 1966.

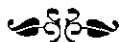
**LLOYD A. NELSON MEMORIAL PROFESSORSHIP IN GEOLOGY** – Friends and associates of the late Dr. Lloyd A. Nelson, a distinguished alumnus and a member of the faculty from 1920 to 1964, are establishing a professorship in his honor. The professorship will require an endowment of \$100,000.

**GORDON PONDER PERMANENT MEMORIAL FUND** – This fund was established by Mr. and Mrs. Jack Ponder in memory of their son, who died while a student at The University of Texas at El Paso. Its income will be used to purchase books for the University Library.

**J. M. ROTH PERMANENT MEMORIAL FUND** – Established by the J. M. Roth Society of The University of Texas at El Paso with contributions from the late educator's friends, this fund memorializes a former chairman of the Department of Philosophy and Psychology. Its income provides scholarships to students of Philosophy and Psychology.

**THE WILLIAM L. STALEY GRANT FOR RESEARCH INTO THE LIFE SUBSTANCE**, a bequest from the late William L. Staley, is administered by Dr. E. W. Rheinheimer and used to support research sponsored by the Schellenger Research Laboratories.

**LUCILLE T. STEVENS ESTATE FUND** – Established by the bequest of Mrs. Lucille T. Stevens, this estate provides income for the University's most valuable scholarship awards. The Stevens Scholarships, in a maximum amount of \$5,000, are directed only to male students with outstanding academic records.



Admission to the University is controlled by the Faculty and administered by the Registrar and Director of Admissions. Information about registration procedures will be posted in the Administration Building several days before registration, and published in the local newspapers.

**Registration Dates:** Students are admitted four times during the year: September, January, June, and July. (See "Calendar" at front of this catalog.) Applications and transcripts should be submitted early to insure acceptance and to avoid delay in registration.

**Student Responsibility:** It is the responsibility of each student to know if he is eligible to enroll. If it is later determined that an ineligible student has enrolled, he will be dropped immediately.

A student who is in doubt about his status should consult his academic dean.

**Co-Education:** Both sexes are admitted to all branches of the University on equal terms regardless of race.

**Character:** The University is open only to applicants of good moral character.

**Health:** Each new full-time student shall furnish a physical examination certificate before his registration can be completed. The form may be obtained from the Admissions Office.

**Hazing Pledge:** By Act of the Texas Legislature, each applicant is required to sign a pledge that he will not "encourage nor participate in hazing or rushes."

**Late Registration:** Any student registering in an undergraduate division who, in the fall or spring semester, with proper permission, registers after the appointed days for registering in that semester, will be required to pay a special charge of five dollars to defray the cost of the extra services required to effect his late registration. Each class missed because of late registration will be counted as an absence, and classroom and laboratory work missed will be counted as zero unless the individual instructor grants the student permission to make up the work.

*Warning:* Due to class load limits, closed classes, and other factors, late registrants may expect some delay and difficulty in getting satisfactory programs. After classes have begun, the student will be asked to enroll for a reduced program, depending on the lateness of his registration.

### PROCEDURE FOR FOREIGN STUDENTS

In addition to the requirements for admission on the following page, all foreign student applicants are required to take the TOEFL (Test of English as a Foreign Language) examination which is given throughout the world. Exceptions to this requirement may be made by the Director of Admissions. For foreign students whose native language is not English, this test in English proficiency is in lieu of the Scholastic Aptitude Test and should be taken in time to allow the results to be sent to the Director of Admissions by June 15 prior to the following September registration. For information concerning the time and place where the examination will be given, the applicant should write to:

TEST OF ENGLISH AS A FOREIGN LANGUAGE  
 Educational Testing Service  
 Princeton, New Jersey, U. S. A. 08540

The University of Texas at El Paso requires all entering foreign students to have adequate hospitalization coverage upon enrolling or to subscribe to the available insurance program during registration.

*There are three ways to qualify:*

1. High School Graduation.    2. Individual Approval.    3. Transfer from Other Colleges.

**1. HIGH SCHOOL GRADUATION**

A graduate from an accredited high school with sixteen acceptable units as outlined in the following patterns, who has shown an aptitude for college studies through the College Entrance Examination Board Scholastic Aptitude Test, will be granted clear admission. For persons graduated from high school in May 1963 or thereafter, the minimum score on the Scholastic Aptitude Test is a combined score of 700 if the student is in the upper half of his graduating class, and a combined score of 800 if the student is in the lower half of his graduating class.

A student who fails to qualify for admission due to test scores may be enrolled as a provisional student. Provisional status entitles the student to one summer session or one spring semester of trial, at the end of which provisional status must be removed. To be removed from provisional status, the student must either:

- (a) earn not less than nine semester credit hours in a summer session with an average grade of "C" in all courses taken; courses selected to satisfy this requirement must have the approval of the student's academic dean.

No provisional student shall be initially admitted in the second summer term.

or

- (b) earn not less than twelve semester credit hours in a spring semester with an average grade of "C" in all courses taken; courses selected to satisfy this requirement must have the approval of the student's academic dean.

**Schools of Business, Education  
Liberal Arts, and Sciences**

a. English . . . . .	3
b. Mathematics . . . . .	2
c. Natural Science . . . . .	2
d. Social Studies . . . . .	2
e. Foreign Language or additional Natural Science or Social Studies . . . . .	2
f. Electives . . . . .	5
Total . . . . .	16

**School of Engineering**

a. English . . . . .	3
b. Algebra . . . . .	2
Geometry . . . . .	1
Trigonometry . . . . .	½
c. Natural Science . . . . .	2
d. Social Studies . . . . .	2
e. Foreign Language or additional Natural Science or Social Studies . . . . .	2
f. Electives . . . . .	3½
Total . . . . .	16

**CONDITIONAL ADMISSION**

A student may not enter the School of Engineering with a condition in any subject or group.

Special consideration will be given an applicant in the Schools of Business, Education, Liberal Arts, and Sciences who has a strong high school record.

High school credit conditions will be removed without penalty if the student makes an average grade of "C" in his first thirty semester hours of work completed in the University. Otherwise, conditions must be removed by using college credit, on the basis of two semester hours college credit for one-half unit high school deficiency, and three semester hours for one unit deficiency.

**2. INDIVIDUAL APPROVAL METHOD**

An applicant, twenty-one years of age or older, who does not have a high school diploma, may, at the discretion of the Registrar and with concurrence of the appropriate academic Dean, be admitted on

Conditional status on furnishing an average standard score of 45 or above on the five sections of the General Educational Development Test.

To remove Conditional status the stu-

## ADMISSION AND REGISTRATION

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dent must earn a "C" average in the first fifteen semester hours attempted. Under exceptional circumstances an applicant nineteen years of age or older may be

admitted, with the approval of the Registrar and concurrence of the appropriate academic Dean, if he meets the above requirements.

### 3. TRANSFER FROM OTHER COLLEGES OR UNIVERSITIES

*Eligibility* — Qualified applicants with honorable dismissal from other colleges and universities will be admitted to The University of Texas at El Paso. A student ineligible to return to the institution last attended will not be admitted to the College. Others who have been placed on probation, or have a record of low grades may be refused admission, or admitted on probation or any other condition that seems suitable. All transfer students with less than thirty semester hours must present scores from the College Entrance Examination Board Scholastic Aptitude Test.

A transfer student who is accepted for admission to this institution but who does not have a minimum cumulative grade point average of "C" in work attempted in institutions other than The University of Texas at El Paso will be admitted on academic scholastic probation.

A student on academic probation at another institution who has not earned at least nine semester hours of college credit at that institution must let a full semester intervene before being admitted to The University of Texas at El Paso.

*Transcript* — Each applicant, including the student who seeks re-admission to The University of Texas at El Paso, is responsible for the direct transfer of an official transcript of his entire college record. This requirement applies to admission to the Summer Session as well as the Long Session.

Trouble and time will be saved by having the Registrar of the College last attended send a transcript directly to the Registrar of The University of Texas at El Paso as soon as possible. Admission cannot be cleared until this transcript is received.

Transcripts become the property of The University of Texas at El Paso and may not be returned.

An applicant who has attended another college or university is not at liberty to disregard his collegiate record and apply for admission on the basis of his high school record, but must submit all previous college records. Thus rule applies even if the student attended another institution for only a brief period; it also applies without regard to whether or not the student wishes credit here for college work done elsewhere.

*Transfer of Credit*—College work completed in another accredited institution with grades of C or better may be transferred insofar as the transfer work will fit into the student's curriculum. Subject to the grade requirement of C, work done in an unaccredited institution usually may be transferred in accordance with the policy of the state university of the state in which the unaccredited institution is located.

Subject to the C grade requirement, Junior College credit (freshman and sophomore levels) will be accepted up to a maximum of sixty-six semester hours insofar as the courses will fit into the student's curriculum.

#### Extension and Correspondence

Not more than thirty semester hours of credit secured by extension and/or correspondence may be offered for a degree. Of that thirty semester hours not more than eighteen may be offered by correspondence.

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## CO-OPERATIVE STUDENT TRAINEE PROGRAM

### White Sands Missile Range, New Mexico

The University of Texas at El Paso participates in the Co-operative Student Trainee Program at White Sands Missile Range, New Mexico, in the fields of Engineering, Physics, and Mathematics. This is a work-study program wherein the student spends six months attending The University of Texas at El Paso and six months working on the job in training phase at White Sands Missile Range. The pay grades vary according to the student's educational level and training in the program. Many students have earned their way through college by participating in this program. For further information, write to the Registrar, The University of Texas at El Paso, El Paso, Texas 79999.

# HOW TO PLAN YOUR CURRICULUM

If you are a beginning student, you may be undecided about a career or final goal in the University. There are certain subjects, however, generally required of ALL students – thus, you can begin by acquiring credits usable in all majors (in case you have difficulty in choosing a major and minor, or later wish to change your program).

To assist in planning your schedule, requirements for the Bachelor of Arts and the Bachelor of Science degrees are outlined on the next two pages. Requirements for Engineering degrees are listed on pages 50-54. Heads of the separate departments will give advice and explain special requirements for specific majors.

## **DEGREES OFFERED AT THE UNIVERSITY OF TEXAS AT EL PASO**

### ***School of Business***

BACHELOR OF BUSINESS ADMINISTRATION

### ***School of Education***

BACHELOR OF SCIENCE IN EDUCATION

### ***School of Engineering***

BACHELOR OF SCIENCE IN CIVIL ENGINEERING  
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING  
BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING  
BACHELOR OF SCIENCE IN METALLURGICAL ENGINEERING

### ***School of Liberal Arts***

BACHELOR OF ARTS  
BACHELOR OF MUSIC

### ***School of Sciences***

BACHELOR OF SCIENCE (IN SCIENCES)

### ***Graduate School***

MASTER OF ARTS  
MASTER OF SCIENCE  
MASTER OF EDUCATION

## *Suggested Outline for the Bachelor of Arts Degree*

Basic Subjects generally required of all students in **bold face type**.

*Exceptions and variations are specified in the REQUIREMENTS for MAJORS on pages 56-64, and by the Departments at beginning of Course Descriptions.*

### FRESHMAN YEAR

(16 hours are recommended for each semester)

	<i>Semester Hours</i>
<b>English</b> 3101-02 .....	6
<b>American History</b> 3101-02 or <b>Government</b> 3110-11 .....	6
<b>Foreign Language</b> (completion of 4102) .....	4
<b>Mathematics</b> .....	6
<b>Laboratory Science</b> (School of Sciences) .....	6
Health Education or other Elective Course .....	3
Physical Education Service Course (or Military Science) .....	2
<i>NOTE - If your Major is not included above, you may postpone one of the above subjects until your second year, in order to get a start in your Major.</i>	

### SOPHOMORE YEAR

<b>English</b> 3211-12 (or 3213-14 or 3215 and 3216) .....	6
<b>American History</b> 3101-02 or <b>Government</b> 3110-11 .....	6
<b>Foreign Language</b> (completion of 3201-02) .....	6
<b>Economics</b> 3203 .....	3
<b>Laboratory Science</b> (School of Sciences) .....	6
Physical Education or Military Science .....	1
Courses in Major or Minor subjects .....	6

### THIRD AND FOURTH YEARS

<b>Philosophy</b> 3203 .....	3
"Major" subjects — <b>advanced courses</b> .....	12
<i>(a total of 24 hours required in the Major subject)</i>	
"Minor" subjects — <b>advanced courses</b> .....	6
<i>(a total of 18 hours required in the Minor subject)</i>	
Required Courses not already taken in previous years .....	—
Electives may be taken when all requirements have been met ....	—

*All required freshman numbered courses in the student's curriculum in Arts and Sciences must be completed by the time the student reaches senior classification; otherwise, no credit hours will be granted toward fulfilling degree requirements for the courses even though the courses must be completed.*

#### **General Requirements** for Bachelor of Arts Degree:

- 123 semester hours of credit (minimum total)
- 30 hours must be taken in advanced courses
- 24 hours in Major (12 advanced)
- 18 hours in Minor (6 advanced)



## Suggested Outline for the Bachelor of Science Degree\*

Exceptions and variations specified in requirements for Majors and Minors on p. 59.

MAJOR SUBJECTS: *Biological Sciences, Chemistry, Geology, Mathematics, Physics.*

MINORS: *Biological Sciences, Chemistry, Engineering, Geology, Mathematics, Physics.*

*This plan does not apply to Bachelor of Science in Education, see pages 69-71.*

\*See pages 50-54 for Engineering Degree Plans.

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FRESHMAN YEAR	Semester Hours
<b>English 3101-02</b> .....	6
<b>American History 3101-02 or Government 3110-11</b> .....	6
<b>Mathematics 3115, 2116, and 4111</b> .....	9
<b>Laboratory Science</b> .....	8
Health Education or other Elective Course .....	3
Physical Education Service Course (or Military Science) .....	2
<i>(16 hours are recommended for each semester)</i>	

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SOPHOMORE YEAR	
<b>English 3211-12 (or 3213-14 or 3215 and 3216)</b> .....	6
<b>American History 3101-02 or Government 3110-11</b> .....	6
<b>German 4101-02</b> .....	8
<b>Economics 3203</b> .....	3
<b>Laboratory Science</b> .....	6
Physical Education or Military Science .....	1 (4)
Courses in Major or Minor subjects .....	6 (12)

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THIRD AND FOURTH YEARS	
<b>Philosophy 3203</b> .....	3
<b>Laboratory Science (other than Major or Minor)</b> .....	6
<b>"Major" subjects — advanced courses</b> .....	15
<i>(a total of 30 hours required in the Major subject)</i>	
<b>"Minor" subjects — advanced courses</b> .....	6
<i>(a total of 18 hours required in the Minor subject)</i>	

Required Courses not already taken in previous years ..... —  
 Electives may be taken when all requirements have been met .... —

*All required freshman numbered courses in the student's curriculum in Arts and Sciences must be completed by the time the student reaches senior classification; otherwise, no credit hours will be granted toward fulfilling degree requirements for the courses even though the courses must be completed.*

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- General Requirements for Bachelor of Science Degree:**
- 135 semester hours of credit (minimum total)
  - 36 hours must be taken in advanced courses
  - 30 hours in Major (15 advanced)
  - 18 hours in Minor (6 advanced)
  - not less than 6 semester hours in a third science

## General Requirements for Undergraduate Degrees

**Degree Plan** — Students in the School of Business, the School of Education, the School of Liberal Arts, and the School of Sciences should secure from their appropriate Dean by the beginning of their third year a plan for the completion of requirements for the degree.

No honorary degree will be conferred.

**Catalog Requirements** — A student may obtain a degree according to the course requirements of the catalog in force at the time of his admission to the University, or of a later catalog, subject to the restriction that all requirements must be completed within six years of the date of the catalog chosen and that a student is eligible to choose a catalog only from one of those years during which he enrolled and earned credit at this University. Requirements for teacher certification are subject to change on shorter notice, if necessary, to comply with standards adopted by The State Board of Education. A minimum of six advanced hours in the major field must have been completed not more than six years previous to the date of graduation. No more than six one-hour courses may be counted toward completion of the minimum total hours required for any undergraduate degree, except with specific approval by the appropriate academic dean.

Students entering The University of Texas at El Paso for the first time during a summer session will be subject to the requirements of the catalog for the next long session.

**Graduation** — Degrees will be conferred at the end of each semester and the summer session. Formal commencement exercises will be held at the end of the spring semester only.

The Office of the Registrar will distribute diplomas to students who graduate January 31 and August 31. However, any student desiring to participate in the formal commencement at the end of the spring semester may do so by entering the appropriate date on the application for a diploma. A diploma will be dated and granted only as of the graduation date requested and indicated by the candidate on the official application.

**Application for Diploma** — A student who intends to graduate at the end of one of the semesters of the regular session, or the summer session, must file an application for a diploma with the student's Dean *not later* than the date here indicated for the appropriate semester or session; for the fall semester, November 15; for the spring

semester, April 15; and for the summer session, July 10. An applicant for the bachelor's degree must be in good academic standing at the end of the semester or summer session in which he is a candidate for graduation.

**Personal Information Forms** — Each student must file a personal information form with the Placement Office by mid-semester of the semester in which he expects to graduate.

**Residence** — Work counting toward the degree must be completed in the University as follows: (1) a total of at least thirty semester hours, (2) twenty-four of the last thirty semester hours, and (3) six semester hours of advanced courses in the major subject.

**Advanced Courses** — These are junior-senior or upper division courses and are designated by 3 or 4 as the second digit of the course number.

**Advanced Placement** — College credit and advanced placement are given for college-level work completed in secondary schools on the basis of CEEB Advanced Placement Examinations.

**Advanced Standing Examinations** — Credit earned by means of Advanced Standing Examinations may not be used to replace any part of the last 30 semester credit hours required for graduation.

**Complete Courses** — In a required course extending through two semesters no credit is given toward a degree until both semesters have been completed.

**Government and History Required** — Six semester hours of Government 3110, 3111 and six semester hours of History 3101, 3102 are required by Texas State law for completion of any Degree. Twelve semester hours of Military Science 3301, 3302, 3401, 3402 may be substituted for Government 3111.

**Minimum Grade-Point Average** — A minimum grade-point average of 2.0 on all college work attempted is required for the bachelor's degree. In calculating this average, all college work, whether transferred or taken at this University, must be included. A minimum grade-point average of 2.0 on all work attempted at The University of Texas at El Paso is required; transferred work may not be used to raise the grade average of work done at the University.

**Second Degree** — No second bachelor's degree will be conferred until the candidate has completed at least twenty-four semester hours at The University of Texas at El Paso in addition to those counted toward the bachelor's degree requiring the higher number of semester hours of credit. These additional hours must include at least six advanced hours in the major subject of the second degree, and at least six hours must have been earned after completion of requirements for the first bachelor's degree. Two bachelor's degrees may not be awarded to any candidate at the same commencement. Students working toward a second bachelor's degree will register as undergraduate students.

It is not possible for a student holding a

B.A. degree from The University of Texas at El Paso to receive a second B.A. degree.

**Military Service Associated Credit**— All such transfer credit is subject to evaluation by the Registrar. Credit may be given for Comprehensive College Tests developed by the Education Testing Service and administered by the United States Armed Forces Institute. Credit may also be given for college-level USAFI correspondence courses. In general, no credit is given for a military service course unless it was completed as a part of a college program and credit was given for it by an accredited college. Most credit granted may be used to absolve elective requirements only.

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## *Academic Honors at Graduation*

Honors will be awarded at graduation in the following categories for first degree only:

1. *Highest Honors* — Highest Honors will be awarded to students who attain a minimum grade average of 3.90.

No transfer student shall be eligible for Highest Honors.

No student with an "F" on his record shall be eligible for Highest Honors.

2. *High Honors* — High Honors will be awarded to students who attain a minimum grade average of 3.80, but who do not qualify for Highest Honors.

A transfer student must have had 75 percent of his work at The University of Texas at El Paso to be eligible for High Honors.

3. *Honors* — Honors will be awarded to students who attain a minimum grade average of 3.50, but who do not qualify for High or Highest Honors.

A transfer student must have had 50 percent of his work at The University of Texas at El Paso to be eligible for Honors.

No student shall be eligible for any category of Honors if he has disciplinary action on his record in the Registrar's office.



# SCHOOL of ENGINEERING



## ACCREDITATION

All curricula offered in the School of Engineering are accredited by the Engineers' Council for Professional Development (E.C.P.D.).

## UNDERGRADUATE STUDY IN ENGINEERING

Bachelor of Science degrees are offered in Civil, Electrical, Mechanical, and Metallurgical Engineering (degree plans are shown on the following pages). Sufficient courses are offered at U.T. El Paso for a student to complete at least the sophomore year for all other engineering degrees.

## HONORS PROGRAM

Students who complete a minimum of sixty semester credit hours of the "Common Core" courses of their respective engineering degree plans, with an overall grade-point average of 3.00, are eligible to enter the engineering honors program. This program is tailored to the special needs or interests of each student; the selection and arrangement of courses are planned by the student in consultation with an honors committee and the dean of engineering.

The Common Core courses (common to all engineering degree plans) are: C.E. 3115, 3238, 3426; Ch. 4103-04; E. 3101-02; E.E. 4251; Hi. 3101, 3102; M.E. 3103, 3201, Ma. 4111, 4212, 4217, 3326; Met. 4203; P.S. 3110, 3111; and Ph. 4216, 4217.

## GRADUATE STUDY IN ENGINEERING

A Master of Science degree in Engineering is offered by the Graduate School. For details, consult the Graduate Bulletin.

### UNIFORM FRESHMAN YEAR

*(Common to all Engineering Degree Plans)*

1st Semester	Sem. Hrs.	2nd Semester	Sem. Hrs.
Ch. 4103 General Chemistry . . . . .	4	C.E. 3115 Engineering Mechanics I . . . . .	3
E. 3101 Freshman English . . . . .	3	Ch. 4104 General Chemistry . . . . .	4
Hi. 3101 History of U.S., to 1865 . . . . .	3	E. 3102 Freshman English . . . . .	3
M.E. 3103 Graphical Fundamentals in Engineering Design . . . . .	3	Hi. 3102 History of U.S., since 1865 . . . . .	3
Ma. 4111 Analytical Geom. & Calculus . . . . .	4	Ma. 4212 Analytical Geom. & Calculus . . . . .	4
Total . . . . .	17	Total . . . . .	17

*Mathematics 3115 and 2116 are no longer counted for credit toward any engineering degree. Students needing these courses are urged to complete them in a Summer Session before entering the regular freshman program.*

### Abbreviations Used in Degree Plans

C.E. . . . .	Civil Engineering	Hi. . . . .	History
Ch. . . . .	Chemistry	M.E. . . . .	Mechanical Engineering
E. . . . .	English	Ma. . . . .	Mathematics
E.E. . . . .	Electrical Engineering	Met. . . . .	Metallurgical Engineering
Ge. . . . .	Geology	P.S. . . . .	Political Science
		Ph. . . . .	Physics

**Bachelor of Science in Civil Engineering**

	<i>Sem. Hrs.</i>
Civil Engineering 3115, 3202, 3213, 3214, 3234, 3238, 4343, 3426, 3435, 3440, 4441, 4442, 4448, 4456, 3461 . . . . .	50
Chemistry 4103-04 . . . . .	8
English 3101-02 . . . . .	6
Electrical Engineering 4251 . . . . .	4
Geology 3321 . . . . .	3
History 3101, 3102 . . . . .	6
Mechanical Engineering 3103, 3201, 4354, 3375 . . . . .	13
Mathematics 4111, 4212, 4217, 3326 . . . . .	15
Metallurgical Engineering 4203 . . . . .	4
Political Science 3110, 3111 . . . . .	6
Physics 4216, 4217 . . . . .	8
Approved Electives* . . . . .	15
Total . . . . .	138

**ARRANGEMENT OF COURSES**

*Uniform Freshman Year (see page 50)*

<b>Sophomore Year—1st Semester</b>	<i>Sem. Hrs.</i>	<b>Sophomore Year—2nd Semester</b>	<i>Sem. Hrs.</i>
C.E. 3202 Introduction to Engr. . . . .	3	C.E. 3213 Engr. Measurements . . . . .	3
C.E. 3238 Engineering Mechanics II . . . . .	3	C.E. 3234 Mechanics of Materials I . . . . .	3
M.E. 3201 Engr. Communications . . . . .	3	Ma. 3326 Differential Equations . . . . .	3
Ma. 4217 Analytical Geom. & Calculus . . . . .	4	P.S. 3110 American Government . . . . .	3
Ph. 4216 Electricity & Magnetism . . . . .	4	Ph. 4217 Optics, Sound & Heat . . . . .	4
Total . . . . .	17	Total . . . . .	16

**Summer — Following Sophomore Year**

C.E. 3214 Field Surveying (3 weeks) . . . . . 3

<b>Junior Year—1st Semester</b>		<b>Junior Year—2nd Semester</b>	
Ge. 3321 Geology for Engineers . . . . .	3	C.E. 4343 Structural Analysis I . . . . .	4
M.E. 4354 Fluid Mechanics I . . . . .	4	E.E. 4251 Networks I . . . . .	4
Met. 4203 Materials Science . . . . .	4	M.E. 3375 Thermodynamics I . . . . .	3
P.S. 3111 American Government . . . . .	3	Approved Electives* . . . . .	6
Approved Elective* . . . . .	3	Total . . . . .	17
Total . . . . .	17		

<b>Senior Year—1st Semester</b>		<b>Senior Year—2nd Semester</b>	
C.E. 3426 Engineering Economy . . . . .	3	C.E. 3440 Transportation . . . . .	3
C.E. 3435 Structural Design I . . . . .	3	C.E. 4442 Waste Treatment & Analysis . . . . .	4
C.E. 4441 Water Treatment & Analysis . . . . .	4	C.E. 4456 Hydraulics . . . . .	4
C.E. 4448 Soil Mechanics . . . . .	4	C.E. 3461 Structural Design II . . . . .	3
Approved Elective* . . . . .	3	Approved Elective* . . . . .	3
Total . . . . .	17	Total . . . . .	17

\*Six hours of electives must be selected from the Humanities and Social Sciences; nine hours from Engineering, Mathematics, and the Biological or Physical Sciences.

DEGREE PLANS

**Bachelor of Science in Electrical Engineering**

	<i>Sem. Hrs.</i>
Civil Engineering 3102, 3115, 3238, 3426 . . . . .	12
Chemistry 4103-04 . . . . .	8
English 3101-02 . . . . .	6
Electrical Engineering 4251, 3321, 4339, 4340, 4352, 3353, 3441, 4447, 4464, 4467, 4468 . . . . .	41
History 3101, 3102 . . . . .	6
Mechanical Engineering 3103, 3201, 3375 . . . . .	9
Mathematics 4111, 4212, 4217, 3326, 3435 . . . . .	18
Metallurgical Engineering 4203 . . . . .	4
Political Science 3110, 3111 . . . . .	6
Physics 4216, 4217, 3326 . . . . .	11
Approved Electives <sup>o</sup> . . . . .	15
Total . . . . .	136

**ARRANGEMENT OF COURSES**

*Uniform Freshman Year (see page 50)*

<b>Sophomore Year—1st Semester</b>	<i>Sem. Hrs.</i>	<b>Sophomore Year—2nd Semester</b>	<i>Sem. Hrs.</i>
C.E. 3202 Introduction to Engineering . . . . .	3	E.E. 4251 Networks I . . . . .	4
C.E. 3238 Engineering Mechanics II . . . . .	3	M.E. 3201 <i>Engr. Communications</i> . . . . .	3
Ma. 4217 Analytical Geom. & Calculus . . . . .	4	Ma. 3326 Differential Equations . . . . .	3
Met. 4203 Materials Science . . . . .	4	P.S. 3110 American Government . . . . .	3
Ph. 4216 Electricity & Magnetism . . . . .	4	Ph. 4217 Optics, Sound & Heat . . . . .	4
Total . . . . .	18	Total . . . . .	17
 <b>Junior Year—1st Semester</b>		 <b>Junior Year—2nd Semester</b>	
E.E. 4339 Electronics I . . . . .	4	E.E. 3321 Electromagnetic Field Theory . . . . .	3
E.E. 4352 Networks II . . . . .	4	E.E. 4340 Electronics II . . . . .	4
Ma. 3435 Higher Mathematics for Engineers & Physicists . . . . .	3	E.E. 3353 Networks III . . . . .	3
P.S. 3111 American Government . . . . .	3	M.E. 3375 Thermodynamics I . . . . .	3
Ph. 3326 Fundamentals of Modern Atomic Physics . . . . .	3	Approved Elective <sup>o</sup> . . . . .	3
Total . . . . .	17	Total . . . . .	16
 <b>Senior Year—1st Semester</b>		 <b>Senior Year—2nd Semester</b>	
C.E. 3426 Engineering Economy . . . . .	3	E.E. 4464 Feedback Control . . . . .	4
E.E. 3441 Electronics III . . . . .	3	E.E. 4468 Energy Conversion . . . . .	4
E.E. 4447 Electromagnetic Energy Transmission & Radiation . . . . .	4	Approved Electives <sup>o</sup> . . . . .	9
E.E. 4467 Energy Conversion . . . . .	4	Total . . . . .	17
Approved Elective <sup>o</sup> . . . . .	3		
Total . . . . .	17		

<sup>o</sup>Six hours of electives must be selected from the Humanities and Social Sciences; nine hours from Engineering, Mathematics, and the Biological or Physical Sciences.

**Bachelor of Science in Mechanical Engineering**

	<i>Sem. Hrs.</i>
Civil Engineering 3102, 3115, 3234, 3238, 3426 . . . . .	15
Chemistry 4103-04 . . . . .	8
English 3101-02 . . . . .	6
Electrical Engineering 4251, 4339 . . . . .	8
History 3101, 3102 . . . . .	6
Mechanical Engineering 3103, 3201, 3236, 3351, 4354, 4363, 3364, 3375, 3376, 3455, 3465, 4466, 3481, 3482 . . . . .	45
Mathematics 4111, 4212, 4217, 3326 . . . . .	15
Metallurgical Engineering 4203 . . . . .	4
Political Science 3110, 3111 . . . . .	6
Physics 4216, 4217 . . . . .	8
Approved Electives* . . . . .	15
Total . . . . .	136

**ARRANGEMENT OF COURSES**

*Uniform Freshman Year (see page 50)*

<b>Sophomore Year—1st Semester</b>	<i>Sem. Hrs.</i>	<b>Sophomore Year—2nd Semester</b>	<i>Sem. Hrs.</i>
C.E. 3202 Introduction to Engineering . . . . .	3	C.E. 3234 Mechanics of Materials I . . . . .	3
C.E. 3238 Engineering Mechanics II . . . . .	3	E.E. 4251 Networks I . . . . .	4
Ma. 4217 Analytical Geom. & Calculus . . . . .	4	M.E. 3201 Engr. Communications . . . . .	3
Met. 4203 Materials Science . . . . .	4	Ma. 3326 Differential Equations . . . . .	3
Ph. 4216 Electricity & Magnetism . . . . .	4	Ph. 4217 Optics, Sound & Heat . . . . .	4
Total . . . . .	18	Total . . . . .	17

<b>Junior Year—1st Semester</b>		<b>Junior Year—2nd Semester</b>	
E.E. 4339 Electronics I . . . . .	4	M.E. 3236 Manufacturing Processes & Quality Control . . . . .	3
M.E. 4354 Fluid Mechanics . . . . .	4	M.E. 3351 Heat Transfer . . . . .	3
M.E. 3375 Thermodynamics I . . . . .	3	M.E. 4363 Kinematics & Dynamics of Mechanisms . . . . .	4
P.S. 3110 American Government . . . . .	3	M.E. 3376 Thermodynamics II . . . . .	3
Approved Elective* . . . . .	3	Approved Elective* . . . . .	3
Total . . . . .	17	Total . . . . .	16

<b>Senior Year—1st Semester</b>		<b>Senior Year—2nd Semester</b>	
M.E. 3455 Gas Dynamics . . . . .	3	C.E. 3426 Engineering Economy . . . . .	3
M.E. 3364 Design of Machine Members . . . . .	3	M.E. 4466 Machine Design . . . . .	4
M.E. 3465 Dynamic Response . . . . .	3	M.E. 3482 Mechanical Engr. Lab II . . . . .	3
M.E. 3481 Mechanical Engr. Lab I . . . . .	3	Approved Electives* . . . . .	6
P.S. 3111 American Government . . . . .	3	Total . . . . .	16
Approved Elective* . . . . .	3		
Total . . . . .	18		

\*Six hours of electives must be selected from the Humanities and Social Sciences; nine hours from Engineering, Mathematics, and the Biological or Physical Sciences.

**Bachelor of Science in Metallurgical Engineering**

	<i>Sem. Hrs.</i>
Civil Engineering 3115, 3238, 3426 . . . . .	9
Chemistry 4103-04, 2221, 4260, 4261 . . . . .	18
English 3101-02 . . . . .	6
Electrical Engineering 4251 . . . . .	4
Geology 2216 . . . . .	2
History 3101, 3102 . . . . .	6
Mechanical Engineering 3103, 3201 . . . . .	6
Mathematics 4111, 4212, 4217, 3326 . . . . .	15
Metallurgical Engineering 3201, 4203, 4302, 3309, 3315, 3402, 3404, 4407, 4411, 4412, 3413, 4415 . . . . .	42
Political Science 3110, 3111 . . . . .	6
Physics 4216, 4217, 3326 . . . . .	11
Approved Electives* . . . . .	12
<b>Total . . . . .</b>	<b>137</b>

**ARRANGEMENT OF COURSES**

*Uniform Freshman Year (see page 50)*

<b>Sophomore Year—1st Semester</b>	<i>Sem. Hrs.</i>	<b>Sophomore Year—2nd Semester</b>	<i>Sem. Hrs.</i>
C.E. 3238 Engineering Mechanics II . . . . .	3	Ce. 2216 Mineralogy . . . . .	2
Ch. 2221 Organic Chemistry . . . . .	2	Ma. 3326 Differential Equations . . . . .	3
Ma. 4217 Analytical Geom. & Calculus . . . . .	4	Met. 4203 Materials Science . . . . .	4
Met. 3201 Principles of Process Met. . . . .	3	P.S. 3111 American Government . . . . .	3
P.S. 3110 American Government . . . . .	3	Ph. 4217 Optics, Sound & Heat . . . . .	4
Ph. 4216 Electricity & Magnetism . . . . .	4	<b>Total . . . . .</b>	<b>16</b>
<b>Total . . . . .</b>	<b>19</b>		
 <b>Junior Year—1st Semester</b>		 <b>Junior Year—2nd Semester</b>	
Ch. 4260 Physical Chemistry . . . . .	4	Ch. 4261 Physical Chemistry . . . . .	4
Met. 4302 Mineral Dressing . . . . .	4	E.E. 4251 Networks I . . . . .	4
Met. 3309 Physics of Metals . . . . .	3	M.E. 3201 Engr. Communications . . . . .	3
Ph. 3326 Fundamentals of Modern Atomic Physics . . . . .	3	Met. 3315 Non-ferrous Process Metallurgy . . . . .	3
Approved Elective* . . . . .	3	Approved Elective* . . . . .	3
<b>Total . . . . .</b>	<b>17</b>	<b>Total . . . . .</b>	<b>17</b>
 <b>Senior Year—1st Semester</b>		 <b>Senior Year—2nd Semester</b>	
C.E. 3426 Engineering Economy . . . . .	3	Met. 3402 Ferrous Process Metallurgy . . . . .	3
Met. 3404 Electro-Metallurgy . . . . .	3	Met. 4412 Physical Metallurgy III . . . . .	4
Met. 4407 Physical Metallurgy I . . . . .	4	Met. 4415 Mechanical Metallurgy . . . . .	4
Met. 4411 Physical Metallurgy II . . . . .	4	Approved Electives* . . . . .	6
Met. 3413 Thermodynamics of Metals . . . . .	3	<b>Total . . . . .</b>	<b>17</b>
<b>Total . . . . .</b>	<b>17</b>		

\*Six hours of electives must be selected from the Humanities and Social Sciences; six hours from Engineering, Mathematics, and the Biological or Physical Sciences.



## SCHOOL OF BUSINESS

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## SCHOOL OF EDUCATION

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## SCHOOL OF LIBERAL ARTS

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## SCHOOL OF SCIENCES

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### *Bachelor of Arts*

#### MAJOR SUBJECTS

Art	French	Philosophy
Biological Sciences	Geology	Physical Education
Business Administration	Government	Physics
Chemistry	History	Psychology
Drama	Inter-American Studies	Radio-Television
Economics	Journalism	Sociology
English	Linguistics	Spanish
	Mathematics	Speech

#### MINOR SUBJECTS

Art	French	Music
Biological Sciences	Geology	Philosophy
Business Administration	German	Physics
Chemistry	Government	Psychology
Drama	History	Radio-Television
Economics	Journalism	Sociology
Education	Mathematics	Spanish
English		Speech

**Major Examinations:** At the discretion of the department concerned a major examination may be required in the major subject under the following conditions: (a) four hours written, or three hours written and one hour oral; (b) the head of the department fixes the time and place, and supervises the examination; (c) in case of failure the student may take another examination on a date determined by the head of the department.

## *Bachelor of Arts*

Variations from the general requirements, including additional semester hours as well as specific courses to be included for a particular major subject, are listed under each Department's Course Descriptions (following page 83 of this catalog).

Bachelor of Arts *All Levels Teaching Programs* in Art, Music, Physical Education, and Drama and Speech are outlined on pages 66, 67, and 68.

### *Min. Sem. Hrs.*

- 24 — MAJOR SUBJECT: including 12 advanced hours. (A minimum of 45 required in Art including 12 advanced.)
- 18 — MINOR SUBJECT: including 6 advanced hours. (In the sciences, the minor must be in another science unless otherwise recommended by the chairman of the major department and approved by the dean.) No minor required in Inter-American Studies.
- 12 — ENGLISH 3101-02, 3211-12 or 3213-14 or 3215-16.
- 14 — FOREIGN LANGUAGE: completion of 4101-02,\* 3201-02.
- 12 — LABORATORY SCIENCES: for non-science majors or minors.
- 6 — MATHEMATICS: (Mathematics 3115, 2116, 4111 for majors in Mathematics, Chemistry, Physics, and for a minor in Physics.)
- 3 — ECONOMICS 3203.
- 6 — HISTORY 3101-02.
- 6 — GOVERNMENT 3110-11.
- 3 — PHILOSOPHY 3203.
- § — ELECTIVES: to make a minimum of 123 semester hours, including 30 semester hours in advanced courses. Not more than 66 semester hours may be in the major and minor subjects.

\* Requirements may be reduced by placement examinations given in the Department of Modern Languages.

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### PRE - LAW

Students who plan to satisfy requirements for admission to a school of law, or who have questions concerning any other matter relating to pre-legal studies, are urged to consult either of the Pre-Law Advisors, Mr. L. Phil Blanchard, Mr. John C. Akard, or Mr. Joseph B. Graves.

### PRE - MEDICAL

Students who plan to satisfy requirements for admission to a school of medicine, a school of dentistry, or a school of veterinary medicine, or a school of medical technology are requested to consult with the Pre-Medical Advisor, Dr. James B. Reeves.

## BACHELOR OF ARTS

## INTER-AMERICAN STUDIES

CHESTER C. CHRISTIAN, JR., *Program Director*

The Inter-American Studies program is an inter-disciplinary major with a Latin American orientation designed to prepare students for a career in Latin America in government, business, or education, or for advanced study in a Latin American field at the graduate level. The program is administered by the Executive Committee of the Inter-American Institute, which coordinates its activities whenever possible with those of the Inter-American Studies program, thereby providing lecturers, seminars, and other Latin American resource opportunities. Fluency in Spanish, rather than a given number of credit hours, is the desired language objective; and a written and oral comprehensive examination conducted in Spanish on Latin American politics, resources, geography, and literature, as well as Spanish composition, must be satisfactorily completed prior to graduation.

In addition to the general requirements for the B.A. degree, the following specific requirements are prescribed, plus one of the following four options: Economics-Business, Government, History, and Spanish. Completion of one of these options fulfills the major and minor requirements for the degree.

*Specific requirements are:* Economics 3204, English 3308, Government 3332, History 3205-06, Philosophy 3212, Psychology 3101 and 3202, Sociology 3101-02.

**ECONOMICS - BUSINESS OPTION**

ACCOUNTING	3101, 3102.
BUSINESS LAW	3303.
ECONOMICS	3365, 3366, 3367
SOCIAL SCIENCES	Three of the following: History 3346, 3347, 3348, 3349; Government 3333; Sociology 3336, 3360.
SPANISH	3357; and one of the following: 3322, 3324, 3360, 3362, 3363, 3364, 3365, 3467.
ADVANCED ELECTIVES	3 hours.

**GOVERNMENT OPTION**

GOVERNMENT	3439; and four of the following: 3333, 3343, 3344, 3347, 3424, 3433.
SPANISH	3357; and one of the following: 3322, 3324, 3360, 3362, 3363, 3364, 3365, 3467.
SOCIAL SCIENCES	Three of the following: History 3346, 3347, 3348, 3349; Economics 3366, 3367; Sociology 3336, 3360.
ADVANCED ELECTIVES	6 hours.

**HISTORY OPTION**

HISTORY	Four of the following: 3346, 3347, 3348, 3349, 3311, 3312.
SPANISH	3357; and one of the following: 3322, 3324, 3360, 3362, 3363, 3364, 3365, 3467.
SOCIAL SCIENCES	Three of the following: Economics 3366, 3367; Government 3333; Sociology 3336, 3360.
ADVANCED ELECTIVES	9 hours.

**SPANISH OPTION**

SPANISH	3357; and three of the following: 3322, 3324, 3360, 3362, 3364, 3365, 3467.
HISTORY	Two of the following: 3346, 3347, 3348, 3349.
SOCIAL SCIENCES	Three of the following: Economics 3366, 3367; Government 3333; Sociology 3336, 3360.
ADVANCED ELECTIVES	9 hours.

BACHELOR OF ARTS  
LINGUISTICS MAJOR

RAY PAST, *Program Director*

The major in linguistics is an inter-disciplinary program which differs from majors in linguistics at other campuses primarily in its insistence on Spanish as one of the languages to be studied, a natural outgrowth of this University's location.

In addition to the general requirements for the B.A. degree, the following specific requirements are prescribed:

SPANISH 3203 With a grade of "B," or competence in Spanish, to be judged by the Department of Modern Languages, equivalent to a "Good" rating on the scale of the Modern Language Association.

ENGLISH 3220 Introduction to Linguistics.

SPEECH 3110 Phonetics.

ENGLISH 3309 The Structure of the English Language.

ENGLISH 3471 Studies in English as Language. (This course may be counted toward this requirement only when the topic is grammatical analysis.)

SPANISH 3309 or 3357 The Structure of Spanish or Advanced Composition and Grammar Review.

ENGLISH 3419 The Foundations of the English Language.

*In addition, the student must choose a minimum of six hours from the following:*

ENGLISH 3308 Teaching English as a Second Language. (May not be counted in addition to Spanish 3400.)

SPANISH 3400 Language Theory and Analysis. (May not be counted in addition to English 3308.)

ENGLISH 3471 Studies in English as Language. (Provided the topic differs from when it was previously taken.)

PSYCHOLOGY 3454 Seminar in Psychology. (When topic is psycholinguistics.)

ENGLISH 3472 Contrastive Linguistics, Spanish, English. (May not be counted in addition to Spanish 3472.)

SPANISH 3472 Contrastive Linguistics, Spanish, English. (May not be counted in addition to English 3472.)

SPANISH 3492 Phonology.

SPANISH 3493 Morphology.

ENGLISH 3395 Linguistics in the Classroom.

SPANISH 3309 or 3357 (Whichever not taken in required courses listed above.)

*The following minor is required:*

1. Competence through 3202 in a second European language.
2. 4101-02 in a non-Indo-European language.

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## *Bachelor of Science* (SCIENCES)

**MAJORS:** Biological Sciences, Chemistry, Geology, Mathematics, Physics.

**MINORS:** Biological Sciences, Chemistry, Engineering, Geology, Mathematics, Physics.

**Min. Sem. Hrs.**

- 30 — MAJOR: at least 30 semester hours including 15 semester hours of advanced courses.
- 18 — MINOR: at least 18 semester hours including 6 semester hours of advanced courses.
- 6 — SCIENCE: another laboratory science as listed above.
- 6 — GOVERNMENT 3110-11.
- 6 — HISTORY 3101 and 3102.
- 3 — ECONOMICS 3203.
- 3 — PHILOSOPHY 3203.
- 12 — ENGLISH 3101-02, and 3211-12 or 3213-14 or 3215 and 3216.
- 9 — MATHEMATICS 3115, 2116, 4111. (Exception: Mathematics 3101 and 3102 may be substituted in the Biological Sciences major - Geology minor.)
- § — ELECTIVES: to make a minimum total of at least 135 semester hours, including a total of 36 semester hours in advanced courses. Foreign language should be included if the student plans graduate work.

Variations from the general requirements, including additional semester hours as well as specific courses to be included for a particular major subject, are listed under each Department's Course Descriptions (following page 79 of this catalog).

§ *Varies according to student's capabilities.*

## *Bachelor of Business Administration*

### **GENERAL EDUCATION CORE REQUIREMENTS**

*Min. Sem. Hrs.*

- 6 - ECONOMICS 3103-3104.
- 12 - ENGLISH 3101-3102 and 3211-3212 or 3213-3214 or 3215 and 3216.
- 6 - GOVERNMENT 3110-3111.
- 6 - HISTORY 3101-3102.
- 6 - MATHEMATICS 3101-3102.
- 6 - NATURAL SCIENCE: Biology, Chemistry, Geology, Physics.
- 3 - PHILOSOPHY, PSYCHOLOGY, or SOCIOLOGY.
- 3 - SPEECH.

### **BUSINESS CORE REQUIREMENTS**

- 9 - ACCOUNTING 3101, 3102, 3205.
- 6 - FINANCE 3310, 3320 (see Department of Economics).
- 3 - MARKETING 3201.
- 3 - OFFICE MANAGEMENT 3203.
- 3 - PERSONNEL MANAGEMENT 3201.
- 6 - STATISTICS 3201, 3301.
- 3 - BUSINESS LAW 3301.
- 3 - GENERAL BUSINESS 3402.

### **BUSINESS MAJOR OPTIONS**

In addition to the General Education and Business Core requirements, the student, with the aid of his Business Administration counselor, will select one of the following optional concentrations of study (only three hours Non-Business electives may be lower division).

#### **ACCOUNTING OPTION**

- 6 - ACCOUNTING 3201, 3202.
- 12 - ACCOUNTING CONCENTRATION ELECTIVES.
- 12 - NON-BUSINESS ELECTIVES.
- 9 - FREE ELECTIVES.  
(Accounting option may substitute another Accounting course for Accounting 3205 in the CORE Requirements.)

#### **GENERAL BUSINESS OPTION**

- 18 - BUSINESS CONCENTRATION ELECTIVES.
- 12 - NON-BUSINESS ELECTIVES.
- 9 - FREE ELECTIVES.

#### **ECONOMICS OPTION**

- 12 - BUSINESS CONCENTRATION ELECTIVES.
- 18 - ECONOMICS CONCENTRATION ELECTIVES.
- 9 - FREE ELECTIVES.

*Min. Sem. Hrs.*

**PRE-PUBLIC SERVICE OPTION**

- 12 - BUSINESS CONCENTRATION ELECTIVES.
- 18 - GOVERNMENT CONCENTRATION ELECTIVES.
- 9 - FREE ELECTIVES.

**MARKETING OPTION**

- 6 - MARKETING 3301 and 3401.
- 6 - MARKETING 3302, 3304, 3305, 3306.
- 6 - ADVANCED BUSINESS ELECTIVES.
- 12 - NON BUSINESS ELECTIVES.
- 9 - FREE ELECTIVES.

**PERSONNEL MANAGEMENT AND INDUSTRIAL RELATIONS OPTION**

- 12 - PERSONNEL MANAGEMENT 3301, 3302, 3303 or 3304, and 3401.
- 6 - ADVANCED BUSINESS ELECTIVES.
- 12 - NON BUSINESS ELECTIVES.
- 9 - FREE ELECTIVES.

**STATISTICS AND QUANTITATIVE ANALYSIS OPTION**

- 6 - STATISTICS 3302, 3401.
- 3 - MARKETING 3401.
- 3 - PRODUCTION MANAGEMENT 3304.
- 6 - ADVANCED BUSINESS ELECTIVES.
- 12 - NON BUSINESS ELECTIVES.
- 9 - FREE ELECTIVES.

**OFFICE MANAGEMENT OPTION**

- 24 - OFFICE MANAGEMENT 3101, 3102, 3201, 3202, 3301, 3302, 3303, 3304.
- 6 - NON BUSINESS ELECTIVES.
- 9 - FREE ELECTIVES.

**PRODUCTION MANAGEMENT OPTION**

- 12 - PRODUCTION MANAGEMENT 3301, 3302, 3303, 3304 or 3305.
- 6 - ADVANCED BUSINESS ELECTIVES.
- 12 - NON BUSINESS ELECTIVES.
- 9 - FREE ELECTIVES.

*NOTE: A minimum of 123 semester hours of credit is required for the degree of Bachelor of Business Administration to be completed with a 2.0 grade point average on all business administration courses required under the student's chosen approved degree concentration program.*

*A "C" average in freshman English is prerequisite to enrollment in all business administration courses but enrollment may be concurrent.*

DEGREE PLANS

**TEACHER CERTIFICATION**

This program enables the student to earn the Bachelor of Business Administration degree and to qualify for the secondary teaching certificate at the same time.

*Min. Sem. Hrs.*

**SECRETARIAL SCIENCE**

- 24 — OFFICE MANAGEMENT 3101, 3102, 3103, 3104, 3203,\* plus 9 hours from the following: OFFICE MANAGEMENT 3301, 3302, 3303, 3304, 3305. PERSONNEL MANAGEMENT 3301, including enough advanced courses to make a total of 12 semester hours of advanced credit. (OFCM 3498 or 3499 may be substituted for OFCM 3101 or 3103.)

**GENERAL BUSINESS FIELD**

- 24 — GENERAL BUSINESS. 15 hours from the following: ACCOUNTING 3101,\* 3102,\* FINANCE 3310,\* MARKETING 3201,\* OFFICE MANAGEMENT 3203,\* PERSONNEL MANAGEMENT 3201,\* STATISTICS 3201,\* BUSINESS LAW 3301,\* plus 9 semester hours of elective Business Administration courses including enough to make a total of 12 semester hours of advanced credit.

**ADDITIONAL REQUIREMENTS**

- 3 — GENERAL PSYCHOLOGY 3101\*.
- 18 — EDUCATION 3310, 3311, 3312, 3420, 3498, 3499.

\*Courses included in the general education and business core requirements.

NOTE: A grade point average of not less than 2.0 is required in both English 3101-02 and Speech 3101. Any student declared deficient in English or Speech by the certifying committee or Department of Business Administration may be required to complete or repeat additional English and Speech courses regardless of his grade point average.

A grade point average of not less than 2.5 is required in the teaching fields and education concentration.

**ENGINEERING - SCIENCE ROUTE TO B.B.A.**

**ARRANGEMENT OF COURSES**

<b>Freshman</b>	<i>Min. Sem. Hrs.</i>	<b>Junior</b>	<i>Min. Sem. Hrs.</i>
English 3101-3102 . . . . .	6	Statistics 3301 . . . . .	3
History 3101-3102 . . . . .	6	Marketing 3201 . . . . .	3
Chemistry 4103-4104 . . . . .	8	Personnel Management 3301 . . . . .	3
Mathematics 4111-4212 . . . . .	8	Production Management 3301 . . . . .	3
Mechanical Engineering 2103 . . . . .	2	Accounting 3205 . . . . .	3
Civil Engineering 3115 . . . . .	3	Mechanical Engineering 3375 . . . . .	3
Total . . . . .	33	Electrical Engineering 4251 . . . . .	4
		Office Management 3203 . . . . .	3
		Physics 4216-4217 . . . . .	8
		Total . . . . .	33
<b>Sophomore</b>		<b>Senior</b>	
Accounting 3101-3102 . . . . .	6	Accounting 3301 . . . . .	3
Economics 3203-3204 . . . . .	6	Business Law 3301 . . . . .	3
Statistics 3201 . . . . .	3	General Business 3402 . . . . .	3
Personnel Management 3201 . . . . .	3	Production Management 3302 . . . . .	3
Government 3110-3111 . . . . .	6	Production Management 3303 . . . . .	3
Mathematics 4217 . . . . .	4	Production Management 3304 . . . . .	3
Civil Engineering 3234 . . . . .	3	Production Management 3305 . . . . .	3
Civil Engineering 3238 . . . . .	3	Civil Engineering 3426 . . . . .	3
Total . . . . .	34	English 3213 or 3215 or 3216 . . . . .	3
		Metallurgy 4203 . . . . .	4
		Finance 3301 . . . . .	3
		Total . . . . .	34



## *Bachelor of Science in Medical Technology*

Medical Technology is one of the important new careers in science today. Medical technologists are trained specialists working in clinical or medical laboratories where they perform scientific tests on which pathologists and doctors rely for help in the diagnosis and treatment of disease.

The work of the medical technologist is both important and challenging. It involves great responsibility and it requires thorough scientific and technical training.

### DEGREE REQUIREMENTS:

The Bachelor of Science Degree program is sponsored by the Department of Biology.

The curriculum consists of a minimum of three years and one term of summer school work (114 semester hours) taken in the School of Liberal Arts & Sciences and 12 months training in a school of Medical Technology approved by the American Society of Clinical Pathologists. The specific courses and general requirements for the degree program are as follows:

#### *Min. Sem. Hrs.*

- 15 - ENGLISH 3101-02, 3211-12, or 3213-3214, or 3215-3216, 3269.
- 9 - MATHEMATICS 3115, 2116, 4111.
- 6 - GOVERNMENT 3110-11.
- 6 - HISTORY 3101-02.
- 8 - PHYSICS 4103-04.
- 14 - BIOLOGY 4110, 4202-03, 3401.
- 12 - MICROBIOLOGY 4202, 4302, 4360.
- 25 - CHEMISTRY 4103-04, 5213, 3221-22, 3330, 3331.
- 10 - ZOOLOGY 3302, 3305, 4103.
- 9 - ELECTIVES.
- 114 - TOTAL.

An overall "C" average must be maintained.

A year (12 months) of professional training must be satisfactorily completed in an approved school of Medical Technology.

The above program is designed to provide the necessary scientific and professional training for a substantially high level of competence, and should thus provide the background required to achieve the professional excellence necessary for the ultimate responsibility of supervisory positions.

## *Library Services*

Basic courses in Library Services have been designed (1) to provide a foundation for the student who plans to take further work at an institution offering a degree in this field, (2) to provide sufficient training to equip a teacher or prospective teacher for work in a school library under supervision of a professional librarian, and (3) to provide knowledge which will enable the classroom teacher to make broad, effective use of the school library. Course titles and descriptions are listed under Education.

## *Bachelor of Music*

*Major Subjects:* Music Theory and Composition; Music Education: Vocal or Instrumental Teaching; Applied Music: (1) Orchestral Instruments, (2) Organ, Piano, (3) Voice.

*Note for Music Majors:* Auditions in piano and voice are required of all music majors.

*Note for Minors in Music:* A minor in music requires participation in the ensemble of the major instrument (band, choir, orchestra), the number of semester hours depending on background of student.

*Note Concerning Music Theory:* A private interview and a proficiency test are required in Music Theory to determine the level of study.

*Minimum  
Semester  
Hours*

### GENERAL REQUIREMENTS FOR ALL MAJORS IN MUSIC

- 12 — ENGLISH (exception: for Music Education, see page 68).
- 12 — MUSIC LITERATURE.
- 3 — SPEECH (not required in: 1. Music Theory and Composition and 2. Organ-Piano).
- 6 — HISTORY 3101-02.
- 6 — GOVERNMENT 3110-11.
- 16 to 20 — MUSIC THEORY 3114, 2111,\* 2112,\* 3213, 3214, 1211, 1212, 2315, 3411, or 3412.  
(Music Theory and Composition Majors: 19 additional hours; Piano and Organ Majors: 5 additional hours; Orchestral Instruments and Voice Majors: 2 additional hours.)
- 7 — MUSIC EDUCATION 1101, 3331 and 3333 or 3435 (exception: Music Theory and Composition requires only 1101 and 3331 or 3333, Piano and voice pedagogy required of piano and voice majors respectively).
- 3 — MUSIC 3113 (essentials of acoustics and music theory).
- 8 — FOREIGN LANGUAGE COURSES 4101-02. (Required of Voice Majors only.)

**APPLIED MUSIC:**

- A. 32 — for Majors in Music Theory and Composition: 18 semester hours, secondary level, of major instrument; 8 semester hours or equivalent, of piano; 6 semester hours of secondary instrument.
- B. 34 — for Applied Majors in Piano and Organ: 32 semester hours of piano or organ, secondary level; 2 semester hours, or minimum standards audition, of piano sight-reading.
- C. 40 — for Applied Majors in Orchestral Instruments: 32 semester hours of the major instrument, secondary level; 4 semester hours of piano, or equivalent; 4 semester hours of Chamber Music, or equivalent.
- D. 34 — for Applied Majors in Voice: 24 semester hours of Voice, secondary level; 8 semester hours, or equivalent, of piano; 2 semester hours of secondary instrument.
  - Participation in the ensemble of the major instrument (band for winds, orchestra for strings, choir for voice, piano and organ majors) each semester in residence. For exceptions, petition the Music Faculty.
  - Qualified bandmen, interested in directing orchestras, must meet minimum participation requirements in Orchestra. For details, consult with department head.
  - Recital participation and/or attendance considered as laboratory for other music courses.

\* May be omitted by passing satisfactorily a proficiency examination.

## Teacher Education and Certification

Teacher training is one of the important purposes of The University of Texas at El Paso. Each teacher training program is concerned with the total education of the prospective teacher, emphasizing preparation for our American way of life, the development of moral and ethical character, and proficiency in the use of basic skills. All students are required to complete successfully a balanced program consisting of work in arts and science, academic specialization, and professional development. Each program represents the minimum course work which a student must complete to be eligible for degree and certification purposes.

The teacher certification laws of Texas, which became effective September 1, 1955, provide for two general types of certificates: the permanent provisional and the permanent professional. The permanent provisional certificate is based on a bachelor's degree and a prescribed state-approved certification program. The professional certificate is based on a minimum of an approved fifth or sixth year of graduate school work beyond the bachelor's degree.

Students interested in earning teachers' certificates should consult early with a Certification Officer in the School of Education. Each candidate for a permanent *provisional* certificate must complete the National Teacher Examination.

The Texas Education Agency has approved specific programs in teacher certification for the various colleges of the State of Texas. Certificates can be obtained through a particular college only in those areas and fields so approved for that college. A student no longer can complete the elements of a particular program as set forth in State bulletins on teacher certification requirements and obtain a teaching certificate. These bulletins are now directed to colleges to guide the college in developing their certification programs. They are not directed to individual students or to individual applicants for teaching certificates.

The University of Texas at El Paso has approved provisional certificate programs at both the elementary and secondary school levels. In certain highly specialized fields, The University of Texas at El Paso has approved programs which will qualify the individual for teaching his special subject at both the elementary and the secondary school levels. These special area certificates carry what is known as an all-levels endorsement. The University of Texas at El Paso has approved all-levels programs in Art, Health and Physical Education, Music, and Speech and Drama. The student who wishes to earn the Bachelor of Arts degree with a major in some other field and who also wishes to qualify for a provisional certificate to teach at the secondary level should confer with the Dean of Education. In the field of special education the University is approved for the provisional mentally retarded certificate.

The University of Texas at El Paso has approved *provisional* certificate programs as follows:

1. Elementary Education — there are two programs for this certificate, Programs A and B as outlined on page 70.
2. Secondary Education — there are two programs for this certificate, Programs A and B as outlined on page 71.
3. All-Levels Programs — these programs are described on pages 66, 67, and 68 of this catalog.
4. Mental Retardation — this program is described on page 71 of this catalog.
5. School Librarian.

The University of Texas at El Paso has *professional* certificate programs in the following areas:

1. Elementary Teaching.
2. Secondary Teaching.
3. School Administration.
4. Educational Supervisor in Elementary School.
5. Educational Supervisor in Secondary School.
6. Counseling and Guidance.

*A student who expects to receive a teaching certificate upon graduation must file an application with the Coordinator of Teacher Education at the beginning of the semester in which he intends to graduate.*

Direct questions concerning certificates to Coordinator of Teacher Education.

## *All-Levels Teacher Programs*

ART (Bachelor of Arts), DRAMA AND SPEECH (Bachelor of Arts),  
HEALTH & PHYSICAL EDUCATION (Bachelor of Arts), and MUSIC (Bachelor of Music).

An all-levels teaching field may be selected from the four programs listed below.  
(For additional information consult with the head of the department concerned.)

*Semester  
Hours*

### ART

**ACADEMIC FOUNDATIONS** (60 semester hours)

ARTS & SCIENCES (36 semester hours)

- 12 — ENGLISH 3101-02\* and 3211-12 or 3213-14 or 3215-16.
- 6 — HISTORY 3101, 3102.
- 6 — GOVERNMENT 3110, 3111.
- 12 — Twelve semester hours from two of the following:  
SCIENCE — MATHEMATICS — FOREIGN LANGUAGES.

DEGREE REQUIREMENTS AND ELECTIVES (24 semester hours)

- 3 — SPEECH.\*
- 3 — PHILOSOPHY 3203 or 3208.
- 3 — ECONOMICS 3203 or SOCIOLOGY 3101.
- 3 — DRAMA OR MUSIC.
- 12 — ELECTIVES.

**PROFESSIONAL DEVELOPMENT**

- 18 — EDUCATION 3301, 3302, 3310, 3311, 3496, 3498.

**ACADEMIC SPECIALIZATION**

- 45 — ART 3101, 3102, 3103, 3104, 3201, 3202, 3203, 3204, 3205, 3208, 3209,  
3311, 3312, 3321, 3322.
- A minimum total of 126 semester hours including 30 advanced hours.

### DRAMA AND SPEECH

**ACADEMIC FOUNDATIONS** (60 semester hours)

ARTS & SCIENCES (36 semester hours)

- 12 — ENGLISH 3101-02\* and 3211-12 or 3213-14 or 3215-16.
- 6 — HISTORY 3101, 3102.
- 6 — GOVERNMENT 3110, 3111.
- 12 — Twelve semester hours from two of the following:  
SCIENCE — MATHEMATICS — FOREIGN LANGUAGES.

\*A grade point average of not less than a 2.0 is required in both English 3101-02 and any three hours of speech. Any student declared deficient in English or Speech by the certifying committee or major department may be required to complete or repeat additional English and Speech courses regardless of his grade point average.

**DRAMA AND SPEECH (continued)****Semester  
Hours****DEGREE REQUIREMENTS AND ELECTIVES (24 semester hours)**

- 3 — PHILOSOPHY 3203.
- 3 — ART or MUSIC.
- 18 — ELECTIVES.

**PROFESSIONAL DEVELOPMENT**

- 18 — EDUCATION 3301, 3302, 3310, 3311, 3496, 3498.

**ACADEMIC SPECIALIZATION**

- 49 — 9 hours of Foundations courses in DRAMA and SPEECH.  
19 hours of SPEECH courses (chosen with the approval of a departmental advisor), including SPEECH 1101, 3210, 3333.  
21 hours of DRAMA courses: 3 hours of DRAMA 1111; 3 hours of Acting (DRAMA 3214, 3321); 3 hours of Directing (DRAMA 3325, 3425); 3 hours of Creative Dramatics (DRAMA 3350); 3 hours of Technical Theatre (DRAMA 3215, 3221, 3332, 3342); 6 hours of History and Criticism (DRAMA 3357, 3358, 3440).
- A minimum total of 127 semester hours including 30 advanced hours.

**HEALTH AND PHYSICAL EDUCATION****ACADEMIC FOUNDATIONS (62 semester hours)****ARTS & SCIENCES (37 semester hours)**

- 12 — ENGLISH 3101-02\* and 3211-12 or 3213-14 or 3215-16.
- 6 — HISTORY 3101, 3102.
- 6 — GOVERNMENT 3110, 3111.
- 13 — BIOLOGY 3110, 3202; ZOOLOGY 4103; and 3 hours of MATHEMATICS.

**DEGREE REQUIREMENTS AND ELECTIVES (25 semester hours)**

- 9 — HEALTH EDUCATION 3101, and six semesters of physical education skill courses.
- 3 — SPEECH.\*
- 3 — PHILOSOPHY 3203.
- 6 — BIOLOGY 3203, 3301.
- 6 — ELECTIVES

**PROFESSIONAL DEVELOPMENT**

- 12 — EDUCATION 3301, 3310, 3311, and 3302 or 3306 or 3403.
- 6 — PHYSICAL EDUCATION 3496, 3498.

**ACADEMIC SPECIALIZATION**

- 36 — PHYSICAL EDUCATION 3103, 3205, 3206 (Men), 3207 (Men), 3215 (Women), 3316 (Women), 3303, 3304, 3305, 3311, 3312, 3409, 3414; HEALTH EDUCATION 3302.
  - 24 — Second Teaching Field, 12 hours of which must be advanced. A minimum total of 129 semester hours including 30 advanced hours.
- A minimum total of 127 semester hours including 30 advanced hours.

\*A grade point average of not less than a 2.0 is required in both English 3101-02 and any three hours of speech. Any student declared deficient in English or Speech by the certifying committee or major department may be required to complete or repeat additional English and Speech courses regardless of his grade point average.

**MUSIC****ACADEMIC FOUNDATIONS (60 semester hours)**° Semester  
Hours**ARTS AND SCIENCES (36 semester hours)**

- 12 — ENGLISH 3101-02° and 3211-12 or 3213-14 or 3215-16.  
 6 — HISTORY 3101, 3102.  
 6 — GOVERNMENT 3110, 3111.  
 12 — Twelve semester hours from two of the following:  
 SCIENCE — MATHEMATICS — FOREIGN LANGUAGES.

**DEGREE REQUIREMENTS AND ELECTIVES (24 semester hours)**

- 3 — SPEECH.\*  
 6 — MUSIC LITERATURE 3121 or 3122 and 3321 or 3322.  
 3 — MUSIC THEORY 3113 or 3114 (acoustics).  
 12 — ELECTIVES.

**PROFESSIONAL DEVELOPMENT**

- 12 — EDUCATION 3301, 3302 or 3306; and 3310, 3311 or 3420.  
 6 — MUSIC EDUCATION 3496, 3498.

**ACADEMIC SPECIALIZATION**

(Choral Plan 51 hours, Instrumental Plan 53 hours)

C	I	
PLAN	PLAN	(C — Choral Plan; I — Instrumental Plan)
13	—	— MUSIC THEORY 1211, 1212, 3213, 3214, 2315, and 3411.
—	13	— MUSIC THEORY 1211, 1212, 3213, 3214, 2315, and 3412.
12	12	— MUSIC EDUCATION 3331, 3333, 3336, and 3433.
—	12	— MAJOR INSTRUMENT.
—	6	— PIANO.
—	2	— VOICE.
—	8	— Choice of 8 hours from: Reeds 2171, Brasses 2171, Percussion 2171, Low Strings 2171, High Strings 2171.
12	—	— MAJOR INSTRUMENT (Voice, Piano, or Organ).
8	—	— SECONDARY INSTRUMENT (Voice or Piano).
6	—	— Additional applied music.
—	—	— Participation in the ensemble of the major instrument (band, orchestra, or choir) each semester in residence.

A minimum total of 129 (Choral Plan) or 131 (Instrumental Plan) semester hours.

° A grade point average of not less than 2.0 is required in both English 3101-02 and Speech 3101. Any student declared deficient in English or Speech by the certifying committee or major department may be required to complete or repeat additional English and Speech courses regardless of his grade point average.

## *Bachelor of Science in Education*

*(Program A or B must be selected and completed)*

### REQUIREMENTS IN ACADEMIC FOUNDATIONS FOR ELEMENTARY EDUCATION, SECONDARY EDUCATION, AND MENTAL RETARDATION

<i>Minimum Semester Hours</i>		<b>ACADEMIC FOUNDATIONS:</b>
PROGRAM A	PROGRAM B	
		<b>ARTS AND SCIENCES (36 semester hours)</b>
12	12	ENGLISH 3101-02 <sup>o</sup> and 3211-12 or 3213-14 or 3215-16.
6	6	HISTORY 3101, 3102.
6	6	GOVERNMENT 3110, 3111.
12	—	Twelve semester hours from two of the following: SCIENCE — MATHEMATICS — FOREIGN LANGUAGES.
—	6	FOREIGN LANGUAGE: Completion of 3201-02.
—	6	MATHEMATICS.
		<b>DEGREE REQUIREMENTS AND ELECTIVES (30 semester hours)</b>
6	—	EDUCATION 3101 or 3437, 3201.
3	3	SPEECH 3101 or 3103. <sup>o</sup>
6	—	Six semester hours from Philosophy 3203 or 3206, Economics 3203, Sociology 3101 or 3102 or 3215.
6	12	LABORATORY SCIENCES.
—	3	ECONOMICS.
—	3	PHILOSOPHY 3203.
—	3	PSYCHOLOGY 3101.
3	—	MATHEMATICS.
6	6	ELECTIVES.

<sup>o</sup> A grade point average of not less than 2.0 is required in both English 3101-02 and Speech 3101. Any student declared deficient in English or Speech by the certifying committee or major department may be required to complete or repeat additional English and Speech courses regardless of his grade point average.

### ADMISSION TO THE PROGRAMS OF SECONDARY EDUCATION, ELEMENTARY EDUCATION, AND MENTAL RETARDATION

Before a student may be admitted to teacher training by having a degree plan made for the degree of bachelor of science in education, it will be necessary for him to satisfy certain Education Department screening requirements and secure a written recommendation for admission to teacher training from the Department. Acceptable standards must be maintained throughout the college career of the student as well as at the time of admission to teacher training.

## *Bachelor of Science in Education*

### ELEMENTARY EDUCATION

<i>Minimum Semester Hours</i>		
PROGRAM A	PROGRAM B	
66	66	<b>ACADEMIC FOUNDATIONS</b> (see page 69)
		<b>ACADEMIC SPECIALIZATION</b> , complete Plan I or II.
		<b>PLAN I:</b>
18	18	Teaching Subjects,* complete one teaching subject listed on page 72 under Teaching Subjects, Elementary Education, Plan I.
18	18	Combination Subjects,† complete 18 semester hours from the following: Art Education 3311, Drama 3350, English 3308, Mathematics 3302, Music Education 3334, Geography 3210, Physical Education 3205, Health Education 3302, not more than 6 hours of mathematics and/or natural science.
		<b>PLAN II:</b>
24	24	Teaching Subject,* complete one teaching subject listed on pages 72 and 73 under Teaching Subjects, Elementary Education, Plan II.
12	12	Combination Subjects,† complete 12 semester hours from the following: Art Education 3311, Drama 3350, English 3308, Mathematics 3302, Music Education 3334, Geography 3210, Physical Education 3205, Health Education 3302, not more than 6 hours of mathematics and/or natural science.
		<b>PROFESSIONAL DEVELOPMENT</b>
18	18	EDUCATION 3301, 3302, 3306, 3403, 3496-97.
		<b>ELEMENTARY CONTENT.</b>
12	12	EDUCATION 3303, 3304, 3305, 3405.
§	§	ELECTIVES to make a minimum of 132 semester hours.

\* Teaching subjects include courses in Academic Foundations.

† Combination Subjects may not include courses in Academic Foundations.

§ Varies according to student's needs and capabilities.

NOTE: A grade point average of not less than 2.5 is required in Education classes in both Programs A and B.



## Bachelor of Science in Education

### SECONDARY EDUCATION

<i>Minimum Semester Hours</i>		
PROGRAM A	PROGRAM B	
66	66	<b>ACADEMIC FOUNDATIONS</b> (see page 69)
48	48	<b>ACADEMIC SPECIALIZATION</b> , complete Plan I or II.
<b>PLAN I:</b>		
Secondary Teaching Fields,* complete two teaching fields listed on pages 73 and 74 under Teaching Fields, Secondary Education, Plan I. (A grade average of not less than 2.5 is required in each teaching field.)		
<b>PLAN II:</b>		
Secondary Composite Teaching Field,* complete one composite teaching field on page 74 under Composite Teaching Fields, Secondary Education, Plan II. (A grade average of not less than 2.5 is required in the composite teaching field.)		
<b>PROFESSIONAL DEVELOPMENT</b>		
18	18	EDUCATION 3310, 3311, 3312, 3420, 3498-99.
§	§	ELECTIVES to make a minimum of 132 semester hours.

\* Secondary teaching fields and secondary composite teaching fields may include courses in Academic Foundations.

§ Varies according to student's needs and capabilities.

NOTE: A grade point average of not less than 2.5 is required in Education classes in both Programs A and B.

*Minimum  
Semester  
Hours*

### MENTAL RETARDATION

- Complete all requirements in Program A or B in Elementary Education (see page 70) except for Electives in Academic Foundations (see page 69).
- 3 — EDUCATION 3409.
- 9 — Complete at least nine hours from Education 3421, 3422, 3429, 3435.
- § — ELECTIVES to make a minimum of 132 semester hours.

§ Varies according to student's needs and capabilities.

NOTE: A grade point average of not less than 2.5 is required in Education classes in this program.

## *Teaching Subjects: Elementary Education*

**Consult adviser in School of Education concerning selection of courses.**

<b>PLAN I</b>	<i>(18 semester hours in a subject, 9 hours of which must be advanced)</i>
ART – Art 3101, 3102, 3204, plus 9 advanced hours . . . . .	Total: 18 hours
SPEECH – Six hours of foundation courses in Speech; Speech 3210, 3333, plus 6 advanced hours in Speech . . . . .	Total: 18 hours
ECONOMICS – Economics 3103, 3104, 3303 or 3304, plus 9 advanced hours . . . . .	Total: 18 hours
GEOLOGY . . . . .	Total: 18 hours
GOVERNMENT – Government 3110, 3111, plus 12 hours of which 9 are advanced . . . . .	Total: 18 hours
HEALTH AND PHYSICAL EDUCATION – P.E. 3103, 3203, 3205, 3303, 3414; H.E. 3302 . . . . .	Total: 18 hours
HISTORY – History 3101, 3102, 3201 or 3202, plus 9 advanced hours . . . . .	Total: 18 hours
MATHEMATICS – Mathematics 3101, 3102, 3201, plus 9 advanced hours . . . . .	Total: 18 hours
PSYCHOLOGY . . . . .	Total: 18 hours
PHYSICS – Physics 4115, 4216, 1216, plus 9 advanced hours . . . . .	Total: 18 hours
READING . . . . .	Total: 18 hours
SOCIOLOGY – Sociology 3101, 3102, 3104 or 3214, plus 9 advanced hours . . . . .	Total: 18 hours

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<b>PLAN II</b>	<i>(24 semester hours in one subject, 12 hours of which must be advanced)</i>
ART – Art 3101, 3102, 3201, 3202, choice of 3 hours from 3203, 3204, 3205, plus 12 advanced hours . . . . .	Total: 27 hours
BIOLOGICAL SCIENCES – Biology 4110, 3304; Zoology 4103, 3303; Botany 4103, 3301; plus 6 hours from Zoology 4304, 3430, Botany 3304 . . . . .	Total: 26 hours
CHEMISTRY – Chemistry 4103-04, 5213, 4221, 4322; plus 4 advanced hours . . . . .	Total: 25 hours
SPEECH – Nine hours of foundation courses in Speech; Speech 3210, 3333; plus 9 advanced hours in Speech . . . . .	Total: 24 hours
ECONOMICS – Economics 3103, 3104, 3303 or 3304; plus 15 advanced hours . . . . .	Total: 24 hours
ENGLISH – English 3101-02, 3211-12, 3309, 3311-12, plus three additional hours of advanced English. (If the student was exempted from English 3101 by examination, he would be required to take three hours of advanced English in addition to the above to complete the total 24 hours required) . . . . .	Total: 24 hours
FRENCH – French 4101-02, 3201-02, 3357, plus nine advanced hours. Non-native speakers are advised to complete three hours of either French 3110 or 3111. Senior French examinations by Modern Languages Department required . . . . .	Total: 26 hours

EDUCATION MAJORS

GEOLOGY — Geology 3101, 3102, 3216, 3217, plus 12 advanced hours . . . . .	Total: 24 hours
GERMAN — German 4101-02, 3201-02, 3357, plus nine advanced hours. Senior German examinations by Modern Languages De- partment required . . . . .	Total: 26 hours
GOVERNMENT — Government 3110, 3111, plus 18 hours of which 12 are advanced . . . . .	Total 24 hours
TEACHING SUBJECTS: ELEMENTARY EDUCATION — PLAN II (continued)	
HEALTH AND PHYSICAL EDUCATION — P.E. 3103, 3205, 3303, 3304, 3312, 3414; H.E. 3101, 3302 . . . . .	Total: 24 hours
HISTORY — History 3101, 3102, 3201, 3202, plus 12 advanced hours . . . . .	Total: 24 hours
MATHEMATICS — Mathematics 3115, 2116, 4111, 4212, plus 12 advanced hours . . . . .	Total: 25 hours
PHYSICS — Physics 4115, 4216, 4217, 4216, plus 12 advanced hours . . . . .	Total: 25 hours
SOCIOLOGY — Sociology 3101, 3102, 3212, 3214, 3327, 3352, plus 6 hours from 3333, 3336, 3345, 3358 . . . . .	Total: 24 hours
SPANISH — Spanish 4101-02, 3201-02, 3357, 3400, plus three hours from Spanish Literature; plus three hours from Spanish Amer- ican Literature. Non-native speakers are advised to complete three hours from Spanish 3110, 3111, 3114. Senior Spanish examination by Modern Languages Department required . . . . .	Total: 26 hours

### *Teaching Fields: Secondary Education*

**Consult adviser in School of Education concerning selection of courses.**

**PLAN I**                    (24 semester hours in a field, 12 hours of which must be advanced)

BIOLOGICAL SCIENCES — Botany 4103, 3301; Zoology 3303; Biology 3304; Microbiology 4202; plus (Biology 4202 and 6 hours) or (Zoology 5201 and 3 hours) from: Zoology 4304 3305, 4306; Microbiology 4302, 3333, 3223; Biology 3314; Botany 3320. Completion of Biology 4110 and Zoology 4103 under Academic Foundations . . . . .	Total: 24 or 25 hours
GENERAL BUSINESS — 15 semester hours from the following: Accounting 3101, 3102, Finance 3302, Marketing 3201, Office Management 3203, Personnel Management 3201, Statistics 3201, Business Law 3301; plus 9 hours of elective business administration courses to make a total of 12 semester hours of advanced credit . . . . .	Total: 24 hours
CHEMISTRY — Chemistry 4103-04; 5213, 4221, 4322; plus 4 advanced hours . . . . .	Total: 25 hours
DRAMA — Drama 3113; 3 hours of Drama 1111; 3 hours of Acting (Drama 3214, 3321); 3 hours of Directing (Drama 3325, 3425), 6 hours of Technical Theatre (Drama 3121, 3221, 3332, 3342); and 6 hours of History and Criticism (Drama 3357, 3358, 3440) . . . . .	Total: 24 hours
ENGLISH — English 3101-02, 3211-12, 3309, 3311-12, 3419. (If the student was exempted from English 3101 by examination, he would be required to take three hours of advanced English in addition to the above to complete the total 24 hours required)	Total: 24 hours
GEOLOGY . . . . .	Total: 24 hours

EDUCATION MAJORS

FRENCH — French 4101-02, 3201-02, 3357, plus nine advanced hours. Completion of 4101-02 in a second language under Academic Foundations. Senior French examination by Modern Languages Department required . . . . .	Total: 26 hours
GERMAN — German 4101-02, 3201-02, 3357, plus nine advanced hours. Completion of 4101-02 in a second language under Academic Foundations. Senior German examination by Modern Language Department required . . . . .	Total: 26 hours
HEALTH AND PHYSICAL EDUCATION — Physical Education 3103, 3206 or 3207 (Men), 3303, 3304, 3311, 3312, 3316 (Women), 3414, H.E. 3401, and six semesters of Skill Courses . . . . .	Total: 30 hours
TEACHING FIELDS: SECONDARY EDUCATION — PLAN I (continued)	
HISTORY — History 3101, 3102, 3201, 3202, plus 12 advanced hours . . . . .	Total: 24 hours
JOURNALISM — Journalism 4207, 3201, 3202, 3305, 3312, 3350; Publications 1104, 1105; 1304, 1305; 1404 . . . . .	Total: 24 hours
MATHEMATICS — Mathematics 3115, 2116, 4111, 4212, plus 12 advanced hours . . . . .	Total: 25 hours
PHYSICS — Physics 4115, 4216, 4217, 1216, plus 12 advanced hours . . . . .	Total: 25 hours
POLITICAL SCIENCE . . . . .	Total: 24 hours
SECRETARIAL SCIENCE — Office Management 3101 or 3498, 3102, 3201, or 3499, 3202, 3203; plus 9 hours from the follow- ing: Office Management 3301, 3302, 3303, 3304, Personnel Management 3301, including enough advanced courses to make a total of 12 semester hours of advanced credit . . . . .	Total: 24 hours
SPANISH — Spanish 4101-02, 3201-02, 3357, 3400; plus three hours from Spanish Literature; plus three hours from Spanish Amer- ican Literature. Completion of 4101-02 in a second language under Academic Foundations. Senior Spanish examination by Modern Languages Department required . . . . .	Total: 26 hours
SPEECH — In consultation with a departmental advisor, 9 hours of Speech Foundations courses plus 15 hours of which 12 are advanced . . . . .	Total: 24 hours

**Composite Teaching Fields: Secondary Education**

**PLAN II** (48 semester hrs. in a composite field, 18 hrs. of which must be advanced)

SCIENCE — Thirty hours from Zoology 4103, 5201; Botany 3210; Microbiology 4202; Chemistry 4104, 5213; Geology 3103-04, 3205; Physics 4216, 1216, 4217. <i>Completion of one of the following:</i> (1) Botany 3301; Microbiology 4302; Zoology 3301; plus 9 hours from Zoology 4304, 3304; Microbiology 4460; (2) Geology 3305, 3405, 3410, plus 9 advanced hours from: 3455, 3460, 3461, 3466. (3) Physics 3325, plus 15 advanced hours. (4) Chemistry 4221, 4322, 3330, 3331, plus 4 advanced hours . . . . .	Total: 48 hours
SOCIAL STUDIES — History 3101, 3102, 3201, 3202, plus twelve advanced hours; Government 3111, plus three advanced hours; Sociology 3101, 3102, plus three advanced hours; Economics 3104, plus three advanced hours; Geography 3210 . . . . .	Total: 48 hours



*(The Graduate Division publishes a separate bulletin with complete details)*

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Since September, 1964, the Graduate School has been a unit in The University of Texas system-wide Graduate School. Degrees are conferred by The University of Texas.

Majors are offered in Education, Engineering, English, Geology, Government, History, Physics, Psychology, and Spanish. Majors in Biology, Chemistry, Economics, Mathematics, Health and Physical Education, Sociology and Speech have been applied for.

## **PROCEDURES AND REQUIREMENTS FOR ADMISSION**

Applications for admission are made in the office of the Dean of the Graduate School, where forms may be secured. Graduates of U.T. El Paso must supply one complete transcript. Graduates of other colleges must provide two complete transcripts — one for the office of the Registrar, and one for the office of the Dean. The application for admission to a degree program cannot be acted upon until these transcripts have been received and the applicant has been admitted to the University.

There are five basic requirements for admission: (1) a bachelor's degree from an accredited institution in the United States, or proof of equivalent training at a foreign institution; (2) a satisfactory grade point average in upper division (junior and senior level) work, and in any graduate work already completed; (3) a satisfactory score on the Graduate Record Examinations Aptitude Test; (4) adequate subject preparation for the proposed graduate major; and (5) acceptance by the Committee on Graduate Studies of the proposed major area. The Graduate Dean reserves the right to examine any application and, at his own discretion, regardless of other criteria, instruct the Registrar to accept it.

**DEADLINE FOR SUBMISSION OF APPLICATION.** — Individuals holding bachelor's degrees from The University of Texas should apply for admission at least thirty days prior to the beginning of the semester or summer session in which they plan to register. Those with degrees from other American universities or colleges should file their applications, along with official transcripts of all previous college or university work, at least sixty days in advance. Foreign students should apply much earlier: All correspondence relating to their applications must be *completed* sixty days before the beginning of the semester or summer session.

Students from non-English-speaking foreign countries must make a satisfactory score on the Test of English as a Foreign Language (TOEFL) given by the Educational Testing Service, or an examination of similar nature.

**THE GRADUATE RECORD EXAMINATIONS APTITUDE TEST.** — The Aptitude Test of the Graduate Record Examinations is designed to test preparation and aptitude for graduate study, and it must be passed with a satisfactory score by every one seeking admission to the Graduate School of The Uni-

versity of Texas. Issued from the Educational Testing Service at Princeton, New Jersey, and taken at the applicant's own expense, it is given six times a year, usually in October, December, January, February, April, and July. On each of the six appointed dates it is administered at The University of Texas and at approximately 500 other designated centers in the United States and abroad. Some twenty-five other colleges and universities also administer the test, but less than six times annually. An informational booklet and an application blank may be obtained from the Testing and Counseling Center. Since applications for the tests must be received in Princeton about eighteen days before each testing date, applicants should secure the booklet and application blank at least a month in advance.

**GRADE-POINT AVERAGE.** — An applicant with a 3.00 average (on the scale of 4.00) on all work of upper division (junior and senior) and graduate level previously taken has satisfied the minimum requirements of the Graduate School in this regard. Some applications showing less than a 3.00 average may nevertheless be accepted upon special recommendation of departmental graduate advisers.

#### **Transfer of Credits**

Acceptance of graduate credits from another institution, except The University of Texas or one of its branches, may not exceed six semester hours, and is subject to approval by the departmental Committee on Graduate Studies.

#### **Undergraduate Students Taking Work for Graduate Credit**

An undergraduate student who lacks no more than twelve semester hours of the requirements for a bachelor's degree may, upon petition to the Dean, take courses for graduate credit.

#### **Graduate Load for Employed People**

Students who are employed in full-time positions should be limited to three semester hours of work each semester. With the written approval of the Dean, as much as six semester hours of graduate credit for one semester may be approved; however, nine semester hours is the maximum that may be approved for one academic year.

#### **Graduate Load for Regular Students**

Twelve semester hours of course work constitutes a full load for the regular semester; six semester hours for each term of the summer session.

#### **Second Degree**

A student who wishes to qualify for a second Master's Degree may not count courses used in completing his first degree. He must take a full program of new courses. A graduate student seeking a second Bachelor's Degree will register as an undergraduate.

#### **Special Requirements**

For grade requirements, thesis requirements, special departmental requirements, graduation requirements, and other regulations applying to graduate students, see the Graduate Bulletin.

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**MASTER OF ARTS DEGREE**

**General Requirements**

1. A thesis (six semester hours) and twenty-four semester hours of course work.
2. A major with a minimum of eighteen semester hours including the thesis, or a maximum of twenty-four semester hours including the thesis. Major fields for the Master of Arts include Education, English, History, Political Science, Psychology, and Spanish.
3. A minor of from six to twelve hours in a related field. A transfer student must complete at least three semester hours of the minor in residence.
4. There must be a minimum of fifteen semester hours, including the thesis, of graduate courses (those numbered 3500 and above).

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**MASTER OF EDUCATION DEGREE**

**A. General Requirements for All Programs.**

1. Thirty-six semester hours of course work.
2. There must be a minimum of eighteen semester hours of graduate courses (those numbered 3500 and above). The other courses must be numbered 3400 or above.
3. A transfer student must complete at least three semester hours of the minor in residence.

**B. Requirements for the program for the Professional School Administration Certificate.**

1. Completion of the M.Ed. and professional teaching certificate as indicated under "D" or "E" below. The professional teacher program must be planned to provide the foundation work for the program in school administration.
2. General and Specialized Professional Administration Areas: Education 3533, plus twenty-one semester hours from Education 3502, 3524, 3525, 3526, 3528, 3529, 3530, 3531, 3532.

**C. Requirements for the programs of Elementary Supervision, Secondary Supervision, and Counseling.**

**ELEMENTARY SUPERVISION:**

1. Education 3502, 3503 or 3523, 3504, 3508, 3513, 3514, 3524, 3528, plus six hours of electives in Education.
2. Six hours credit from one of the following minors: Art, Biological Sciences, Business Administration, Chemistry, Drama, Speech, Economics, English, French, Geology, Political Science, Health and Physical Education, History, Mathematics, Music, Philosophy, Physics, Psychology, Sociology, Spanish.

**SECONDARY SUPERVISION:**

1. Education 3502, 3503 or 3523, 3504, 3509, 3511, 3517 or 3518, 3524, 3532, plus six hours of electives in Education.
2. Six hours credit from one of the minors listed above under Elementary Supervision.

COUNSELING:

1. Education 3435, 3436, 3504, 3516, 3517, 3518, 3520, 3522, plus six hours of electives in Education (Education 3420 must be taken if not completed as part of the undergraduate program).
2. Six hours credit from one of the minors listed above under Elementary Supervision.

D. Requirements for the program in Elementary Teaching for students who wish to qualify for the Professional Certificate.\*

1. Specialization Area: Twelve semester hours of credit in courses numbered 3500 and above in one of the following elementary subjects: Biological Sciences, Chemistry, English, French, Political Science, Health and Physical Education, History, Music, Physics, Reading, Sociology, & Spanish. At least eighteen semester hours of undergraduate credit is required in the selected elementary subject.
2. Professional Development Area: Six semester hours from Education 3504 and either 3513 or 3514.
3. Resource Area: Six semester hours.
4. Electives: Twelve semester hours approved by the head of the Department of Education, of which at least six must be in Education.

E. Requirements for the program in Secondary Teaching for students who wish to qualify for the Professional Certificate.\*

1. Specialization Area: Twelve semester hours of credit in courses numbered 3500 and above in one of the following secondary subjects: Biological Sciences, Chemistry, English, French, Political Science, Health and Physical Education, History, Music, Physics, and Spanish. At least twenty-four semester hours of undergraduate credit is required in the selected secondary teaching field.
2. Professional Development Area: Six semester hours from Education 3504 and either 3511 or 3517.
3. Resource Area: Six semester hours.
4. Electives: Twelve semester hours approved by the head of the Department of Education, of which at least six must be in Education.

F. Requirements for the program in Elementary Teaching for students who do not wish to qualify for the Professional Certificate.\*

1. Specialization Area: Twelve semester hours of advanced or graduate credit in one of the following subjects: Art, Biological Sciences, Chemistry, Economics, English, French, Geology, Political Science, Health and Physical Education, History, Mathematics, Music, Physics, Reading, Spanish, Speech, and Sociology.
2. Professional Development Area: Six semester hours from Education 3504, 3513 or 3514. The Graduate Dean may in individual cases approve substitutions.
3. Resource Area: Six semester hours.
4. Electives: Twelve semester hours approved by the Dean of the Graduate Division, of which at least six must be in Education.

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\*The applicant should hold or be eligible for the appropriate provisional certificate before admission into this program.



C. Requirements for the program in Secondary Teaching for students who do not wish to qualify for the Professional Certificate.\*

1. Specialization Area: Twelve semester hours of advanced or graduate credit in one of the following fields: Art, Biological Sciences, Business Administration, Chemistry, Drama, English, French, Political Science, Health and Physical Education, History, Mathematics, Music, Physics, Spanish, and Speech. At least twenty-four semester hours of undergraduate credit is required in the selected secondary teaching field.
2. Professional Development Area: Six semester hours from Education 3504, 3511, or 3517. The Graduate Dean may in individual cases approve substitutions.
3. Resource Area: Six semester hours.
4. Electives: Twelve semester hours approved by the Dean of the Graduate Division, of which at least six must be in Education.

H. Special Programs: Students whose needs are not met by any of the alternatives listed above may plan special programs provided the General Requirements for the degree of Master of Education are met.

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**THE MASTER OF SCIENCE DEGREE**

1. A thesis (six semester hours) and twenty-four hours of course work. In the Engineering major, Plan 2 requires completion of thirty-six semester credit hours, without a thesis.
2. Major fields for the Master of Science Degree include Engineering, Geology, and Physics. Engineering offers an undesignated degree covering the areas of Civil Electrical, Mechanical, and Metallurgical Engineering. Half the work must be done in 0500 (Graduate) courses. The rest may be done in 0300 and 0400 courses (0400 courses only in Engineering).  
In the Geology and Physics majors twenty-one hours, including the thesis must be in 0500 courses.  
Areas available for research in Physics include Atmospheric, Fluid, Geo, Molecular, Nuclear, Plasma, Solid State and Theoretical Physics. Specific courses required in the Physics major are Physics 3521, 3541, and 3561.
3. In the Physics major a six-hour minor in Mathematics may be included in the twenty-four hours of course work on recommendation of the committee on graduate studies. Geology majors are required to present a six-hour minor in Mathematics, Chemistry, Physics, Biology, Civil Engineering, or Metallurgical Engineering. At least three hours of the minor must be done in residence.

(See the Graduate Bulletin for complete details)

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\*The applicant should hold or be eligible for the appropriate provisional certificate before admission into this program.



## ***Courses Offered . . .***

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Anthropology . . . . .	203	Health Education . . . . .	149
Art . . . . .	83	History . . . . .	153
Bible . . . . .	86	Japanese . . . . .	171
Biology . . . . .	88	Journalism . . . . .	158
Botany . . . . .	89	Latin . . . . .	171
Broadcasting . . . . .	160	Library Services . . . . .	119
Business Administration	93	Mass Communication	158
Chemistry . . . . .	101	Mathematics . . . . .	162
Drama . . . . .	105	Microbiology . . . . .	90
Economics . . . . .	110	Military Science . . . . .	166
Finance included		Music . . . . .	175
Education . . . . .	113	Music Education . . . . .	177
Engineering:		Philosophy . . . . .	183
Civil . . . . .	120	Physical Education . . . . .	149
Electrical . . . . .	125	Physics . . . . .	185
Mechanical . . . . .	129	Political Science . . . . .	192
Metallurgical . . . . .	133	Psychology . . . . .	196
English . . . . .	136	Russian . . . . .	171
French . . . . .	169	Sociology . . . . .	200
Geography . . . . .	148, 203	Spanish . . . . .	172
Geology . . . . .	143	Speech . . . . .	107
German . . . . .	170	Zoology . . . . .	91

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## ☞ Explanation of Course Numbering System ☞

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### CREDIT MEASUREMENT

The unit of measurement for credit purposes is the semester hour. A semester hour entails one hour of recitation and/or lecture (or the equivalent in shop or laboratory work) per week for one semester of eighteen weeks, unless otherwise specified in the course description. For each classroom hour two hours of preparation are expected. Three hours of shop or laboratory work are counted as equivalent to one classroom hour and the preparation for it. Unless otherwise stated in the course description, it can be assumed that a course will meet for one hour of recitation-lecture per week for each semester hour of credit.

### COURSE NUMBERING SYSTEM

Courses are designated by four digit numbers. The first number indicates semester hour value of the course, the second number indicates level of the course: all courses with a second number of 1 are freshman courses, all courses with a second number of 2 are sophomore courses, all courses with a second number of 3 are junior courses, all courses with a second number of 4 are senior courses, and all courses with a second number of 5 are graduate courses. Any course with a second number of 3 or 4 may be counted as upper division work.

### TWO SEMESTER COURSES

Courses requiring two semesters for completion of a specific degree requirement are designated in the course description by a hyphen, for example, Biology 4101-02. Elective credit only will be given until both semesters of the course have been completed. When any course requires two semesters for completion, the first semester is prerequisite for enrolling in the second semester.

### COURSE FEES

Laboratory and other special fees for individual courses are indicated on a per-semester basis in parentheses following course titles:

#### GEOLOGY

3210 Principles of Geomorphology (\$2)

#### CHEMISTRY

3221-3222 Organic Chemistry (\$2 + \$2)

(Two Semesters – Two Fees)



CLARKE H. GARNSEY, *Head*

*Professors GARNSEY, MASSEY, HARRISON; Associate Professor DEPAGTER;  
Assistant Professor COOGLER; Instructor ARNOLD.*

**B.A. Degree** — Art courses required for a Major in Art are: Art 3101, 3102, 3103, 3104, 3105, 3106, plus three (3) 3200 number courses in one area and two (2) 3200 number courses in the other area plus additional hours to make a total of twelve (12) advanced hours in Art.

**B.A. Degree** with Teacher Certification (see page 66) — Art Majors are required to meet with the Department Head upon accumulating 60 semester hours credit to outline their remaining major program.

See Graduate Bulletin for courses that are approved for credit in the Master's degree programs.

The Art Department reserves the right to retain student work for temporary or permanent exhibition.

*AREA I, Two-dimensional*

- 3201 Painting I
- 3301 Painting II
- 3205 Printmaking I
- 3305 Printmaking II
- 3207 Commercial Design I
- 3307 Commercial Design II
- 3208 Life Drawing I
- 3308 Life Drawing II

*AREA II, Three-dimensional*

- 3202 Sculpture I
- 3302 Sculpture II
- 3203 Metals I
- 3303 Metals II
- 3204 Ceramic Design I
- 3304 Ceramic Design II
- 3215 Enamels I
- 3315 Enamels II

**For Undergraduates**

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

**BASIC COURSES** (Required for all Art degrees)

- 3101 Design I  
An introduction to art through design experience with various media. Includes discussion and laboratory activity in introducing the student to the visual phenomena that form the basis for understanding and creating various art forms.
- 3103 Design II  
Continuation of Art 3101. *Prerequisite:* Art 3101.
- 3102 Drawing I  
Introduction to various types and uses of drawing in a variety of media and subject matter.
- 3104 Drawing II  
Continuation of Art 3102. *Prerequisite:* Art 3102.
- 3105 Art History of the Western World [Formerly 3206]  
A critical and analytical study of the great historical works of art in the western world in architecture, sculpture, painting and the minor arts from the prehistoric period to the Renaissance.
- 3106 Art History of the Western World  
A critical and analytical study of the great historical works of art in the western world in architecture, sculpture, painting and the minor arts from the Renaissance to the present.

- 3209 **Contemporary Art History**<sup>o</sup>  
A course investigating in depth the causes and forms of architecture, painting, sculpture and the minor arts in the western world from 1789 to the present. *Prerequisite:* Sophomore standing.
- 3310 **History of Latin American Art**  
A study of architecture, painting, sculpture and the minor arts of Latin America from 1492 to the present, with an emphasis in the arts of Mexico. *Prerequisite:* Art 3105 and Art 3106.

**For Undergraduates and Graduates**

- 3201 **Painting I**<sup>o</sup> (\$4)  
Introduction to the materials and techniques of oil and other painting media. Development of form through color conditioned to meet the requirements of a controlled composition and aesthetic concept. *Prerequisite:* Art 3103, and Art 3104.
- 3301 **Painting II** (\$4)  
Continuation of Art 3201. *Prerequisite:* Art 3201.
- 3208 **Life Drawing I**<sup>o</sup>  
Methods and techniques of sketching from the living model. Emphasis will be placed on anatomy and figure construction. *Prerequisite:* Art 3103, and Art 3104.
- 3308 **Life Drawing II**  
Continuation of Art 3208. *Prerequisite:* Art 3208.
- 3202 **Sculpture I**<sup>o</sup> (\$7.50)  
An introduction to sculptural form and problems through the use of classic and contemporary materials and techniques. *Prerequisite:* Art 3101, Art 3102, Art 3203, and Art 3204.
- 3302 **Sculpture II** (\$7.50)  
Continuation of Art 3202. *Prerequisite:* Art 3202.
- 3203 **Metals I**<sup>o</sup> (\$7.50)  
Techniques in metal construction, including jewelry, silversmithing, and investment casting of base and precious metals. *Prerequisite:* Art 3103, and Art 3104.
- 3303 **Metals II** (\$7.50)  
Continuation of Art 3203. *Prerequisite:* Art 3203.
- 3215 **Enamels I**<sup>o</sup>  
Basic techniques in enameling from jewelry forms to the enameling of hollow ware. *Prerequisite:* Art 3103, and Art 3104.
- 3315 **Enamels II**  
Continuation of Art 3215. *Prerequisite:* Art 3215.
- 3204 **Ceramic Design I**<sup>o</sup> (\$7.50)  
A survey of ceramic materials and their function in relation to art values, basic laboratory practice in glazing of ware, related information on survey of clay origins and composition, decorating processes, firing kilns and nontechnical glaze composition. *Prerequisite:* Art 3103, and Art 3104.
- 3304 **Ceramic Design II** (\$7.50)  
A continuation of Art 3204. *Prerequisite:* Art 3204.

<sup>o</sup>Prerequisite as indicated or equivalent as determined by Department Head

- 3205 **Printmaking I\* (\$4)**  
Appreciation of design principles as they apply to print processes, with emphasis on etching and engraving. *Prerequisite:* Art 3103, and Art 3104.
- 3305 **Printmaking II (\$4)**  
A continuation of Art 3205. *Prerequisite:* Art 3205.
- 3207 **Commercial Design I\***  
Application of design and aesthetic principles of Commercial Art. *Prerequisite:* Art 3103, and Art 3104.
- 3307 **Commercial Design II**  
Continuation of Art 3207. *Prerequisite:* Art 3207.
- 3311 **Practicum and Theory for the Elementary Self-Contained Classroom Teacher (\$4)**  
An intensive examination of basic art materials and their application in aiding creative and esthetic growth in the Elementary school child. Two hours lecture and four hours studio per week. *Prerequisite or concurrently:* Ed. 3301.
- 3312 **Methodology and Theory for Secondary School Art Education Specialists (\$4)**  
A study of the literature, materials and theory of Secondary School Art Education. *Prerequisite or concurrently:* Ed. 3310 and Junior standing.
- 3321 **Methodology, Materials and Theory for Elementary School Art Education Specialists (\$4)**  
A survey of materials, methodology and research related to the teaching of Elementary School Art Education. Two hours lecture and four studio hours per week. *Prerequisite:* Junior standing.
- 3322 **Advanced Practicum and Theory of American Public Secondary School Art Education (\$4)**  
An intensive survey of the Sociological, Psychological, Philosophical and Historical foundations of American public school Art Education. *Prerequisite:* Art 3312 and 3321 plus Senior standing.
- 3401 **Studio Problems in Art (\$10)**  
A course for the professionally oriented art student which will allow him to explore to a greater depth in areas which he has had basic preparation. *Prerequisite:* Permission of the Department Head and completion of the most advanced course in the subject to be explored. May be repeated for credit.
- 3402 **Research in Art History**  
A course for the advanced student which will allow him to explore various phases of Art History beyond the regular offerings. Seminars and papers will be required. *Prerequisite:* Art 3105 and Art 3106.

\*Prerequisite as indicated or equivalent as determined by Department Head



ROY L. RUCKMAN, *Acting Head*

*Instructors* RUCKMAN, ATKINSON, KNICKERBOCKER and SNEDEKER.

Credit toward college degrees is given for certain courses offered under the following regulations established by the Board of Regents to maintain the equivalence of these courses with other courses given in the College:

The plant in which the courses credited are given must (1) be located in El Paso, convenient to the College; (2) contain adequate classroom facilities — rooms, seats, blackboards, charts, maps, tables; (3) provide a library of books, dictionaries, and lexicons costing at least \$500 as an initial expenditure.

The instructors by whom the courses credited are given must (1) be under the control of some permanent religious organization of recognized standing; (2) possess at least the training demanded of instructors in the College; (3) devote their time primarily to teaching; (4) be approved by the President, subject to final action by the Board of Regents.

The courses credited must (1) be in the field of historical or literary, but not exegetical or doctrinal, study of the Bible; (2) be thoroughly organized, with syllabi showing the outlines and required readings; (3) be of college grade and on a subject suitable for college instruction; (4) be given in regular classes with meetings at least equal in number, in length of period, and in amount of preparation required, to those of a College course involving the credit asked; (5) include regular tests or examinations corresponding to those of the College, to be given at the time prescribed by the College for other examinations; (6) be subject to the same regulations and oversight as regular courses in the College.

The students enrolled in the courses for credit (1) may be credited with no more than twelve semester hours in Bible on any bachelor's degree; (2) are subject to the regulations of the catalog on the amount of work which may be carried.

Bible courses for which college credit is given are conducted by the Baptist Student Union, the Wesley Foundation and Church of Christ Bible Chair.

#### **For Undergraduate Credit Only**

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

**1101 Introduction to the Bible**

A course to provide the beginning Bible student with a general introduction to the Bible. Those who have had 3101 or 3104 may not take this course.

**1102 The Biblical Teachings on Marriage and the Home**

A study of Biblical teachings on the home and marriage with an effort to apply the principles to today's problems.

**3101 Survey of the Old Testament**

A comprehensive study of the entire Old Testament.

**3103 The Life of Christ**

A historical study of the life and teachings of Christ.

**3104 Survey of the New Testament**

A comprehensive study of the entire New Testament.



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- 3201 **The Life of Paul**  
A historical study of the life and missionary endeavors of the Apostle Paul. *Prerequisite:* Sophomore standing.
- 3203 **An Introduction to the Psychology of Religion**  
To introduce students to the creative dialogue between the disciplines of the psychological sciences and theological studies through the writings of psychiatry, psychoanalysis and religion.
- 3301 **Comparative Religion**  
An introduction to the study of religion and an examination of primitive religion. Among the living religions, Zoroastrianism, Hinduism, Buddhism, Confucianism, Taoism, Shintoism, Judaism, and Christianity will be studied. *Prerequisite:* Junior standing.
- 1202 **Poetical and Wisdom Literature of the Old Testament**  
A study of the Hebrew contributions to poetry. Special attention will be given to background, style and content of the Old Testament books which are classified as poetry: Job, Psalms, Proverbs, Ecclesiastes, Song of Solomon, and Lamentations.
- 2202 **The Hebrew Prophets**  
A study of the place of Hebrew prophecy in the development of the Old Testament. Special attention will be given to all of the major and minor prophets. *Prerequisite:* 60 hours.



## BIOLOGY



JAMES B. REEVES, *Head*

*Professors* BERKMAN (emeritus), REEVES, WEBB;

*Associate Professors* CHRAPLIWY, DUKE, EKLUND, METCALF, WILLIAMS, HARRIS,  
JOHNSON; *Assistant Professors* HUNTER, MANNING, TULLEY;

*Instructor* RAMIREZ.

Twenty-seven semester hours of Biological Sciences are required for the Bachelor of Arts with a major in Biology.

Thirty-three semester hours of Biological Sciences are required for the Bachelor of Science (in the Sciences) with a major in Biology.

A student, at his option, may pursue a field of concentration in Botany, Microbiology, or Zoology.

1415 Required of all Biology majors for graduation.

### BIOLOGY

#### For Undergraduates

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

#### 4101-02 Anatomy and Physiology (\$2-\$2) [For Nurses Only]

Study of a typical animal cell; mitosis and cell division; meiosis; survey of mammalian histology, the human skeleton, muscles of the body, circulatory and nervous systems, physiology. Three lectures and two laboratory hours per week.

#### 4110 General Biology (\$2)

Principles of cell and energy relationships in biotic systems, self-perpetuation, classification, and relationships of the organism to space, time and environment. Three lectures and two laboratory hours per week. *Prerequisite:* College entrance

#### 4202 Biology of the Human Body (\$2)

Survey of the anatomy of the human body with emphasis on the skeletal and muscular systems. Three lectures and two laboratory hours per week. *Prerequisite:* Zoology 4103. This course may not be counted for credit in addition to Zoology 5201.

#### 4203 Introduction to Human Physiology (\$2)

Body functions with emphasis at the organismal level. Three lectures and two laboratory hours per week. *Prerequisite:* Biology 4202 or Zoology 5201.

#### For Undergraduates and Graduates

#### 4301 Physiology of Exercise (\$2) [For P.E. and Education majors only]

Brief review of embryogeny and histogenesis of muscles in Vertebrates; physiology of the nervous, muscular, digestive, skeletal, and respiratory systems of man in relation to work and exercise. Three lectures and two laboratory hours per week. *Prerequisite:* Biology 4203 or Zoology 5201.

#### 3304 Genetics

Principles of heredity in their application to animals, plants, and mankind. *Prerequisite:* Zoology 4103 or Botany 4103 and Junior standing.

#### 3314 Evolutionary Theory

History of evolutionary thought; critical examination of the evidence for evolution with emphasis on genetic, morphological, ecological and zoogeographical

- concepts as related to the process of evolution. Three lectures per week. *Prerequisite*: Twelve hours of biological sciences and Junior standing.
- 4327 Cellular Biology (\$2)  
A study of the structure and function of cells. Three lectures and three laboratory hours per week. *Prerequisite*: Twelve semester hours of biology and eight hours of chemistry. May be counted as four semester hours toward botany or zoology option.
- 3401 Technique in Histology and Cytology (\$2)  
Fixing, imbedding, sectioning, staining and mounting tissues and cells for critical microscopical examination. One lecture and six laboratory hours per week. *Prerequisite*: Senior standing and permission of the Head of the department.
- 1415 Selected Topics in the Biological Sciences — SEMINAR (\$2)  
Two lecture hours per week. *Prerequisite*: Twelve hours of advanced biological sciences.
- 2498-6498 Introduction to Research (\$4)  
Credit will be granted, up to six semester hours, for research satisfactorily completed by advanced students. Only specially qualified students will be accepted for this work. *Prerequisite*: Senior standing and permission of the Head of the department.

**BOTANY****For Undergraduates**

- 4103 Survey of the Plant Kingdom (\$2)  
The life histories and phylogenetic relationships of vascular and non-vascular plants. Three lectures and two laboratory hours per week. *Prerequisite*: Biology 4110 or the equivalent.
- 3210 Morphology and Taxonomy (\$2)  
The form, structure, and development of the higher plants with principles of collecting, preservation, identification and classification. Two lectures and three laboratory hours per week. *Prerequisite*: Botany 4103.
- 3223 Mycology (\$2)  
Morphology, taxonomy and physiology of the fungi. Two lectures and three laboratory hours per week. *Prerequisite*: Biology 4110 and Botany 4103. May be counted as three semester hours toward Botany or Microbiology option.

**For Undergraduates and Graduates**

- 3301 Plant Ecology (\$2)  
The adaptation of plants to environmental growth conditions. Emphasis is on the origin, development, and stabilization of plant communities. Two lectures and three laboratory hours per week. *Prerequisite*: Botany 3210.
- 3304 Economic Botany  
Survey of the plants with the greatest economic importance to man. Study of products from the plant cell wall, cell exudates and extractions. Three lecture hours per week. *Prerequisite*: Botany 4103 and permission of Head of Department.
- 3320 Plant Anatomy (\$2)  
A comprehensive treatment of the development, function and evolutionary significance of the internal structure of plants. Two lectures and three laboratory hours per week. *Prerequisite*: Botany 3210.
- 4313 Plant Physiology (\$2)  
A study of the processes of nutrition, growth and metabolism. Three lectures and two laboratory hours per week. *Prerequisite*: Botany 4103 and Chemistry 4103-04.

**MICROBIOLOGY**

**4201 Microbiology (\$2) [For Nurses Only]**

Survey of microbes with emphasis on pathogens, bacteria and protozoans; culture technique; staining technique; histology of the blood and typing of blood groups. Three lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4106 and Biology 4101.

**For Undergraduates**

**4202 General Microbiology (\$2)**

Principles of microbiology; application of pure culture techniques employing non-pathogenic forms; bacteriological analysis of water, milk and sewage; staining techniques, preparation of media; application of microbiology to industrial problems. Three lectures and three laboratory hours per week. *Prerequisite:* Biology 4110, Botany 4103 or Zoology 4103 and Sophomore standing.

**3223 Mycology (\$2)**

Morphology, taxonomy and physiology of the fungi. Two lectures and three laboratory hours per week. *Prerequisite:* Biology 4110 and Botany 4103. May be counted as three semester hours toward Botany or Microbiology option.

**For Undergraduates and Graduates**

**4302 Pathogenic Microbiology (\$2)**

Survey of pathogenic bacteria with emphasis on their pathogenicity, and application of principles in isolation; introduction to immunology and haematology. Three lectures and three laboratory hours per week. *Prerequisite:* Microbiology 4202; for juniors and seniors, the equivalent of Microbiology 4202 as determined by the Instructor and the Head of the department.

**3333 Microbial Physiology**

Principles of microbial activity; microbial anatomy, growth, nutrition and metabolism. Three lectures per week. *Prerequisite:* Microbiology 4202 and eight hours of Chemistry. Chemistry 3221-22 concurrently.

**3334 Industrial Microbiology (\$2)**

Principles of antibiotic production, microbial fermentations, microbiology of water and sewage, production of biological agents. Two lectures and three laboratory hours per week. *Prerequisite:* Microbiology 4202 and 3333.

**3424 Advanced General Microbiology (\$2)**

An intensive study of the genera of bacteria, principles of dilutions, enzymatic assay, and an introduction to instrumental analyses. Two lectures and three laboratory hours per week. *Prerequisite:* Microbiology 4202 and 3333 and six additional semester hours of Microbiology.

**3425 General Virology**

A morphological, physiological, and biochemical study of animal, plant, and bacterial viruses. Three lectures per week. *Prerequisite:* Microbiology 3333 and 4460.

**4460 Immunology (\$4)**

Principles of the immune reaction, nature of antigens and antibodies, antigen-antibody reactions, allergic phenomena, antiviral immunity. Three lectures and six laboratory hours per week. *Prerequisite:* Microbiology 4302, and Chemistry 3221 or 4221 concurrently.

**ZOOLOGY****For Undergraduates**

- 4103 Survey of the Animal Kingdom (\$2)  
A survey of the kinds of animals, their classification, phylogenetic relationships, anatomy and ecology. Three lectures and two laboratory hours per week. *Prerequisite:* Biology 4110 or the equivalent.
- 5201 Comparative Vertebrate Anatomy (\$7)  
Classification and comparative anatomy of vertebrates, including function, ontogeny and phylogeny of their organs and organ systems. Dissection of a cyclostome, selachian, and a mammal. Three lectures and five laboratory hours per week. *Prerequisite:* Zoology 4103 with a grade of at least a "C" and Sophomore standing.
- 3204 Ornithology (\$2)  
A study of the morphology, taxonomy and life histories of birds. *Prerequisite:* Zoology 4103 and sophomore standing. Two lecture and three laboratory hours per week.

**For Undergraduates and Graduates**

- 3301 Vertebrate Embryology (\$2)  
Comparative embryology with special emphasis on avian and mammalian development. Two lectures and three laboratory hours per week. *Prerequisite:* Zoology 5201 with a grade of at least a "C" and Junior standing.
- 3302 Vertebrate Histology (\$2)  
Structure of vertebrate tissues and organs. Two lectures and three laboratory hours per week. *Prerequisite:* Zoology 4103 and junior standing.
- 3303 Animal Ecology (\$2)  
Fundamentals of the relations of animals to the physical and biological environment; adaptation of structure and functions, natural selection, populations and the factors that control them, associations and specialized relations, organization and interrelationships of plant-animal communities. Two lectures and three laboratory hours per week. *Prerequisite:* Zoology 4103 and six additional hours of biological science.
- 4304 General Physiology (\$4)  
Principles of organization of cellular activity; molecular structure of protoplasm, surface and osmotic phenomena, permeability, nutrition, metabolism, and mechanism of energy exchange. Three lectures and three laboratory hours per week. *Prerequisite:* Biology 4110, Zoology 4103, Chemistry 4103-04.
- 3305 Parasitology (\$2)  
A survey of the parasitic Protozoa, Platyhelminthes, Aschelminthes and Arthropoda; their morphology, physiology and life cycles. Two lectures and three laboratory hours per week. *Prerequisite:* Zoology 4103 and six additional hours of biological sciences.
- 4306 Vertebrate Natural History (\$2)  
The evolution, taxonomy, ecology, and zoogeography of vertebrates with a consideration of their morphology, physiology, and behavior pertinent for adaptation to various habitats. Three lectures and two laboratory hours per week. *Prerequisite:* Zoology 5201.

## BIOLOGY

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- 3307 Entomology (\$2)  
A study of the morphology, taxonomy and life histories of insects. *Prerequisite:* Eight semester hours of zoology and junior standing. Two lectures and three laboratory hours per week.
- 4464 Invertebrate Zoology  
A study of the morphology, taxonomy and life histories of invertebrates. *Prerequisite:* 12 semester hours of biology and senior standing. Three lectures and three laboratory hours per week.
- 3430 Zoogeography  
A study of the geographical distribution of animals. Past geologic and ecologic factors accounting for present distributional patterns are emphasized. Three lectures per week. *Prerequisite:* Twelve hours of biological sciences and Senior standing.
- 4463 Protozoology (\$2)  
The morphology, taxonomy and physiology of the non-parasitic protozoa. Three lectures and three laboratory hours per week. *Prerequisite:* Twelve semester hours of biology and senior standing. May be counted as four semester hours toward zoology or microbiology option.

### FOR GRADUATE STUDENTS ONLY

*Prerequisite:* Twelve advanced hours of Biological Sciences and a Bachelor's Degree.

- 3501 Selected Advanced Topics in Zoology — SEMINAR  
Topics vary with student background and instructor.
- 3502 Problems in the Biological Sciences  
Research, writing and discussion in the Biological Sciences.
- 3503 Desert Ecology  
An advanced study of the relation of plants and animals to the physical and biological environments.
- 3504 Cytogenetics  
A correlation of plant and animal cytology and genetics.
- 3505 Herpetology  
A study of the morphology, taxonomy and life histories of reptiles & amphibians.
- 3506 Mammalogy  
A study of the morphology, taxonomy and life histories of mammals.
- 3507 Biology of the Pleistocene  
A study of the organisms of the Pleistocene.
- 3508 Endocrinology  
A study of the structure and function of the endocrine glands of mammals and invertebrates.
- 3509 Microbial Genetics  
A study of the genetics of microorganisms.
- 3598-99 Thesis



G. R. BOVARD, *Head*

Due to the change in degree program structure certain courses may be scheduled out of sequence subject to approval of the department Head.

See pages 60-62 for Degree Plan requirements and certificates.

ACCOUNTING AREA

*Associate Professor* BURCHARD; *Assistant Professors* BOVARD, BUCKNER, FLYNT, SANDERS, STRONG; *Part Time Instructors* FRUITHANDLER, KAUFMAN, RUSSELL.

- 3101 Principles of Accounting I (\$2)  
Introductory study of the double entry accounting system. Analysis and recording of business transactions; preparation of financial statements applicable to proprietorship and partnership accounting. Problems and practice set. Three hours of lecture and one hour of Lab per week. (Voluntary Lab)
- 3102 Principles of Accounting II (\$2)  
A continuation of accounting principles. Study of the partnership and corporate forms of the business entity with an introduction to taxes (payroll, property, and income), the cost system (job order, process cost, and standard cost), and financial statement analysis. *Prerequisite:* Accounting 3101. Three hours of lecture and one hour of Lab per week. (Voluntary Lab)
- 3201 Intermediate Accounting I  
Critical analysis of the balance sheet accounts. Introductory analysis of income statement expense and revenue accounts with emphasis on the matching process. Problems keyed to studies made by professional accounting societies. *Prerequisite:* Accounting 3102.
- 3202 Intermediate Accounting II  
Completion of the critical study of balance sheet accounts. Continuing intensive analysis of financial statements. Emphasis on comparative analysis of tabulated data, special ratios and measurement, funds and cash flow statements, and accounting for price level changes. *Prerequisite:* Accounting 3201.
- 3205 Managerial Accounting  
Fundamental techniques of dynamic cost and profit control. Primary emphasis on responsibility accounting. Problems in managerial planning budgets, variable expenses, cost-volume-profit analysis, and budget reports. *Prerequisite:* Accounting 3102.
- 3301 Cost Analysis I  
A study of cost accounting procedures with emphasis on the basic theory and procedures of allocating materials, labor, and manufacturing expenses in job order and process cost systems. *Prerequisite:* Accounting 3102.
- 3302 Cost Analysis II  
Fundamental techniques of expense allocation are more fully developed. Emphasis on determining standard costs, budgetary control, variance analysis, and cost and profit analysis for management decision making. *Prerequisite:* Accounting 3301.
- 3303 Management Services — Systems Design  
Analysis of fundamental accounting systems. Emphasis on systems design; relationship of system and organization; objectives, policies, procedures, and plans. Field trips scheduled to selected business offices in problem analysis of operating systems. *Prerequisite:* Accounting 3202.

## BUSINESS ADMINISTRATION

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- 3304 **Management Services – Electronic Data Processing**  
Punch card tabulating; electronic data processing; principles and problems of accounting systems planning, organization, and control in internal procedures, auditing, and analysis. *Prerequisite:* Accounting 3303.
- 3306 **Governmental and Institutional Accounting**  
Study of the specialized procedures and unique methods of fund accounting for governmental units and private institutions. Problems in actuarial science. *Prerequisite:* Accounting 3102.
- 3307 **Federal Tax – Individuals**  
Intensive study of the tax structure as stated public policy. Ethical implications of tax policy interpretations. Emphasis on the current income tax code with problem analysis and preparation of income tax returns for individuals. *Prerequisite:* Accounting 3102.
- 3308 **Federal Tax – Partnerships and Corporations**  
Analysis of the current Federal Income Tax code in relation to partnerships and corporations including problems and preparation of tax returns. Analysis of federal gift, estate, and inheritance tax structure. *Prerequisite:* Accounting 3307.
- 3309 **Survey of Accounting Principles, Techniques, and Concepts**  
(Open only to Non-Business students). A non-technical approach to Accounting, emphasis is on use of financial statements, evaluation of Cost Accounting Reports, Budgets and Variances. Survey of Governmental Accounting or Accounting for non-profit organizations.
- 3401 **Advanced Accounting**  
Designed to prepare the student for special problems in accounting; consolidations, fiduciaries, consignment sales, liquidations and dissolutions of partnerships, estates and trusts. *Prerequisite:* Accounting 3202.
- 3404 **Auditing Principles and Procedures**  
Public accounting firm organization and operation; internal control and internal auditing; verification of balance sheet and operating accounts; auditors reports and opinions. *Prerequisite:* Accounting 3202.

## BUSINESS AREA

*Professors* BAYLOR, HARTRICK; *Associate Professors* BLACK, BLANCHARD, DAWKINS;  
*Assistant Professors* FREELAND, GIFFORD, REYNOLDS, TOMPKINS;  
*Part Time Instructors* GREEN, DAWSON, SIPES.

## GENERAL BUSINESS

- 3101 **Development of American Industry**  
A comparative analysis of the major industries in the United States. Selected motion pictures, slides, and audio tapes are used to teach the factors of integration and rationalization of each industry; fundamental development of the problem – solving technique with qualitative data.
- 3102 **Introduction to Data Processing (\$2)**  
An introductory course designed to familiarize the student with basic principles related to the association of Electronic Data Processing and its application to business and economics.



- 3202 **Owning and Operating a Small Business**  
 A study of steps essential in planning, organizing, and operating a single proprietorship or partnership enterprise. Special emphasis on meeting local, state, and federal requirements; locating, financing, insuring, accounting, and merchandising for profit. *Prerequisite:* Sophomore standing or approval of the department Head.
- 3203 **Introduction to Computers (\$2)**  
 An introduction course in computers designed to familiarize the student with the impact of the computer on the business and economic society. Emphasis is placed on computer language, programming and decision-making, in the fields of economics and business.
- 3301 **Social Responsibility of Business**  
 The student correlates the objectives of business firms with those of the society as a whole, analyzes the interrelationships of business resources, and examines the management process of marshalling and utilizing resources to attain desired objectives.
- 3401 **Comparative Readings**  
 An independent study opportunity designed to augment a student's unique ability or to be used as a means of encouraging broadened thought through comparisons of business philosophies. Written reports based upon assigned readings are required.
- 3402 **Business Policy and Management Laboratory**  
 Integration of accounting, business law, finance, personnel and production management, and marketing background in the solution of top-management problems. Computer simulated business operation and administration. Student placement with co-operating firms to receive on-the-job training in management. *Prerequisite:* Senior standing.

#### BUSINESS LAW

- 3301 **Business Law I**  
 Designed to introduce the student to the legal environment in which business decisions are made with an intensive study of contracts.
- 3304 **Business Law II**  
 A continuation of Business Law 3301 with emphasis on the Uniform Commercial Code. *Prerequisite:* Business Law 3301.
- 3401 **C.P.A. — Law Review**  
 A review of the legal subjects covered in the examination for Certified Public Accountants. *Prerequisite:* Business Law 3304 or permission of the instructor.

#### MARKETING

- 3201 **Principles of Marketing**  
 A description and analysis of the ways in which goods move to points of consumption. Topics studied include functions, institutions, the marketing environment, markets, and government regulation.
- 3301 **Advanced Marketing**  
 Legal, economic, and social aspects of the marketing process. Analysis of the role of marketing management; governmental regulations, pricing policies and practices, the selection of distribution channels, sales promotion, and market analysis. *Prerequisite:* Marketing 3201.
- 3302 **Principles of Retailing**  
 Analysis of retail store management including personal requirements and career opportunities with emphasis on modern methods in buying, receiving, pricing, merchandise and financial control, sales promotion and customer service. *Prerequisite:* Marketing 3201.

- 3303 **Fundamentals of Advertising**  
 Survey of advertising principles used in all media of communications. Discussion of advertising's role in small and large business enterprises. *Prerequisite:* Marketing 3201. Marketing 3303 and Journalism 3350 may not both be counted for credit.
- 3304 **Distribution Logistics**  
 Provides a functional knowledge of transportation and distribution systems capable of introducing change or reacting to change in the economic system. Emphasis upon the functional analysis of carriers, distribution system alternatives, spatial arrangements of markets, and selection of physical movement channels in accordance with emerging regional and national programs. *Prerequisite:* Marketing 3201.
- 3305 **International Marketing**  
 Emphasis is given international marketing from the viewpoint of the marketing manager who must recognize differences in market arrangements, and in legal, cultural, and economic factors in different countries. Areas covered include planning and organizing for international operations, interrelationships with other functions, product strategy, pricing, promotion, channels and financial aspects of international marketing. *Prerequisite:* Marketing 3201.
- 3306 **Sales Management**  
 The selection and administration of the sales force; determination of marketing policies; and the planning, coordination, and control of all promotional activities. *Prerequisite:* Marketing 3201.
- 3307 **Professional Salesmanship**  
 Analysis of the concepts and personal attributes required for professional selling, preparation, modern methods of sales presentation, building of good-will; employer, employee, and competitor relationships. *Prerequisite:* Sophomore standing or approval of the department Head.
- 3401 **Marketing Research and Analysis**  
 Scientific methods of analysis and statistical techniques are employed in solving marketing problems. Emphasis on collection of information from internal and external sources; analysis; interpretation, and presentation of research findings. *Prerequisite:* Statistics 3301 and six advanced hours in Marketing.

**OFFICE MANAGEMENT AND BUSINESS EDUCATION**

- 3101 **Typewriting I (\$2)**  
 Fundamentals of touch typewriting; mastery of keyboard and techniques; development of speed and accuracy; page arrangement of business letters, tabulation, and manuscript writing. Three hours of lecture and two hours of laboratory per week.
- 3102 **Typewriting II (\$2)**  
 Advanced instruction in applied typewriting with emphasis on increased speed, accuracy, and efficiency to meet business production standards; legal work and business forms. *Prerequisite:* Off. Mgt. 3101. Three hours of lecture and two hours of laboratory per week.
- 3103 **Shorthand I (\$2)**  
 Principles of Gregg shorthand; reading, writing, and elementary transcription. *Prerequisite:* OFCM 3101 or approval of Department Head. (Three hours of lecture and two hours of laboratory per week.)
- 3104 **Shorthand II (\$2)**  
 Gregg shorthand continued; skill and speed building; dictation and transcription of unpracticed material. *Prerequisite:* OFCM 3101 or approval of Department Head. (Three hours of lecture and two hours of laboratory per week.)
- 3203 **Business Communications**  
 Development of clear, persuasive writing skill through intensive application of communication principles. Classroom discussion is supplemented by supervised practice in the composition of business letters, reports, memos, and other written communications.

- 3301 **Transcription (\$2)**  
 Transcription of mailable business correspondence; vocabulary building; sustained dictation and transcription practice for secretarial efficiency. *Prerequisite:* Off. Mgt. 3104. Three hours of lecture and two hours of laboratory per week.
- 3302 **Office Problems and Procedures (\$2)**  
 Secretarial procedures including: processing of mail, filing and records control, procuring of office supplies, receiving calls and callers, handling travel arrangements, preparing business reports, developing business reports, developing personal and professional qualities of the career secretary. *Prerequisite:* OFCM 3101 or approval of Department Head.
- 3303 **Office Management**  
 A study of the authority and responsibilities of the office manager. Comprehensive applications of modern management concepts and practices in the organization, operation, and control of office functions.
- 3304 **Business Systems**  
 Methods of establishing, analyzing, standardizing, and controlling administrative systems and procedures including: work simplification, forms analysis, work-flow charting, layout and space analysis, office manuals.
- 3305 **Administrative Services**  
 Theory and practice in the selection and operation of dictation and transcription machines, duplicating machines, copying machines, calculators, and proportional spacing typewriters. *Prerequisite:* OFCM 3101.

**PERSONNEL MANAGEMENT AND INDUSTRIAL RELATIONS**

- 3201 **Principles of Management**  
 Study and application of the concepts of management in business organization and operation. The student's attention is focused on the universality of management functions in all phases of business in his search for a practical philosophy of management.
- 3301 **Personnel Management and Industrial Relations**  
 Survey of policy, procedure and practice in major areas of the Personnel-Industrial Relations field, including: employment, training, labor relations, wages and incentives, benefits and services, program research and evaluation.
- 3302 **Industrial Psychology**  
 Psychological applications to business organizations. Primary emphasis upon research findings in Personnel Administration areas such as: selection, training, group relations, employee evaluation motivation, work environment. Also attention to other areas of Industrial Psychology such as: human engineering, advertising and public relations. *Prerequisite:* Personnel Management 3301.
- 3303 **Collective Bargaining**  
 Analysis of bargaining procedures; study of basic institutional issues in bargaining, economic related administrative clauses, strike and lockout tactics, contract administration. Preparation, negotiation, and interpretation of labor contracts. *Prerequisite:* Personnel Management 3301.
- 3304 **Organization Staffing**  
 Detailed consideration of programs and methods in procurement, selection, assessment, and development of an organization's manpower resources. Areas include: psychological testing, interviewing, and related employment techniques, counseling and employee appraisal training and development plans. *Prerequisite:* Personnel Management 3301 and Statistics 3301.
- 3401 **Human Relations in Management**  
 Applications of contemporary theory in motivation of employees at all organizational levels. Direct and indirect compensations; nonfinancial rewards; interrelationships among measures of morale, productivity and leadership. *Prerequisite:* Personnel Management 3301.

**PRODUCTION MANAGEMENT**

**3301 Production Management – Fundamental**

Study of basic quantitative procedures and techniques employed in operations management with emphasis on the development and understanding of analytical techniques and their contribution to managerial decision-making. Statistical, linear programming, and general quantitative analysis applied in case problems.

**3302 Production Management – Advanced**

An analytical approach to the management of physical resources. Study of new developments in mathematical and statistical bases for making rational decisions in operating management; linear programming; value analysis; problem-solving models. Production system simulation by computer. *Prerequisite:* Production Management 3301 and Statistics 3301.

**3303 Methods Analysis**

Methods improvement procedures; process analysis; principles of motion economy. Determination of time standards and their relation to incentive systems. Emphasis on human relations problems. Development and control of performance standards. *Prerequisite:* Production Management 3301.

**3304 Operations Research – Managerial (\$2)**

The objective of this course is to provide an understanding of the philosophy of operations research, to introduce the mathematical techniques employed in the solution of typical management problems, and to teach the student when and where the operations research methodology can be applied. Mathematical programming, game theory, queuing theory, and Monte Carlo simulation applied to problem situations. Computer programmed problem-solving. *Prerequisite:* Production Management 3301. Three hours of lecture and one hour of Lab per week.

**3305 Production Control**

The control of time, quantity, and quality of operations. Routing, scheduling, dispatching, and control problems. System relationships in manufacturing, sales, and technical staff departments. *Prerequisite:* Production Management 3301.

**3306 Purchasing, Stores and Inventory Control**

Objectives, principles, and methods in managing the function of material supply in industry. Special attention to problems met in planning materials, requirements, purchasing, receiving, storing, and disbursing. *Prerequisite:* Personnel Management 3201.

**STATISTICS AND QUANTITATIVE ANALYSIS**

**3201 Fundamentals of Statistics (\$2)**

Introduction to the foundations of descriptive statistics. Measures of location and variation, with emphasis to specific applications. Study of Index numbers. Introduction to foundations of probability. Time series, Correlation analysis. The course will cover also an introduction to electronic data programming with application emphasis to the related statistical problems studied. *Prerequisite:* Mathematics 3102 or equivalent. Three hours of lecture and one hour of Lab per week. (Voluntary Lab)

**3301 Intermediate Statistics (\$2)**

Probability and combinatorial analysis. Decision theory, mathematical expectations, tests of hypotheses, linear regression and analysis, correlation analysis, multiple linear regression. Time series and trend analysis, seasonal and cyclical movements. Probability distributions, sampling distribution, the "t" distribution, the binomial distribution, the Poisson distribution, chi-square distribution. Introduction to operations research and linear programming. *Prerequisite:* Statistics 3201. Three hours of lecture and one hour of Lab per week. (Voluntary Lab.)

3302 Operations Analysis

Introduction to philosophy, techniques and business applications of modern mathematical sciences with emphasis on the managerial viewpoint. Foundations of mathematical operations for programming; analysis methods; price analysis and its determination; study of market elasticities with applications. *Prerequisite:* Statistics 3301.

3401 Business Forecasting and Time Series

Introduction to the contemporary theory of economic fluctuations, economic indicators; foundations of business forecasting; analysis of business indexes in current use. Business index number construction, methods of measuring business trends and fluctuations, with applications to business forecasting. Serial and multiple correlation and business trends. Advanced study of time series. Application of forecasting methods to specific case studies. Role of business forecasting in managerial planning, principles and methods of forecasting and evaluation of the reliability of existing forecasting techniques. Short term and long term forecasting of industry, regional and national business trends. *Prerequisite:* Statistics 3301.

**For Undergraduates and Graduates**

*Prerequisite* for courses listed below: Senior or Graduate standing.

**ACCOUNTING**

3498 Studies in Advanced Accounting

A study of fundamental concepts and standards; the relationship between theory and practice; criteria developed for understanding, interpreting, and applying accounting theory. *Prerequisite:* Twelve hours of advanced Business Administration including intermediate accounting.

3499 Accounting Theory — SEMINAR

A study of modern accounting theory, its background, applications, and influencing forces. *Prerequisite:* Twelve hours of advanced Business Administration, including intermediate accounting.

**MARKETING**

3498 Marketing Survey and Analysis

A comprehensive approach embracing all business activities involved in moving goods from production to consumption. Breadth and depth are pursued with analytical emphasis upon marketing institutions, functions, regulations costs, efficiency, and contemporary marketing problems. Developing a philosophy of the role of marketing in the American economy is also emphasized.

3499 Marketing Theory — SEMINAR

Concepts and theories advanced in the development of marketing institutions, channels, functions and marketing processes. Emphasis is given other disciplines and their contributions to marketing thought.

**OFFICE MANAGEMENT AND BUSINESS EDUCATION**

3498 Improving Instruction in Secretarial Subjects

Modern methodology in teaching typewriting, shorthand, and office practice courses. The psychology of skill building and techniques of office production.

3499 Business Education — SEMINAR

Evaluation of methodology and materials used in teaching business subjects. The place of business education in general education.

**PERSONNEL MANAGEMENT AND INDUSTRIAL RELATIONS**

**3498 Management of Human Resources**

Manpower management viewed in terms of overall organizational performance. Constructive personnel techniques studied as implementation of modern management theory. Behavioral concepts applied to the broad problems, changing emphases, and specific issues of managing human resources in the autonomous firm in a free society. *Prerequisite:* Senior standing and six hours of advanced Personnel Management courses or Graduate standing.

**3499 Industrial Relations Research — SEMINAR**

Applications of the scientific method to contemporary and potential problems in manpower management, including procedures for establishment of standards and for evaluation of existing programs. *Prerequisite:* Senior standing and six hours of advanced Personnel Management courses or Graduate standing.

**PRODUCTION MANAGEMENT**

**3498 Operations Planning and Control**

An analytical study of modern concepts and techniques which have been developed to plan and control operations effectively. Analysis by quantitative techniques for managerial planning and decision-making. Computer applications in problem-solving and simulation. The objective of the course is to bring the range of concepts and techniques to a point of effective application. *Prerequisite:* Production Management 3301 and three hours of advanced Production Management.

**3499 Production Management — SEMINAR**

Current development in production engineering and management. Attention will be given to the identification, definition, and analysis of problem areas. Research of literature and investigation of modern methods. Designed to develop facility in analyzing management problems in manufacturing. *Prerequisite:* Production Management 3301 and three hours of advanced Production Management.

**STATISTICS AND QUANTITATIVE ANALYSIS**

**3498 Statistical Survey Techniques**

Building of econometric models and advanced time series analysis in measuring trends and fluctuations in business and economics; mathematical programming and the analysis of business series; input-output analysis. Analysis of inter-industry relationships.

**3499 Regional Analysis, Methods and Principles — SEMINAR**

Quantitative and mathematical approach to the analysis of regional economies; construction of regional economic models; and methods of regional analysis. Some case studies and class projects for the El Paso area.



## CHEMISTRY



JAMES W. WHALEN, *Head*

*Professors* ALEXANDER, HANCOCK, HATCH, LEVITT, WHALEN;

*Associate Professors* DAVIS, CABANESS, LLOYD, RIVERA;

*Assistant Professors* AMADOR, DE VRIES, SCRUGGS; *Instructors* BRISSETTE, MILEDI;

*Part-time Instructors* FARRARO, SPRINGER.

**B.S. Degree** — The minimum course requirements in Chemistry for the Bachelor of Science Degree are Chemistry 4103-04, 5213, 4221, 4322, 4450, 4360-61, 2468, and six additional advanced hours in Chemistry. Students seeking a B.S. degree in Chemistry must obtain credit in 8 semester hours of German.

An entering Freshman student with at least one year of high school chemistry with an "A" or "B" in chemistry and a SAT score of at least 1000 may take an Achievement Examination given by the department. If a student scores 80 or above, he will be given the corresponding grade AND credit for Chemistry 4103.

An entering Freshman student with two years of high school chemistry with grades of "A" or "B" and a SAT score of at least 1000 may take Achievement Examinations given by the department over Chemistry 4103 and 4104. If he scores 80 or above, he will be given the corresponding grade and credit for Chemistry 4103 and 4104.

An entering Freshman student with the above qualifications and who scores less than 80 on the Achievement Examination may, at the discretion of the department be allowed to enter the next higher course without credit granted.

### For Undergraduates

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

#### 3101 Generic Chemistry (\$2)

A study of the fundamentals of inorganic chemistry based upon the periodic arrangement of the elements with applications involving life experiences. Two lectures, one demonstration hour, and two laboratory hours per week. Field trips to local industries are included as part of the laboratory.

#### 3102 Generic Chemistry (\$2)

A continuation of 3101 with emphasis on organic and biochemical processes in modern living. Two lectures, one demonstration hour, and two laboratory hours per week. May not be used as prerequisite for any other chemistry course. *Prerequisite:* Chemistry 3101 or permission of instructor.

#### 4103-04 General Chemistry (\$6-\$6)

The laws and theories of chemistry; the elements and their most important compounds with reference to their production and use. For students who need a foundation for work in advanced chemistry and related sciences. Three lectures and four laboratory hours per week.

#### 4106 Chemistry for Nurses (\$2)

Elementary principles of chemistry with applications to the nursing profession. Three lectures and three laboratory hours per week. Open only to pre-clinical nurses and to students in a school of nursing.

#### 5213 Analytical Chemistry (\$8)

Analytical reactions from the point of view of the laws of chemical equilibrium. Principles of gravimetric and volumetric analyses. Three lectures and five laboratory hours per week. *Prerequisite:* Chemistry 4103-04 with a grade of not less than "C" in each semester. Three of the five credit hours may be counted as advanced with a grade of at least "C", if preceded by twelve hours of Chemistry.

#### 3221-22 Organic Chemistry (\$4-\$4)

A study of the fundamental types of carbon compounds. Two lectures, one recitation, and three laboratory hours per week. *Prerequisite:* Chemistry 4103-04.

**2221-22 Organic Chemistry**

The same as Chemistry 3221-22 but without the laboratory. Two lectures and one recitation per week. *Prerequisite:* Chemistry 4103-04.

**4221 Organic Chemistry (\$6)**

A study of chemical bonding and structure in organic molecules, functional group synthesis and reactions, reaction mechanisms, nomenclature and isomerism. Three lectures and five laboratory hours per week. *Prerequisite:* Chemistry 5213 or permission of the Head of the department. May not be counted in addition to Chemistry 3221-22 or 2221-22. Counts as an advanced course if preceded by twelve hours of Chemistry not including Organic.

**4260 Physical Chemistry (\$5)**

Physical and chemical properties of solid, liquid, and gaseous states of matter with special emphasis on principles related to metallurgy. Three lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4103-04 with not less than a grade of "C", Mathematics 4212, and Physics 4216. Not counted in addition to Chemistry 4361.

**4261 Physical Chemistry (\$4)**

A continuation of Chemistry 4260 including kinetics, electromotive force, crystal structure, quantum theory and other advanced topics. Three lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4260. Not counted in addition to Chemistry 4361.

**For Undergraduates and Graduates**

**4322 Organic Chemistry (\$5)**

A continuation of Chemistry 4221 including reaction mechanisms, special areas of isomerism, and types of reactions. *Prerequisite:* Chemistry 4221.

**3330 Biochemistry (\$2)**

Chemistry of food substances, digestion, vitamins, enzymes, absorption, and blood. Two lectures and three laboratory hours per week. *Prerequisite:* Chemistry 3222 or 4322.

**3331 Biochemistry**

Immunochemistry, chemistry of respiration, hormones, intermediary metabolism, etc., with emphasis on cell metabolism. Three lectures per week. *Prerequisite:* Chemistry 3330.

**3333 Petroleum Chemistry and Petrochemicals**

The chemical nature of petroleum and the chemistry of petroleum's conversion into refinery products. The conversion of hydrocarbons into petrochemicals. Three lectures per week. *Prerequisite:* Chemistry 3222 or 4322.

**4450 Instrumental Methods of Analytical Chemistry (\$2)**

A study of the more important optical and electrical methods of chemical analysis. Two lectures and six laboratory hours per week. *Prerequisite:* Chemistry 4360 and Physics 4217.

**4360 Physical Chemistry (\$5)**

Properties of substances in the gaseous, liquid and solid states; solutions, thermochemistry. Three lectures and three laboratory hours per week. *Prerequisite:* Chemistry 5213 and 4322. Mathematics 4212, and Physics 4216. May not be counted in addition to Chemistry 4260.

**4361 Physical Chemistry (\$4)**

A continuation of Chemistry 4360 including kinetics, electromotive force, crystal structure, quantum theory and other advanced topics. Three lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4360. Not counted in addition to Chemistry 4261.



- 3465 Inorganic Chemistry  
Modern bonding theories and the chemistry of transition and unusual elements. Three lectures per week. *Prerequisite:* Chemistry 4361 concurrently.
- 2468 Analytical Organic Chemistry (\$6)  
Identification techniques and functional group analysis of organic compounds. One lecture and six laboratory hours per week. *Prerequisite:* Chemistry 4322.
- 4470 Radiochemistry (\$8)  
A study of radioactivity with emphasis on radiochemical techniques. Three lectures and three laboratory hours per week. *Prerequisite:* Mathematics 4212, Physics 4216, Chemistry 5213.
- 3474 Nuclear Chemistry – SEMINAR  
Selected topics in nuclear chemistry such as activation analysis, transmutation of elements, interaction of radiation with matter, and other related subjects. Three lectures per week. *Prerequisite:* Chemistry 4470 or the equivalent as determined by the Head of department and the instructor.
- 2476-6476 Introduction to Research (\$4)  
Only specially qualified students approved by the Head of the Chemistry Department will be accepted. Credit will be granted only upon completion of research in the Senior year on the recommendation of the Head of the Chemistry Department. *Prerequisite:* Permission of the Head of the Chemistry Department.

## FOR GRADUATE STUDENTS ONLY

- 3580 Advanced Topics – SEMINAR  
A study of the more recent discoveries in the field of chemistry and its allied sciences. May be repeated for credit. Three lectures per week. *Prerequisite:* Permission of the Head of the Chemistry Department.
- 3582 History of Chemistry – SEMINAR  
A study of the major contributions to the science of Chemistry, with theories traced from their beginnings through modifications to the presently accepted concepts. The impact of various theories on other sciences and society in general will be discussed. *Prerequisite:* Chemistry 4322 or 3331 and Chemistry 5213 or its equivalent.
- 3584 Chemical Bonding – SEMINAR  
A survey of bonding theories from their inceptions to the present. Correlations of various physical and chemical properties with the various theories will be given with emphasis as to the values of current theories over the older ones. *Prerequisite:* Chemistry 4322 or 3331 and Chemistry 5213 or its equivalent.
- 3586 Special Problems – SEMINAR  
Primarily research orientation in area of specialization under the direction of a senior staff member. *Prerequisite:* Approval by staff member and permission of the Head of the Chemistry Department.



## DRAMA and SPEECH



GIFFORD W. WINGATE, *Head*

*Professors* CULP, HARDING, LEECH, WINGATE; *Associate Professor* WINDT;  
*Assistant Professors* ADKINS, ETHERIDGE,\* GOURD, JONES, MICULKA, TUCKER, WOOD;  
*Instructors* MAGNUSON, RONKE, YERBY.

Thirty semester hours are required for the B.A. degree with a major in Drama and/or Speech. Twelve of these must be advanced.

Eighteen semester hours are required for the B.A. degree with a minor in Drama and/or Speech. Six of these must be advanced.

### FOUNDATIONS IN DRAMA AND SPEECH

Majors in Drama and/or Speech pursuing the B.A. degree are to select, *in consultation with an advisor appointed by the department*, nine (9) hours from the following list of courses as a Foundation for specific degree routes. Minors, in similar consultation, are to select six (6) hours. Candidates for teaching degrees must fulfill Foundation requirements listed in their degree plans. To be admitted to any upper division course, the major or minor in any program must first complete the core curriculum requirement.

SPEECH 3101: Basic Principles of Speech  
3102: Introduction to Public Address  
3103: Voice and Articulation  
3104: Speech for the Bilingual Student  
3110: Phonetics  
3205: Oral Interpretation  
3216: Speech and the Democratic Process

DRAMA 3103: Voice & Articulation  
3113: Introduction to Drama  
3205: Oral Interpretation  
3221: Stagecraft

### B.A. DEGREE ROUTES

**Majors:** Departmental majors are to select, *in consultation with an appointed advisor*, one of three routes: Speech, Drama, or Combined Speech-Drama. The following are the minimum requirements for each of the three degree routes:

*Speech:* 9 hours of Foundations courses.

21 hours of Speech courses (chosen with the approval of a departmental advisor), 12 of which must be advanced . . . . TOTAL: 30 hours

*Drama:* 9 hours of Foundation courses.

21 hours of Drama: 3 hours of Drama 1111; 3 hours of Acting (Drama 3214, 3321); 3 hours of Directing (Drama 3325, 3425); 3 hours of Technical Theatre (Drama 3215, 3221, 3332, 3342); 6 hours of History and Criticism (Drama 3357, 3358, 3440); 3 advanced elective hours . . . . . TOTAL: 30 hours

*Combined Speech-Drama:* 9 hours of Foundations courses.

9 hours of Speech courses (chosen with the approval of a departmental advisor), 6 of which must be advanced. 12 hours of Drama: 3 hours of Drama 1111; 9 hours from three of the following four areas: Acting (Drama 3214, 3321); Directing (Drama 3325, 3425); Technical Theatre (Drama 3215, 3221, 3332, 3342); History and Criticism (Drama 3357, 3358, 3440) . . . . . TOTAL: 30 hours

\*On Leave of Absence.

**Minors:** (w/majors in the Department of Drama & Speech).

*Speech:* 6 hours of Foundations courses.  
12 hours of Speech courses (chosen with the approval of a departmental advisor), 6 of which must be advanced . . . . . TOTAL: 18 hours

*Drama:* 6 hours of Foundations courses.  
12 hours of Drama: 3 hours of Drama 1111; 9 hours from three of the following four areas: Acting (Drama 3214, 3321); Directing (Drama 3325, 3425); Technical Theatre (Drama 3215, 3221, 3332, 3342); History and Criticism (Drama 3357, 3358, 3440) . . . . . TOTAL: 18 hours

*Combined Speech-Drama:*  
6 hours of Foundations courses; 6 hours of Speech courses (3 of which must be advanced); 6 hours of Drama courses (3 of which must be advanced) . . . . . TOTAL: 18 hours

**DRAMA For Undergraduates and Graduates**

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

- 1111 **Basic Theatre Practice**  
Practical laboratory experience in all phases of production of major plays for public presentation. Offered every semester. May be taken four semesters for credit.
- 3103 **Voice & Articulation**  
A course designed to improve the actor's speech. Study of the phonetic alphabet, major dialects and types of stage speech. Two lectures and four laboratory hours per week. May not be taken for credit with Speech 3103. Offered every semester.
- 3113 **Introduction to Theatre Art**  
Analysis of the principles and techniques involved in representing human experience in a play: the relationship of acting, directing, staging, lighting, costuming and other theatre arts to one another and to the written word. The course is designed to serve not only as an introduction to drama for departmental majors, but as a general survey for others. Three lectures and four laboratory hours weekly. Offered each semester.
- 3205 **Oral Interpretation**  
Study of and practice in the techniques of oral interpretation of literature. May not be taken for credit with Speech 3205. Offered during first semester of each year.
- 3214 **Acting**  
A lecture-laboratory course in which a student may develop his ability to analyze a character and create a role. Two lectures and four laboratory hours per week. Offered during the second semester of each year. *Prerequisite:* Drama 3205, 3113.
- 3215 **Summer Theatre Workshop**  
A lecture-laboratory course in all phases of drama and theatre, with emphasis on the techniques and procedures of summer theatre operation. Registration in the course enrolls the student in the summer repertory group. May be repeated for credit. Offered in the summer only.
- 3221 **Stagecraft**  
Introduction to and practice in stage methodology. Includes basic instruction in stage design and structure. Two hours of lecture and four laboratory hours per week. Offered during the first semester of each year. *Prerequisite:* Drama 3113.
- 3321 **Advanced Acting**  
Detailed study of characterization and styles of acting through assignment of individual roles and group rehearsal of scenes. Two lectures and four laboratory hours per week. *Prerequisite:* Drama 3214. Offered during first semester of alternate years only, beginning in 1968-69.

- 3325 Directing**  
 Analysis of the role of the director in contemporary theatre production. Students will be required to plan and produce a one-act play for presentation. Two lectures and four laboratory hours per week. Required of All-Levels Education Majors who intend to teach on the secondary level. Offered during second semester of each year. *Prerequisite:* Drama 3113.
- 3332 Scene Design**  
 Detailed study of the technical problems of theatre production. Methods of designing, constructing, and handling scenery; lighting; backstage organization; properties; and sound effects. Two classes and four laboratory hours per week. *Prerequisite:* Drama 3221. Offered during first semester of each year.
- 3340 A History of Costume**  
 A study of costume from the earliest times to the present and their use on the stage. Practical experience in designing and executing costumes for actual production. Offered during first semester of alternate years only, beginning in 1969-70.
- 3342 Lighting**  
 A history of lighting and an analysis of contemporary lighting techniques. Practice in designing and executing the lighting for major productions. Two lectures and four workshop hours per week. *Prerequisite:* Drama 3221. Offered during second semester of each year.
- 3350 Creative Dramatics in the Elementary School**  
 Methods of developing original dramatizations with children and of creating plays from children's literature. Two lectures and four laboratory hours per week. Required of All-Levels Education Majors who intend to teach on the elementary level. May not be taken for credit with Speech 3350. Offered during first semester of each year.
- 3357 The Early Theatre**  
 Study of theatre art from earliest times to 1800. Discussion of plays, playwrights, actors, costumes, and scenic arts of each historical period. Offered during first semester of alternate years, beginning in 1968-69. *Prerequisite:* Drama 3113, or permission of the instructor.
- 3358 The Modern Theatre**  
 Study of theatre art from 1800 to the present. Offered during first semester of alternate years only, beginning in 1969-70. *Prerequisite:* Drama 3113, or permission of the instructor.
- 3418 Dramatic Script Writing**  
 The principles of script writing for the stage, radio, and television. Drama majors will be required to write an original one-act play; Radio and Television majors will be required to write an original half-hour script. Offered during second semester of alternate years only, beginning in 1969-70. *Prerequisite:* Drama 3113, or permission of the instructor.
- 3425 Advanced Directing and Theatre Management**  
 Study of techniques of direction, in various styles, modes, and periods, together with analysis of the problems of the producer and theatre manager. Two classes and four laboratory hours per week. *Prerequisite:* Drama 3325. Offered during second semester of alternate years only, beginning with 1968-69.
- 3440 SEMINAR**  
 Independent research in an area to be chosen from dramatic criticism, technical production, or theatre history. Admission by consent of the instructor. Offered during second semester of each year.

**SPEECH For Undergraduates and Graduates**

- 1101 Choral Reading**  
A laboratory course devoted to the study and performance of literature written for group interpretation. *Prerequisite:* Permission of the instructor. Offered every semester. May be taken four times for credit.
- 3101 Basic Principles of Speech**  
Emphasis on the practical skills involved in the communication of ideas to audiences under various conditions and for various purposes. Offered every semester.
- 3102 Introduction to Public Address**  
An introduction to speech analysis, criticism, and history. Emphasis is placed on developing an understanding of the role of speech in modern society. Offered each semester.
- 3103 Voice and Articulation**  
A course intended to develop clear articulation and enunciation, correct pronunciation, proper vowel placement, and control of the speaking voice. Two lectures and four laboratory hours per week. May not be taken for credit with Drama 3103. Offered each semester.
- 3104 Speech for the Bilingual Student**  
A course designed for the bilingual student who wishes to improve his oral English. It includes a study of the sound system, the stress pattern, the timing, and the melody of American English. Laboratory periods are required in preparation for an oral proficiency examination which is administered at the end of each semester. The results of this examination are determined by a faculty panel. This course may be substituted, at the discretion of the Department of Drama and Speech, for Speech 3101 in a student's degree plan. Offered every semester.
- 3110 Phonetics**  
The study of speech sounds with emphasis on the physical nature of voice production. IPA transcription is used as a tool, with practice in the ability to describe standard speech, foreign speech, and pathological speech defects. This is the foundation course for students interested in Speech Therapy or Linguistics. Offered every semester.
- 3205 Oral Interpretation**  
Study of and practice in the techniques of oral interpretation of literature. May not be taken for credit with Drama 3205. Offered during first semester of each year.
- 3210 Survey of Major Speech Disorders**  
Presentation and discussion of the major areas of communication disorders. A general approach dealing with the causes and their treatment-principles. Field trips to local facilities. Required of All-Levels Education Majors who intend to teach on the elementary level. *Prerequisite:* Speech 3103. Offered during first semester of each year.
- 3215 Fundamentals of Argumentation and Debate**  
A course designed for those who wish to understand the basic techniques of formal argument. Preparation of briefs for participation in debate on timely issues. For entering freshman with two years of high school debate experience who have not yet completed the Foundation requirements, admission to the course may be granted on the basis of a departmental proficiency examination. Offered during first semester of each year.
- 3216 Speech and the Democratic Process**  
A study of the role of public speaking in our society with practice in the deliberative speech of the legislative assembly. Offered during second semester of each year.

- 3305 The Oral Interpretation of Literature: Problems and Projects**  
 A course designed to develop deeper intellectual and emotional response to the meaning of literature. Emphasis on independent preparation and performance of longer programs, according to the student's interests and needs. *Prerequisite:* Speech 3205. Offered during second semester of alternate years only, beginning with 1968-69.
- 3306 Techniques of Public Discussion**  
 The principles and methods of group deliberation. Participation in and leadership of various forms of group inquiry — the forum, colloquy, symposium, case conference, and others. Offered during second semester of alternate years only, beginning with 1969-70.
- 3312 Voice Science**  
 A study of the anatomical and physiological bases of speech. Emphasis is placed upon the neurological aspects of speech as well as upon the speech mechanism. *Prerequisite:* Speech 3210. Offered during the second semester of each year.
- 3313 Functional Disorders of Speech**  
 Normal language development in children. Delayed speech, functional articulation problems, and voice production disorders given attention as disturbances of communication. Techniques and materials for speech therapy emphasized, with practical application of theories stressed. *Prerequisite:* Speech 3312. Offered during the first semester of each year.
- 3314 Organic Disorders of Speech**  
 Further investigation of communication disorders, with emphasis on structural anomalies such as cleft palate. Speech problems of hearing deficiency and cerebral palsy will also be considered. *Prerequisite:* Speech 3313. Offered during the second semester of each year.
- 3333 Speech Education**  
 For teachers of speech in elementary and secondary schools, emphasizing the development of an effective speech program, methods of criticism, correction of speech difficulties, and direction of speech activities. Required of All-Level Education Majors who intend to teach on the secondary level. Offered during first semester of each year.
- 3350 Creative Dramatics**  
 Methods of developing original dramatizations with children and of creating plays from children's literature. Two lectures and four laboratory hours per week. Required of All-Levels Education Majors who intend to teach on the secondary level. May not be taken for credit with Drama 3350. Offered during first semester of each year.
- 3415 Speech Criticism**  
 Rhetorical criticism of speeches by contemporary leaders on issues of urgent national and international concern. *Prerequisite:* Senior standing or permission of the instructor. Offered in the second semester of alternate years only, beginning with 1969-70.
- 3421 History of Classical Oratory**  
 A study of the orators, issues, and speaking arenas of ancient Greece and Rome, with special emphasis on the classical rhetorical tradition. Aristotle, Cicero, and Quintillian. *Prerequisite:* Junior standing. Offered during first semester of each year.
- 3422 History of Medieval and Modern Oratory**  
 A study of the development of oratory through the Medieval period to modern times. St. Augustine to the present. *Prerequisite:* Junior standing. Offered during second semester of alternate years only, beginning with 1968-69.

- 3430 **SEMINAR in General Speech**  
 Independent research in an area to be chosen from oral interpretation, phonetics, public address, semantics, discussion, speech education, or speech and hearing therapy. Admission by consent of the instructor. Offered during second semester of alternate years only, beginning with 1968-69. May be taken twice for credit.
- 3431 **SEMINAR in Bilingual Speech Problems**  
 Research in the problems of the foreign student pursuing the study of the English language. Practical application of methods for dealing with the problems. *Prerequisite:* Speech 3103. May be taken twice for credit. Offered each semester.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite: Twelve Semester hours of advanced courses in Drama and Speech and a bachelor's degree.*

**SPEECH**

- 3521 **Rhetoric and Politics**  
 Studies in the relationship between speech and politics with major emphasis upon presidential addresses and campaign speeches.
- 3530 **Rhetoric of the Deliberative Assembly**  
 Studies in the history of selected parliamentary debates and other speeches in Great Britain and the United States.
- 3531 **Seminar in the Classical Rhetorical Tradition**  
 Research, writing, and discussion. Topics to be announced.
- 3532 **Seminar in Contemporary Problems in Rhetoric and Public Address**  
 Research, writing, and discussion. Topics to be announced.
- 3540 **Speech Education**  
 Problems in speech for the classroom teacher.
- 3550 **Graduate Seminar in General Speech**  
 Independent research and writing.
- 3553 **Rhetoric of International Relations**  
 Studies in foreign policy speeches with major attention given to Soviet-American relations.
- 3598-99 **THESIS**



## ECONOMICS (FINANCE included)



PAUL E. FENLON, *Head*

*Professors* FENLON, RICHARDS; *Associate Professors* BRAND, DURIEZ;  
*Assistant Professors* JAMES, NEILL, ROBAK, VAN ZANT; *Lecturer* TREVINO.

### ECONOMICS

**B.A. Degree** – Specific requirements for the economics major are: Economics 3203, 3204, 3303, 3304, twelve additional hours of economics, three hours of accounting, and three hours of statistics, as approved by the Department.

#### For Undergraduate Credit Only

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

- 3203 Principles of Economics [Formerly 3103]  
A survey of the basic principles of economics designed to give a broad understanding of the economy; primary attention is given to aggregate problems and issues considered of particular importance to the nation.
- 3204 Principles of Economics [Formerly 3104]  
A continuation of basic economic principles designed to provide an analytical understanding of markets, prices and production.
- 3210 Economic Development of the United States  
Survey of American economic development from colonial time to present; analyses of factors which have shaped that development. *Prerequisite:* Economics 3203.
- 3303 Intermediate Economic Analysis  
A study of cost, demand, and price theory; the concepts, assumptions, and policy implications of aspects of particular equilibrium and general equilibrium theory; a critical survey of various concepts of the scope, methods, and approaches to economics. *Prerequisite:* Economics 3204.
- 3304 National Income Analysis  
A study of national income accounting and theory; emphasis is placed on the classification and analysis of conventional spending sectors and the effect upon income and employment; a critical survey of policy applications that affect the level of income and employment. *Prerequisite:* Economics 3204.
- 3490 Senior Seminar  
Concentrated study of selected current economic problems. Emphasis is given to concerted student participation, using proper research techniques and stressing preparation of scholarly presentations. *Prerequisite:* Economics 3204 and consent of instructor and Department Head.

#### For Undergraduates and Graduates

- 3305 Business Cycles and Forecasting  
History and description of the phases of the cycle, leading theories of economics fluctuations. Prediction of industrial production, prices and profits. Methods of alleviation and public policy. *Prerequisite:* Economics 3204.



- 3330 **Public Finance**  
Financial administration by agencies of local, state, and federal government; principles of taxation; sales, property, income, and inheritance taxes; analysis of government expenditures and public credit. *Prerequisite:* Economics 3203.
- 3340 **Labor Problems**  
An introductory course in labor-management relations, unions, management, and the government; including pertinent history, and labor legislation. *Prerequisite:* Economics 3203.
- 3351 **Government and the Economy**  
A study of the impact of government activity on business, emphasizing effects of governmental regulation on manufacturing and service industries, public utilities, and other segments of the economy. *Prerequisite:* Economics 3203.
- 3352 **Economics of Transportation**  
Theory of rate making; rate levels and economic characteristics of railroad, motor vehicle and air transportation. Analysis of government regulation and public policy. *Prerequisite:* Economics 3204.
- 3365 **International Economics**  
Principle theories of international trade; foreign exchange markets, international capital flows, barriers to trade, international economic institutions, and the economics of regional trade integration. *Prerequisite:* Economics 3204.
- 3366 **Economics of Latin America**  
Considers economic history; current problems of monetary and fiscal policy, regional economic integration, land reform, export patterns, and industrialization. The emphasis is institutional rather than analytical. *Prerequisite:* Economics 3203.
- 3367 **Economic Development**  
A course concerned with problems of economic growth in the less developed countries. Consideration is given to patterns and problems of human and material resource utilization, capital formation, investment criteria, inflation, and the development of innovative techniques. Emphasis is placed on the application of analytical concepts to the problems of economic development. *Prerequisite:* Economics 3203.
- 3370 **Econometrics**  
An introductory course designed to acquaint the student with the basic concepts in model building, different types of economic models, problems in techniques of quantifying models, and the use of such models for public and business policy. *Prerequisite:* Economics 3204 and six hours of Mathematics.
- 3371 **Mathematical Economics**  
Basic concepts and operations of mathematical logic and their application to economic analysis. *Prerequisite:* Economics 3204 and six units of Mathematics.
- 3380 **History of Economic Thought**  
A study of the development of principal economic doctrines and schools of economic thought. *Prerequisite:* Economics 3203.
- 3390 **Comparative Economic Systems**  
A consideration of economic foundations of the capitalistic and other systems; consideration of the economic attributes of fascism, socialism, communism, capitalism. *Prerequisite:* Economics 3203.
- 3420 **Monetary and Fiscal Policy**  
An analysis and critique of monetary and fiscal policies and practices to facilitate economic stability and promote economic progress. *Prerequisite:* Finance 3320.

## ECONOMICS

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### 3441 Wage Determination

A study of collective bargaining, the theoretical aspects of wages and wage determination, and the relationship between wages, production, distribution, and employment. *Prerequisite:* Economics 3204.

### 3475 Finite Mathematics and Social Sciences

Basic concepts of the finite mathematics and applications in the study of human behavior throughout the Social Sciences. *Prerequisite:* Economics 3204, six hours of Mathematics and Senior standing or consent of instructor.

### 2495 - 6495 Selected Problems in Economics

Special studies in areas for which a separate course is not organized. Supervised individual reading and research; writing of a substantial paper in the area chosen for study. Credit will vary according to the work performed, value being indicated by course numbers. *Prerequisite:* Consent of instructor and Department Head.

## FINANCE

### For Undergraduates and Graduates

### 3310 Business Finance

Sources and applications of funds by corporations. Management and financing of current assets; the sources and use of short, intermediate, and long-term funds. Study of capital budgeting, capital structure, dividend policy, and the problems peculiar to financing new business ventures. *Prerequisite:* Accounting 3101-3102, or consent of instructor.

### 3315 Investments

Introduction to the analysis of investment media, means of purchasing and selling securities, and personal investment decision-making. Emphasis is given to determinants of growth, safety, and income and to problems involved in achieving objectives.

### 3320 Money and Banking

A description of the history and present characteristics of the money and banking structure of the United States. Special emphasis is placed on monetary policy as it affects the level of economic activity. *Prerequisite:* Economics 3204.

### 3496 Senior Seminar

Concentrated study of selected concepts and problems. Emphasis is given to concerted student participation in using research techniques and preparing scholarly presentations. *Prerequisite:* Finance 3310 and consent of instructor and Department Head.

## FOR GRADUATE STUDENTS ONLY

### 3597 Economic Theory

A systematic exposition of those tools and concepts of modern economic theory which are basic to an understanding of the functioning of an economic system, and which include specialized analysis of price theory, national income, and modern institutions. *Prerequisite:* Twelve semester hours of advanced courses in Economics and a bachelor's degree.



JOHN W. MCFARLAND, *Dean*

*Professors* BURNS, CARTER, DAY, FARQUEAR (Emeritus), FOSTER, HIMELSTEIN,  
LOWMAN, MEADOWS, MCFARLAND, PAST, PUCKETT (Emeritus), ROSEN;

*Associate Professors* BARBER, CLINE, FISHER, SCARBROUGH, C. WALKER, J. R. WALKER;  
*Assistant Professors* AHO, E. DAVIS, V. DAVIS, L. S. HAMILTON, LANDRUM, LOWRANCE,

G. E. MILLER, WAGNER, D. WILLIAMS; *Instructors* LAWRENCE, MUNN, PRESTWOOD,  
I. J. STEVENS; *Part-time Instructors* ARNOLD, GUY MCNIEL, ZANKER;

*Full-time Lecturer* SELIG; *Part-time Lecturer* BURCKHARTT.

See pages 65-74 for Degree Plan Requirements and Certificates.

**For Undergraduate Credit Only**

**GENERAL** (Open to all students)

**3101 Introduction to Education**

The relationship of American public schools to social and economic changes, also problems in the development of the curriculum, instructional practices, school organization, and administration.

**3201 Introduction to Educational Psychology**

A study of the learning process with attention given to growth and development, conditions of effective learning, adjustment, and individual differences and evaluation.

**ELEMENTARY EDUCATION**

*General prerequisite* for 3300 and 3400 courses listed below: Junior standing  
(completion of 60 semester hours) †

**3301 Psychology of the Elementary School Child**

A study of the phases of the development and behavior of the child in the elementary school. Also provision for observation of the elementary school child as an individual and as a member of a group. *Recommended prerequisite*: Education 3201 or Psychology 3101.

**3302 The Curriculum and Modern Media in the Elementary School**

An introduction to the curriculum in the elementary school; consideration of the function of modern media in curriculum development and application.

**3303 Social Studies in the Elementary School\***

Content, materials, and methods of teaching social studies in the elementary school. *Prerequisite*: Education 3301.

**3304 Science in the Elementary School\***

Content, materials, and methods of teaching science in the elementary school. *Prerequisite*: Education 3301.

**3305 Children's Literature in the Elementary School\***

Children's literature and the administration of the recreational reading program in relation to the content subjects in the elementary school. Special reading may be done at the level in which the student is most interested. *Prerequisite*: Education 3301.

\**Prerequisite* as indicated or equivalent as determined by head of department.

†May be waived upon recommendation of department head in the case of a student who is a declared major in the department and who has credit for 12 semester hours of course work in his major and/or teaching fields or elementary subject.

## EDUCATION

- 3306 **Language Arts Materials and Methods in the Elementary School\***  
Materials and methods of teaching language arts in the elementary school. *Prerequisite:* Education 3301 and 3302.
- 3307 **Social Foundations of Elementary Education**  
Structure and functioning of society as a background for the study and evaluation of elementary education; the contribution of sociological principles and findings to the improvement of educational practices. (This course may not be counted for credit in addition to Education 3101 and/or 3313 and/or 3437.)
- 3308 **Psychological Foundations of Elementary Education**  
Introductory course in applications of psychological principles and knowledge to elementary education practices. (This course may not be counted for credit in addition to Education 3201 and/or 3314 and/or 3403 and/or 3420.)
- 3309 **Instructional Problems in Elementary Education\***  
An analysis of the types of curricular patterns, principles of curriculum development, evolving trends, and teaching methods in each of the major curricular areas found in the modern elementary school. Special attention is given to materials and procedures in the language arts area. (This course may not be counted for credit in addition to Education 3302 and/or 3306.) *Prerequisite:* Education 3301, 3307, and 3308.
- 3496 **Professional Laboratory Experience in the Elementary School\***  
A minimum of ten hours a week for one semester of laboratory observation and teaching experience in an elementary classroom. *Prerequisite:* A grade point average of at least 2.0 in both English 3101-02 and Speech 3101; of at least 2.5 in Education 3301, 3302, 3303, 3304, 3305, 3306; senior standing and permission of the department head. (In an all-level program, permission of the department head concerned.) Students must file a practice teaching application with their college supervisor of student teaching during the semester preceding the taking of the course.
- 3497 **Professional Laboratory Experience in the Elementary School\***  
A minimum of ten hours a week for one semester of laboratory teaching experience in an elementary school classroom. To be taken concurrently with Education 3496, except in an all-levels program.

## SECONDARY EDUCATION

- 3310 **Psychology of the Secondary School Student**  
A study of the phases of development and behavior of the adolescent. Also, provision for observation of the adolescent as an individual and as a member of a group. *Recommended prerequisite:* Education 3201 or Psychology 3101.
- 3311 **Introduction to the Secondary Curriculum**  
An introduction to the development of the curriculum in the secondary school.
- 3312 **Methodology and Technological Applications for Secondary Education\***  
Consideration of instructional techniques with emphasis on team teaching, laboratory methods, programming, and test development with applications from recent research. *Prerequisite:* Education 3310.
- 3313 **Social Foundations of Secondary Education**  
Structure and functioning of society as a background for the study and evaluation of secondary education; the contribution of sociological principles and findings to the improvement of educational practices. (This course may not be counted for credit in addition to Education 3101 and/or 3307 and/or 3437.)

\**Prerequisite* as indicated or equivalent as determined by head of department.

- 3314 **Psychological Foundations of Secondary Education**  
Introductory course in applications of psychological principles and knowledge to secondary educational practices. (This course may not be counted for credit in addition to Education 3201 and/or 3308 and/or 3403 and/or 3420.)
- 3315 **Instructional Problems in Secondary Education\***  
Methods and materials used in secondary teaching; particular emphasis on analysis and development of courses of study and their use in secondary education. *Prerequisite:* Education 3310, 3313, and 3314. (This course may not be counted for credit in addition to Education 3311 and/or 3312.)
- 3498 **Professional Laboratory Experience in the Secondary School\***  
A minimum of ten hours a week for one semester of laboratory observation and teaching experience in a secondary school classroom. *Prerequisite:* A grade point average of at least 2.0 in both English 3101-02 and Speech 3101; of at least 2.5 in eighteen semester hours in each of two secondary teaching fields or in thirty-six semester hours in a secondary composite teaching field; of at least 2.5 in Education 3310, 3311, 3312; senior standing and permission of the department head. (In an all-levels program, permission of the department head concerned.) Students must file a practice teaching application with their college supervisor of student teaching during the semester preceding the taking of this course.
- 3499 **Professional Laboratory Experience in the Secondary School\***  
A minimum of ten hours a week for one semester of laboratory teaching experience in a secondary school classroom. To be taken concurrently with Education 3498, except in an all-levels program.

**For Undergraduates and Graduates**

*Prerequisite for courses listed below:* Twelve Semester hours of Education.

**ELEMENTARY EDUCATION**

- 3403 **Evaluation and Guidance in the Elementary School**  
The study and utilization of educational instruments, materials, and techniques in reference to the improvement of instruction and the guidance of pupils.
- 3404 **Developmental Reading in the Elementary School**  
Developmental reading growth, curriculum, methods, and materials in the elementary school with special attention to the Spanish speaking child. *Prerequisite:* Education 3306.
- 3405 **Arithmetic in the Elementary School**  
Content, materials and methods of teaching arithmetic in the elementary school.
- 3406 **Psychology of Reading in the Elementary School**  
Psychological correlates with the reading process; consideration of methodology, evaluation and counseling for reading progress with consideration for the learning process of the Spanish speaking child. *Prerequisite:* Education 3306.
- 3407 **Classroom Management in the Elementary School**  
The use of records and group techniques to improve human relations in the classroom.

**SECONDARY EDUCATION**

- 3418 **Current Events in Relation to Classroom Use in the Secondary School**  
Particular attention given to selection, organization, and use of current event materials in the secondary school classroom.

\**Prerequisite* as indicated or equivalent as determined by head of department.

EDUCATION

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- 3420 **Principles of Guidance and Measurement in the Secondary School\***  
A foundation course concerned with principles of guidance and measurement and evaluation in the secondary school.

**GENERAL** (Elementary or Secondary Education)

- 3412 **Classroom Use of Audio-Visual Equipment and Materials**  
Consideration of various kinds of audio-visual equipment and materials in relation to classroom instruction in elementary and secondary schools.
- 3413 **Educational Television and Radio: Preparation and Presentation of In-School Programs**  
A survey course at the elementary and secondary level in the public school applications of television, including techniques of teaching by closed circuit TV. Production of in-school radio programs for presentation on commercial and educational stations.
- 3433 **Advanced Educational Psychology — SEMINAR\***  
Independent study in educational psychology. *Prerequisite:* Education 3201.
- 3435 **Principles of Psychological Testing\***  
Study, evaluation, and use of educational and psychological tests used in the study and guidance of students. *Prerequisite:* An introductory course in tests and measurements.
- 1436 to 6436 **Individual Mental Testing — SEMINAR\***  
Study, administration, and interpretation of the Stanford Binet, WISC, WAIS, Vineland Social Maturity Scale, diagnostic reading tests, and special tests for the physically handicapped. *Prerequisite:* Education 3435 or permission of the head of the department.
- 3437 **History and Philosophy of Education**  
A survey of educational ideas and practices in the history of western civilization.
- 1450 to 6450 **Educational Workshop** (Area of study will be designated)

**SPECIAL EDUCATION**

- 3409 **The Education of Exceptional Children\***  
Consideration given to the philosophy, problems, treatment and methods of providing appropriate education and training for exceptional children.
- 3421 **Psychology of Mental Retardation\***  
Consideration of basic psychological problems and research pertaining to mentally retarded children with emphasis on the study of the social, emotional, physical, and learning characteristics of mentally retarded children.
- 3422 **Curriculum, Materials, and Methods of Teaching the Mentally Retarded\***  
Basic organization of programs for educating the mentally retarded at the primary, intermediate, and secondary setting. Curriculum development, principles of teaching, and instructional materials, methods, and records pertaining to the education of the mentally retarded.
- 3429 **Observation, Teaching, and Field Work with Mentally Retarded — SEMINAR\***  
*Prerequisite:* Education 3409, 2421, and 3422 or permission of the head of the department.

\**Prerequisite* as indicated or equivalent as determined by head of department.

## FOR GRADUATE STUDENTS ONLY

*Prerequisite:* Twelve semester hours of advanced courses in Education and a bachelor's degree.

- 3502 **Problems in Education – SEMINAR**  
A course emphasizing educational research in both the elementary and secondary school fields. The student is allowed to make a choice of the field in which to carry on educational research.
- 3503 **Problems in Education – SEMINAR**  
*Prerequisite:* Education 3502.
- 3504 **Educational Statistics – Beginning Course**
- 3505 **The Construction and Use of Achievement Examinations – SEMINAR**  
Covers the theory of testing and provides practical experience in both critical analysis and construction of tests for classroom use. The student will be allowed to devote his attention exclusively either to the elementary school level or to the secondary, thereby receiving credit in elementary education or in secondary.
- 3506 **Remedial Reading in the Elementary School**  
Examination and appraisal of significant researches in the field of remedial reading. Attention given to the analysis and diagnosis of individual cases of reading retardation, and to corrective and remedial procedures.
- 3507 **Educational Sociology**  
A survey of the field of educational sociology and its application to problems in modern education.
- 3508 **Workshop in Instructional Problems (Elementary) – SEMINAR**  
Study of teaching problems arising in the classroom. Students will choose their own problems and those with allied interests will be grouped together to facilitate individual research. The instructor will guide this research.
- 3509 **Workshop in Instructional Problems (Secondary) – SEMINAR**  
Same as Education 3508 except the problems are at the secondary level.
- 3510 **Comparative Education**  
A comparative study of educational systems of representative European, Latin American, and Afro-Asian countries.
- 3511 **Curriculum Construction and Organization of Secondary Subject Matter – SEMINAR**  
The student is permitted to devote his attention exclusively to a pertinent curriculum problem in a secondary school field.
- 3512 **Curriculum Problems in Science Education – SEMINAR**  
The student is permitted to devote his attention exclusively to a pertinent curriculum problem in science education either in the elementary or secondary school field.
- 3513 **The Curriculum in the Elementary School**  
Particular attention given to selection and organization of materials in reference to curriculum development in the elementary school.
- 3514 **Child Development in the Elementary School**  
Characteristics of the growth period of children in the elementary school. Consideration of the bearing of the needs of children upon the elementary school program.

EDUCATION

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- 3515 **Clinical Reading Laboratory Experience in the Elementary Grades**  
Actual laboratory experience for application of concepts, media and evaluation, to meet reading disadvantages in the elementary grades. *Prerequisite:* Education 3404, 3406, 3506. May be repeated for credit.
- 3516 **The Psychology of Individual Differences**  
The study of individual differences in intelligence, school achievement, vocational aptitudes, personality, interests and attitudes; study of varieties of group differences; and study of methods used in studying human differences.
- 3517 **Psychology of Personality Development of Secondary School Student**  
Study of mental hygiene, the nature and development of personality, and personality theory and assessment.
- 3518 **Counseling and Guidance**  
Principles, functions, and methods and techniques of counseling.
- 3520 **Socio-Economic Information in Guidance — SEMINAR**  
Educational, occupational, and social information and its use in counseling and guidance.
- 3521 **Independent Study in Special Education — SEMINAR**  
This course offers opportunities for study in any one of the following special education areas: orthopedic handicaps, visual handicaps, auditory handicaps, giftedness, mental retardation.
- 3522 **Supervised Practice in Counseling — SEMINAR**  
Actual practice under supervision in applying the principles, tools, and techniques used in the guidance program. Students will be assigned to guidance workers in this area and supervised and instructed by an instructor in the Department of Education of Texas Western College. *Prerequisite:* Education 3420, 3435, 3436, 3504; and two of the following: Education 3516, 3517, 3518, 3520; and only by permission of the department head.
- 3523 **Educational Trends — SEMINAR**  
A critical consideration of selected trends in Education.
- 3524 **Public School Supervision**  
The purpose is to acquaint school supervisors with the modern philosophy of school supervision along with the techniques which have been found useful in the performance of the supervisory function.
- 3525 **The Administration of Teaching Personnel**  
A course in ethics of the various relationships between teachers and other school employees and the numerous "outside groups, interests, individuals, and officials."
- 3526 **Public School Finance**  
Consideration is given to such matters as public school revenue, budget making and administration, accounting procedures and records, and school bonds.
- 3528 **Organization and Administration of the Elementary School**  
Problems confronting the elementary school principal will be studied. For example, teacher schedules, classroom schedules, teachers' meetings, organization of the staff, supervision, curriculum development, and related problems will be considered.
- 3529 **The School Plant**  
Specialized study of all facets of the school plant planning and maintenance.
- 3530 **Public School Law**  
A study of the constitutional provisions, legislation, court decisions, and regulations governing the public schools with special reference to Texas.



- 3531 **Principles of Public School Relations**  
Principles, techniques, and methods used in school public relations. Relationships include the school board and the public, the superintendent in the public relations program, school personnel and the public, the public relations of professional organizations.
- 3532 **Organization and Administration of the Secondary School**  
The study of problems pertaining to teachers' meetings, organization of the staff, supervision, curriculum development, and related problems.
- 3533 **Field Experience and Internship in Educational Administration**  
On-the-job training in public school administration for students in the program for elementary principal, secondary principal, and superintendent.
- 3535 **Fundamentals of Public School Administration**  
Basic administrative concepts and processes; organization of public school administration; roles of the superintendent and other central office personnel; relationship of the local school district to the Texas Education Agency, federal educational agencies and other educational institutions.
- 3598-99 **Thesis Course for Master's Degree**  
*Prerequisite:* Twelve semester hours of advanced courses in Education, and permission of the head of the department.

### *Library Services*

*(Sponsored by the Department of Education)*

- 3301 **Survey of School Library Services**  
Topics include the role and services of the library in the school, simplified cataloging and classification of materials (Dewey Decimal system), procedures in planning the library and supervision of staff. *Prerequisite:* Junior standing.
- 3302 **Survey of School Library Services**  
Continuation of 3301. *Prerequisite:* Library Services 3301 or concurrent registration in 3301.
- 3303 **Books for Elementary School Libraries**  
Survey of literature for elementary school students and of their reading interests. Comprehensive examination of bibliographic tools to be used as guides to the selection of books, periodicals, and other materials for elementary school libraries. *Prerequisite:* Junior standing.
- 3304 **Books for High School Libraries**  
Survey of literature for high school students and of their reading interests. Comprehensive examination of bibliographic tools to be used as guides to the selection of books, periodicals, and other materials for high school libraries. *Prerequisite:* Junior standing.
- 3305 **Children's Literature in the Elementary School**  
Same as Education 3305. *Prerequisite:* Junior standing.
- 3306 **The Teacher and the School Library**  
Designed to meet needs both of the teacher who may work in the library and the teacher or prospective teacher who wants to use the school library with maximum effectiveness in teaching. Provisions made for specialization in elementary or secondary schools. *Prerequisite:* Junior standing.
- 3495 **School Library Observation and Practice**  
A minimum of ten hours per week for one semester of laboratory observation and school library experience in a school library. *Prerequisite:* Twelve hours credit in Library Services; permission of instructor in advance.



## CIVIL ENGINEERING

CALVIN E. WOODS, *Head**Professors* HASSLER, HENDERSON, WOODS;*Associate Professors* COLTHARP, YOUNG; *Assistant Professors* OEY, ROZENDAL.\**Lecturers* DECKER, JETTON, NUSYNOWITZ.

(See pages 50-54 for Degree Plans)

**For Undergraduates***General prerequisite:* Junior standing for all 300 or 400 level courses.**3101 Pollution and Natural Resources**

Study of man's environment and its demands upon our resources. Emphasis will be on pollutants and their effect upon air, water and food resources. Open to all students.

**3115 Engineering Mechanics I**Forces in space, equilibrium of particles and rigid bodies, friction, centroids, centers of gravity, and kinetics and kinematics of particles. *Prerequisite:* Mathematics 4212 concurrently.**3202 Introduction to Engineering**Studies to include the techniques and tools of problem analysis. Two lectures and three laboratory hours per week. *Prerequisite:* Mathematics 4111 and 4212.**3213 Engineering Measurements**Summer work: Theory and practice of surveying measurements with emphasis on precision, errors and significant figures. Theory of simple curves, reverse, compound and vertical; also spirals and earthwork. Two lecture and three laboratory hours per week. *Prerequisite:* Mathematics 4111 and Mechanical Engineering 2103 or 3103.**3214 Field Surveying**Summer work: Practical application of the topics covered in CE 3213. Forty hours per week for three weeks. *Prerequisite:* CE 3213.**3234 Mechanics of Materials I**Study of stress, strain, torsion, shear, moment, flexure, combined stress, stress at a point and column action. *Prerequisite:* Civil Engineering 3115.**3238 Engineering Mechanics II**Principles of dynamics and their application to engineering problems; work and energy, impulse and momentum and kinetics and kinematics of rigid bodies. *Prerequisite:* CE 3115.**4343 Structural Analysis I**A study of framed structures, trusses, girders and bridges. Analysis of statically indeterminate structures including beams and frames. Three lectures and three laboratory hours per week. *Prerequisite:* CE 3234.

\*On Leave of Absence.

**For Undergraduates and Graduates**

*Prerequisite for graduate credit:* At least twelve semester hours of undergraduate credit in Engineering.

- 3426 **Engineering Economy**  
Application of economics to engineering and industrial problems which require a knowledge of engineering for their solution. *Prerequisite:* Senior standing or approval of instructor.
- 3435 **Structural Design I**  
Reinforced concrete theory; design of beams, columns, slabs, footings and retaining walls using current design specifications. *Prerequisite:* CE 4343.
- 3440 **Transportation Engineering**  
Study of planning, economics, finance, location, design and administration of transportation systems. *Prerequisite:* CE 3214 and 4448 or concurrent enrollment.
- 4441 **Water Treatment and Analysis**  
Principles of water treatment and its application to the design and operation of municipal and industrial water treatment plants. Laboratory analyses of water. Three lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4203-04.
- 4442 **Waste Treatment and Analysis (\$2)**  
Principles of waste treatment and disposal and its application to the design and operation of waste treatment plants. Laboratory analyses of wastes. Three lecture and three laboratory hours per week. *Prerequisite:* CE 4441.
- 3446 **Engineering Law**  
A study of the law of contracts, sales, negotiable instruments, insurance, property, torts, agency and business organizations. *Prerequisite:* Senior standing in engineering and permission of the instructor.
- 4448 **Soil Mechanics (\$2)**  
Physical and mechanical properties of soils; specific gravity, grain size distribution, plasticity, shrinkage, permeability, compressibility, consolidation and shear. Three lecture hours and three laboratory hours per week. *Prerequisite:* Civil Engineering 3234, Mechanical Engineering 3354, and Geology 3321.
- 3449 **Foundation Engineering**  
Study of properties of subsurface materials, exploration methods, durability of construction materials used in foundations, construction methods and types of foundations, selection of foundations and basis for design. *Prerequisite:* CE 4448.
- 3450 **Surface Water Hydrology**  
Study of rainfall, evaporation, percolation, stream gauging, stream flow, storage, and flood routing. *Prerequisite:* Senior standing and permission of instructor.
- 3456 **Engineering Hydrology**  
Study of the hydrologic cycle, precipitation, flood frequency, storm characteristics, net rain, surface drainage, and flood runoff. *Prerequisite:* Senior standing and permission of instructor.
- 4460 **Structural Analysis II**  
Analysis of statically indeterminate structures including continuous beams and frames. Three lecture hours and three laboratory hours per week. *Prerequisite:* Civil Engineering 3234 and Senior standing.

- 3461 **Structural Design II**  
 Design of steel structures including the application of plastic design methods using current design specifications. Two lecture hours and three laboratory hours per week. *Prerequisite:* CE 4343.
- 4456 **Hydraulic Engineering (\$2)**  
 Principles of hydrology and hydraulics applied to the design of hydraulic projects. Three lecture and three laboratory hours per week. *Prerequisite:* Mechanical Engineering 3354.
- 4470 **Mechanics of Materials II (\$6)**  
 Analysis of problems dealing with energy methods, curved bars, torsion of non-circular sections, fatigue, stress concentration, stress and strain, and experimental methods of stress determination. Three lecture hours and three laboratory hours per week. *Prerequisite:* Civil Engineering 3234 and Senior standing.
- 3471 **Engineering Problems — SEMINAR**  
 Original investigation of special problems in the student's field, the problem to be selected by the student with the approval of the head of the department. *Prerequisite:* Senior standing and consent of the head of the department. Can be repeated for credit.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Twelve semester hours of advanced courses in Engineering and a Bachelor's Degree.

- 4501 **Free Surface Flow**  
 Open channel hydraulics: Energy concepts, resistance, transitions, spillways, energy dissipation, solutions of gradually varied flow, stable channels, steep channels, steady and unsteady flow conditions. *Prerequisite:* Mechanical Engineering 3354 or approval of instructor.
- 3502 **Ground Water Hydrology**  
 Flow of ground water in isotropic and anisotropic media; Flow nets, hydraulics of wells, basin-wide development, safe yield, quality, recharge, salt-water intrusion and dispersion of wells. *Prerequisite:* Approval of instructor.
- 4503 **Analysis and Design of Water Resources Projects**  
 The analysis and design of a complete hydraulic project or structure. Possible projects are multipurpose river storage projects, spillways, water power developments, pipelines, pumping stations, distribution and collection systems, flood control systems, ocean cutfalls, irrigation systems, water and sewage treatment plants, navigation locks, and harbors. May be repeated for credit. *Prerequisite:* Approval of instructor.
- 3504 **Construction Engineering**  
 Study of construction estimating, planning, methods and procedure. Application and maintenance of construction equipment and machinery. *Prerequisite:* Approval of instructor.
- 4505 **Advanced Structural Analysis**  
 Theory of finite element approximation, numerical solutions of a variety of problems in structural mechanics including beam-columns, grid beams and plates on linear and nonlinear foundations; interpretations of the static and dynamic response of soils and other deformable media. May be repeated for credit. *Prerequisite:* Civil Engineering 4343 or approval of instructor.
- 3506 **Soil Mechanics II**  
 Application of soil mechanics to stability of slopes, retaining walls, and foundations, frost action in soil. Introduction to seepage. *Prerequisite:* Approval of instructor.

- 4507 **Aerial Photographic Interpretation of Soils**  
A study of the applications of the science of aerial photographic interpretations as it pertains to the field of engineering, including the recognition of soil types and classes, engineering materials surveys, route location, and the deliniation of watersheds and estimates of runoff and seepage. *Prerequisite:* Approval of instructor.
- 4508 **Bioengineering Processes**  
Description of biochemical processes involved in complex pollution problems. Energetics of aerobic and anaerobic processes, enzymes, metabolic reactions, sythesis, and theory of biological waste treatment. Three lecture hours and three laboratory hours per week. May be repeated for credit. *Prerequisite:* Approval of instructor.
- 4509 **Analysis of Water and Wastes**  
Analysis of physical, chemical, and biological properties of water and wastes; evaluation of processes involved in complex pollution problems. Two lecture hours and six laboratory hours per week. *Prerequisite:* Approval of instructor.
- 3510 **Water Resources and Irrigation**  
Problems in water resources conservation and utilization. Water supply development and irrigation principles applied to the design of pumping plants, water conveyance and distribution systems. *Prerequisite:* Civil Engineering 4356 or approval of instructor.
- 3511 **Municipal Design and Planning**  
Orderly development and extension in city growth, civil, legal and engineering aspects; subdivisions, zoning, park systems, water fronts, street systems, airports and transportation terminals and traffic controls; the functional organization of a city and city engineering organization. *Prerequisite:* Approval of instructor.
- 3512 **Plastic Design of Steel Structures**  
Fundamental principles of plastic design, plastic hinges, method of analysis of structures for ultimate load. Plastic design for axial and shearing forces. Stability problems in plastic design. Design of continuous structures. *Prerequisite:* Civil Engineering 3461 or approval of instructor.
- 3513 **Prestressed Concrete Design**  
The study of prestressing methods and their application to the design of concrete structures. *Prerequisite:* Civil Engineering 3435 or approval of instructor.
- 4514 **Mobile-Bed Fluviology**  
Mechanics of fluid flow, bed-load transport, and suspended load in rivers. Evolution of river beds and sedimentation. Practical solutions to problems of erosion and training works. *Prerequisite:* Mechanical Engineering 3354 or approval of instructor.
- 4515 **Hydraulic and Sanitary Structures**  
Design of concrete and steel hydraulic and sanitary structures. *Prerequisite:* Civil Engineering 3234 or approval of instructor.
- 4516 **Radiological Health Engineering**  
Principles of radiological health. Analysis of radiation hazards; ionizing effects of radiation; unit operations and processes used in handling radioactive wastes; dosimetry, principles of detection devices; decontamination. Three hours lecture and 3 hours laboratory per week. *Prerequisite:* Approval of instructor.
- 3517 **Similitude in Research**  
Theory of similitude and its use in planning, conducting and analyzing physical experiments in engineering and biological sciences. *Prerequisite:* Approval of instructor.

CIVIL ENGINEERING

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4518 Advanced Soil Mechanics I

Seepage through dams and foundation soils. Properties of line seepage. Seepage pressures: Piping and boiling as applied to stability of dams and levees and sheeted excavations. Ground water lowering for construction purposes. Sub-drainage of air fields. Three lecture hours and three laboratory hours per week. *Prerequisite:* CE 4448 or consent of the instructor.

4519 Foundation Engineering II

Dams on rock and sediments. Effects of geological variations on stability and integrity of structures. Stability of slopes in natural ground. Earthquake resistant structures. Tunnels in hard and soft ground. Three lecture hours and three laboratory hours per week. *Prerequisite:* CE 4448 or consent of the instructor.

3520 Advanced Soil Mechanics II

Theoretical Soil Mechanics. Fundamental structure and properties in soils. Formation of soils, clay mineralogy, and soil structure. Theory of consolidation and compaction. *Prerequisite:* CE 4448 or consent of the instructor.

3521 Air Resources

Industrial Hygiene and Toxicology. Techniques of industrial toxicology; mechanisms by which toxic gases, vapors, and dusts produce disease in experimental animals and in man. *Prerequisite:* Consent of the instructor.

3522 Water Resources

Water Quality Improvement. Principles of treatment of domestic and industrial wastewaters; stream and estuarial self-purification. *Prerequisite:* Consent of the instructor.

1595-3595 Graduate Seminar

Conferences, discussions and/or research, individual or collective, on advanced phases of engineering problems conducted under the direct supervision of a faculty member. Variable credit, and may be repeated for credit to total six credits. *Prerequisite:* Permission of the instructor.

3598-99 Thesis Course for the Master's Degree

## ELECTRICAL ENGINEERING

CLYDE R. NICHOLS, *Head**Professors* LAMBERT, NICHOLS; *Associate Professors* AUSTIN, GIBSON, SMITH;  
*Lecturer* HINTZE.

(See pages 50-54 for Degree Plans)

**For Undergraduates***General prerequisite:* Junior standing for all 300 or 400 level courses.

## 4251 Networks I (\$2)

Theory and analysis of networks including the basic laws, complex phasor algebra and impedance, sinusoidal single-phase circuits, resonance, and network equations and theorems. Three lecture and three laboratory hours per week. *Prerequisite:* Mathematics 4217 and Physics 4216.

## 3321 Electromagnetic Field Theory

Fundamentals of static electric and magnetic fields, time-varying fields and Maxwell's equations, motion of charged particles in electromagnetic fields. *Prerequisite:* Mathematics 3435.

## 4339 Electronics I (\$2)

Electronic properties of materials, terminal characteristics of semiconductor and vacuum tube devices, graphical methods, two-port network analysis, small-signal equivalent circuits, frequency response methods, root-locus analysis. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4251 and Mathematics 3326.

## 4340 Electronics II (\$2)

Application of the concepts and methods developed in Electronics I to large- and small-signal tuned amplifiers and broad-band amplifiers. Concepts of wave-shaping, waveform generation, and switching are developed. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4339 and 3353 concurrently; or Physics 4339 and permission of the instructor.

## 4352 Networks II (\$2)

Continuation of Networks I. Balanced and unbalanced polyphase circuits, coupled circuits and transformers, Fourier analysis, transient response and the complex frequency plane, and the Laplace transformation. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4251.

## 3353 Networks III

Continuation of Networks II. Two-terminal-pair networks, filters, signal flow, and synthesis. *Prerequisite:* Electrical Engineering 4252.

## 3374 Analog Computers

A study of the theory and practice of modern analog computers using electrical, electronic, and electromechanical elements; analysis of operational components; summers, sign changes, multipliers, dividers, integrators, trigonometric resolvers, and function generators; machine stability, errors, and checking systems. Fields of application: real-time control and simulation studies during design and evaluation of dynamic systems. *Prerequisite:* Junior standing in engineering or permission of the instructor.

## For Undergraduates and Graduates

*Prerequisite for graduate credit:* At least twelve semester hours of undergraduate credit in Engineering.

- 3428 **Cybernetics**  
Principles of natural and man-made mechanisms; possible behavior—regular, de-terminable, or reproducible. *Fundamental concepts of finite differences; changes and transformations, leading to stability and feedback. Shannon's information theory. Regulation and control of mechanisms. Prerequisite:* Senior standing in engineering or permission of the instructor.
- 3441 **Electronics III**  
Advanced topics in communications, including frequency analysis of signals, modulation, noise, information transmission, and statistical methods in system analysis. *Prerequisite:* Electrical Engineering 4340.
- 4447 **Electromagnetic Energy Transmission and Radiation** (§2)  
Derivation and applications of the general transmission-line equations, propagation and reflection of plane waves, analysis of wave guide transmission systems, electromagnetic radiation and simple antenna systems. The laboratory experiments utilize the principles set forth in Electrical Engineering 3441 and 3447. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 3321 and 4340 and 3441 concurrently.
- 4464 **Feedback Control** (§2)  
Characteristics, differential equations, and transfer functions of various physical components, characteristics of control systems, root-locus and frequency response methods of analysis and synthesis, analog techniques for system design. Three lecture and three laboratory hours per week. *Prerequisite:* Civil Engineering 3238, Mathematics 3326, and Electrical Engineering 4340, or permission of instructor.
- 4467 **Energy Conversion** (§2)  
Theory and performance characteristics of electromechanical energy conversion equipment to include both static and dynamic properties of d-c generators and motors, special d-c machines and other devices, and the control and control devices employed therewith. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4352 or consent of the instructor.
- 4468 **Energy Conversion** (§2)  
Theory and performance characteristics of electromechanical energy conversion equipment to include both static and dynamic properties of a-c machines, transformers and special devices, and the control and control devices employed therewith. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4352 or consent of the instructor.
- 3469 **Switching Circuits**  
Study of logical properties of circuits based on two-valued devices used in digital computers and control and telephone switching; elements of logical algebras including the propositional calculus and Boolean algebra; logical analysis and synthesis of combinational nets; optimization of series-parallel controlled-contact circuits; and sequential relay circuits. *Prerequisite:* Senior standing in engineering or permission of the instructor.
- 3471 **Engineering Problems — SEMINAR**  
Original investigation of special problems in the student's field, the problem to be selected by the student with the approval of the head of the department. *Prerequisite:* Senior standing and consent of the head of the department. May be repeated for credit.
- 3472 **Digital Computers**  
An introduction to digital computers including arithmetic procedures, basic programming patterns, input-output systems, storage systems, arithmetic units, meth-



ods of control, and basic timing and control sequences; comparative analysis of representative digital computing machines and their associated engineering, arithmetic, and logical design characteristics. *Prerequisite:* Electrical Engineering 3469 or permission of the instructor.

**3480 Microwave Theory I**

A study of the theory and techniques used in distributed-element circuits. Topics include waveguide transmission, resonant cavities, microwave networks, and radiation. *Prerequisite:* Electrical Engineering 3447.

**3484 Probabilistic Methods in Engineering and Science**

Problems involving discrete and continuous random variables, distribution functions, moments, and statistical dependence. Emphasis to be on formulation of physical problems. *Prerequisite:* Senior standing in engineering or permission of the instructor.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Twelve semester hours of advanced courses in Engineering and a Bachelor's Degree.

**3501 Operational Methods of Circuit Analysis**

Elements of functions of a complex variable, followed by application of Fourier and Laplace transform techniques to the problems of signal transmission through lumped and distributed parameter systems.

**3502 Analytical Methods in Electrical Engineering**

Formulation of electric and magnetic phenomena in terms of partial differential equations. Application of Fourier series, cylindrical and spherical harmonics. Source-free and source-excited systems and the methods of solution.

**3504 Information Theory**

Encoding, transmission, and decoding of messages; information content, information gain, channel capacity, and entropy; coding theorems. *Prerequisite:* Electrical Engineering 3503.

**3505 Wave Propagation**

Theoretical treatment of waves in electromagnetics, acoustics, and hydromagnetics. Special attention to both ray and mode theory of propagation when medium is inhomogeneous and anisotropic. *Prerequisite:* Electrical Engineering 4447 or consent of the instructor.

**3506 Antenna Theory**

Fundamental theory of point sources; the antenna as an aperture; methods of analyzing and calculating characteristics of various types of antennas; self and mutual impedances of antennas; array of linear antennas; antenna measurement technique. *Prerequisite:* Electrical Engineering 4447 or consent of the instructor.

**3507 Modern Control Theory**

State Space techniques (continuous case); controllability and observability, Lyapunov's second method; Pontryagin's principle, the principle of optimality and dynamic programming; the method of steepest descent; and other optimization techniques. *Prerequisite:* Electrical Engineering 4464 or consent of the instructor.

**3508 Sampled-Data and Digital Control Systems**

Theoretical analysis and optimization of sampled-data control systems; application of digital-computing devices in closed loop systems. *Prerequisite:* Electrical Engineering 3507.

**3509 Network Analysis and Synthesis I**

Advanced treatment of linear passive network theory with primary emphasis upon synthesis aspects; application to design of networks for prescribed driving-point and transfer characteristics; fundamental work of Foster, Cauer, Brune, and Darlington.

- 3510 **Networks Analysis and Synthesis II**  
Synthesis of coupling networks for prescribed transfer characteristics, minimum-phase and non-minimum-phase types, filters, constant-resistance filter groups, and ultimate response characteristics obtainable from linear passive networks. Frequency and time domain aspects. *Prerequisite:* Electrical Engineering 3509.
- 3511 **Physical Electronics**  
Fundamental electronic processes in solids, liquids, and gases; statistical mechanics and introductory quantum mechanics; gaseous and plasma electronics.
- 3512 **Solid State Electronics**  
Free electron theory of metals including thermoelectric and thermomagnetic effects; band theory of solids. Magnetic and dielectric properties of materials; theoretical analysis of solid state devices. *Prerequisite:* Electrical Engineering 3511.
- 3513 **Principles of Pulse Circuits**  
Analysis and design of overdriven circuits, multivibrators, blocking oscillators, and other high-speed circuits. Piecewise-linear and other approximations useful in non-linear analysis.
- 4513 **Principles of Pulse Circuits (\$2)**  
Analysis and design of overdriven circuits, multivibrators, blocking oscillators, and other high-speed circuits. Piecewise-linear and other approximations useful in non-linear analysis. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4340 or consent of the instructor.
- 3514 **Advanced Topics in Electrical Engineering**  
A course covering one or more advanced topics in electrical engineering. The subjects will vary from year to year and may be selected, for example, from one of the following fields: nonlinear system analysis; analog and digital computing systems and components; systems engineering; applications of new types of magnetic, dielectric and semiconductor materials to engineering devices; pulse systems and techniques. May be repeated for credit.
- 3515 **Advanced Electromagnetic Field Theory**  
The inhomogeneous wave equation; relativistic kinematics and the Lorenz transformation; covariance and relativistic mechanics; covariant formulation of electrodynamics; the Lienard-Wiechert potentials; Hamiltonian formulation of Maxwell's equations. *Prerequisite:* Electrical Engineering 4447 or consent of the instructor.
- 3523 **Random Processes in Physical Systems** [Formerly 3503]  
Probability theory, Lebesgue integration, representation of random variables and processes, time and frequency domain analysis of random processes. *Prerequisite:* Electrical Engineering 3441 or consent of the instructor.
- 3524 **Statistical Communication Theory**  
Optimum filters, signal detection problems, Gaussian Random processes, statistical estimation, measurement problems, modulation by random processes. *Prerequisite:* Electrical Engineering 3523.
- 3527 **Modern Control Theory II**  
Properties of optimal systems; the minimum time, minimum fuel, and minimum energy problems; and application of optimization techniques to system design. *Prerequisite:* Electrical Engineering 3507.
- 1595 - 3595 **Graduate Seminar**  
Conferences, discussions and/or research, individual or collective, on advanced phases of engineering problems conducted under the direct supervision of a faculty member. Variable credit, and may be repeated for credit to total 6 credits. *Prerequisite:* Permission of the instructor.
- 3598 - 99 **Thesis Course for the Master's Degree**

## MECHANICAL ENGINEERING

K. S. EDWARDS, *Head**Professors* COLEMAN, EDWARDS;*Associate Professors* BHADURI, CERVENKA, DOWDY, LEVOSKY, WHITACRE;*Assistant Professor* MAXWELL.\*

(See pages 50-54 for Degree Plans)

**For Undergraduates***General prerequisite:* Junior standing for all 300 or 400 level courses.

- 3103 **Graphical Fundamentals in Engineering Design (\$2)**  
Freehand projection, fundamentals of multiview projections, auxiliaries, sections, detailed drawings, dimensioning and pictorials. Preliminary investigation of elementary engineering design problems. 1½ hours of lecture and 4½ hours of laboratory per week.
- 3201 **Engineering Communications**  
Preparation and presentation of written and oral reports related to engineering. *Prerequisite:* English 3101-02, with a grade of "C" in each course, and enrollment in engineering, or permission.
- 3236 **Manufacturing Processes and Quality Control (\$2)**  
Theory and practice of production as a system; power, material, choice of process. Introduction to engineering probability; quality control. Two lectures and three laboratory hours per week. *Prerequisite:* Ma. 4217 or concurrently.
- 3351 **Heat Transfer**  
Introduction to heat transfer by conduction, convection and radiation; steady and transient states, steady periodic states. Heat transfer in engineering apparatus; graphical and numerical methods; electrical and fluid analogies. *Prerequisite:* M.E. 3375 and M.E. 3354.
- 4354 **Fluid Mechanics (\$2)**  
Fluid properties and definitions, fluid statics, fluid flow concepts and basic equations, ideal fluid flow, dimensional analysis and dynamic similitude, viscous effects: fluid resistance, introduction to laminar and turbulent boundary layers, flow through pipes and open channels, compressible flow, fluid measurement and control. Three lecture and three laboratory hours per week. *Prerequisite:* MA 3326 or concurrently.
- 4363 **Kinematics and Dynamics of Mechanisms (\$2)**  
Analysis of displacement, velocity and acceleration in basic mechanisms for control, transmission and conversion of motion and force. Forces associated with accelerated motion. Three lecture and three laboratory hours per week. *Prerequisite:* C.E. 3238.
- 3364 **Design of Machine Members (\$2)**  
Application of mechanics, kinematics and materials science to the design and selection of machine members, fastenings, pressure vessels. Lubrication theory; stress concentration and residual stresses. Two lecture and three laboratory hours per week. *Prerequisite:* M.E. 4363.
- 3375 **Thermodynamics I**  
Principles of thermodynamics of single and multi-phase systems of pure substances. *Prerequisite:* Ma. 4212.
- 3376 **Thermodynamics II**  
Continuation of M.E. 3375. Application of principles to cycles and reactive systems; energy relationships and equilibrium requirements. *Prerequisite:* M.E. 3375.

\*On Leave of Absence.

**For Undergraduates and Graduates**

*Prerequisite for graduate credit:* At least twelve semester hours of undergraduate credit in Engineering.

- 3441 **Engineering Systems Analysis**  
Fundamental classification of dynamic system variables and study of engineering systems based on the concepts of state, work, energy, information and signal. Unified treatment and analysis of mechanical systems, electrical circuits, electro-mechanical systems, and feedback control systems. Introduction of the concept of a linear vector space for the development of general dynamic theories of stability and optimum control. *Prerequisite:* Ma. 3326 or permission.
- 3455 **Gas Dynamics**  
A study of the flow of compressible fluids. One dimensional steady flow, supersonic flow, normal and oblique shock, and flow with heating and cooling; measurement of fluid properties and flow parameters. *Prerequisite:* M.E. 3354 and 3376.
- 3465 **Dynamic Response**  
Fundamentals of vibration theory and system response. Simple and multiple degrees of freedom, critical speeds, damping, isolation. *Prerequisite:* Ma. 3326.
- 4466 **Machine Design (\$2)**  
Continuation of the design sequence. Feasibility studies and preliminary design of mechanical systems, including detailed design of one or more machines in a system. Two lecture and six laboratory hours per week. *Prerequisite:* Senior standing in engineering, or permission.
- 3471 **Engineering Problems – SEMINAR**  
Original investigation of special problems in the student's field, the problem to be selected by the student with the approval of the head of the department. *Prerequisite:* Senior standing and consent of the head of the department. May be repeated for credit.
- 4477 **Thermal Systems (\$2)**  
Application of thermodynamics, fluid mechanics and heat transfer to thermal systems. Power, air conditioning, refrigeration systems; performance criteria and economic considerations. Three lectures and three laboratory hours per week. *Prerequisite:* ME 3351 and 3376.
- 3481 **Mechanical Engineering Laboratory I (\$2)**  
*Calibration and use of instrumentation in the areas of property determination, thermodynamics, heat transfer, fluid flow, dynamics.* Two lecture and three laboratory hours per week. *Prerequisite:* Senior standing in engineering, or permission.
- 3482 **Mechanical Engineering Laboratory II (\$2)**  
Continuation of M.E. 3481. Testing and analysis of systems; analogies. Two lecture and three laboratory hours per week. *Prerequisite:* M.E. 3481.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Twelve semester hours of advanced courses in Engineering and a Bachelor's Degree.

- 3501 **Experimental Stress Analysis (\$2)**  
Modern techniques for determining state of stress and strain experimentally. The laboratory provides the opportunity to gain practice in the use of these devices and their ancillary equipment. Two hours of lecture and three hours of laboratory a week. *Prerequisite:* Civil Engineering 3234 or consent of the instructor.

- 3502 **Advanced Mechanics of Materials I**  
Box-beam theory: shear flow, shear center, strength and deflections. Unsymmetrical beam loadings. Statically indeterminate structures. Beams on elastic foundation. *Prerequisite:* Civil Engineering 3234 or consent of the instructor.
- 3503 **Advanced Heat Transfer I – Conduction**  
Conduction in various coordinate systems: steady and transient-state cases with various boundary conditions; analytical, numerical and graphical solutions. *Prerequisite:* Mathematics 3326 or consent of the instructor.
- 3504 **Advanced Heat Transfer II – Convection and Radiation**  
Thermal boundary-layer theory; forced convection in laminar and turbulent flows; free convection. Thermal radiation; emissivity and absorptivity of materials; geometric factors. *Prerequisite:* Mechanical Engineering 3354 or consent of the instructor.
- 3506 **Advanced Fluid Mechanics I**  
Survey of the principal concepts of fluid mechanics, statics, continuity, momentum and energy relations for continuum fluids, kinematics of fluid motion, governing equations for motion of non-viscous fluid, vorticity and circulation, Kelvin's theorem, Helmholtz theorem, Crocco's theorem, stream function, potential flow, conformal transformation, theory of lift, wave phenomena in fluids. *Prerequisite:* Mechanical Engineering 3354 or consent of the instructor.
- 3507 **Advanced Fluid Mechanics II**  
Viscous and turbulent flows, Viscosity and dissipation phenomena, the Navier-Stokes and energy equations; creep flow at low Reynolds numbers, laminar boundary layers, laminar stability, transition and turbulence, turbulent boundary layers, jets, wakes, and separated flows, thermal boundary layers, compressible boundary layers, dissociation and ionization. *Prerequisite:* Mechanical Engineering 3354 or consent of the instructor.
- 4508 **Advanced Mechanical Design (\$2)**  
Study of the method of optimum design for mechanical systems. Evolution of optimum design, approximation for explicit design: Mathematical functions in design, evaluation of the effects of manufacturing errors on product performance, optimum choice for method of analysis, statistical consideration for factor of safety; adequate design, optimum design, design equations; normal redundant and incompatible specifications; loose limits and loose specifications; problems with more than one primary design equation. Three lecture and three laboratory hours per week.
- 3509 **Structural Dynamics**  
Continuation of Mechanical Engineering 3465 with emphasis on multiple-degree-of-freedom systems and their response to disturbances. Normal mode theory, matrix representation of problem; Laplace transform, electrical analogue and mobility techniques of solution. Vibration measurements and analysis. *Prerequisite:* Mechanical Engineering 3465 or consent of the instructor.
- 3510 **Advanced Thermodynamics**  
General thermodynamic relations, equations of state, advanced treatment of second law, equilibrium availability and selected topics. *Prerequisite:* Mechanical Engineering 3376 or consent of the instructor.
- 3511 **Environmental Engineering**  
Thermal and humidity load analysis. Human comfort and tolerances. Environmental control methods: heating, refrigeration, humidification and drying; atmosphere and pollution control. System component characteristics; system analysis and design. Automatic controls. *Prerequisite:* Mechanical Engineering 3376 or consent of the instructor.

**3512 Analysis of Multivariable Processes**

Study of the mathematical structures and couplings describing the dynamics of observable processes using vector space methods with geometrical interpretations. Mapping of vector equations into corresponding matrix equations. Description of process changes by transformation matrices. Identification of process parameters and observable vectors in changing reference frames in the presence of measurement uncertainties. *Prerequisite:* Consent of the instructor.

**3513 Advanced Fluid Mechanics III**

Compressible flow, energy, continuity and momentum principles applied to compressible fluid flows, one, two, and three dimensional subsonic, supersonic and hypersonic flow, normal and oblique shocks, method of characteristics, mixed flows: hodograph method, compressible laminar and turbulent boundary layers. *Prerequisite:* ME 3455, or consent of the instructor.

**1595-3595 Graduate Seminar**

Conferences, discussions and/or research, individual or collective, on advanced phases of engineering problems conducted under the direct supervision of a faculty member. Variable credit, and may be repeated for credit to total 6 credits. *Prerequisite:* Permission of the instructor.

**3598-99 Thesis Course for the Master's Degree**

METALLURGICAL ENGINEERING

D. P. KEDZIE, *Head*

*Professors* ABERNETHY, KEDZIE, RINTELEN, THOMAS (Emeritus);

*Associate Professors* EHRLINGER, RIZZO, ROSER.

(See pages 50-54 for Degree Plans)

**For Undergraduates**

*General prerequisite:* Junior standing for all 300 or 400 level courses.

**3101 Introduction to Metallurgy I (\$2)**

An elementary course in the extraction of metals from ores, and the industrial application of metals and alloys. Two lectures and three laboratory hours per week. Open to all students.

**3102 Introduction to Metallurgy II (\$2)**

A course in metallurgical operations including basic sampling, screening, grinding, flotation of ores; the roasting, leaching and electrolytic recovery of metals from calcines; cementation of copper mine waters and heap leaching effluents; amalgamation and cyanidation of gold and silver ores; copper, lead and zinc refining and metallurgical plant calculations including smelter payments and metal balances. Two one-hour lectures and one three-hour laboratory period per week. *Prerequisite:* Metallurgy 3101.

**3201 Principles of Process Metallurgy**

A study of the fundamental engineering principles applied to metallurgical processes. Field trips are made to metallurgical industries. Two lectures and one laboratory hour per week. *Prerequisite:* Chemistry 4103-04.

**4203 Materials Science (\$3)**

A solid state study concerned with the physical and mechanical properties of metals, plastics, and ceramics. Three lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4103-04.

**4302 Mineral Dressing I (\$2)**

The principles governing the process employed in the liberation and separation of the minerals and coal dressing. In the laboratory the student experiments with milling equipment and methods of concentration. Three lectures and three laboratory hours per week. *Prerequisite:* One semester of physics, or Metallurgy 3102.

**3309 Physics of Metals**

A study of solid state physics applied to metals and alloys. Three lecture hours per week. *Prerequisite:* Metallurgy 4203 or Math 4212 and Physics 4216 or 4214.

**3315 Non-Ferrous Process Metallurgy**

The smelting and refining of non-ferrous metals. One-third of the course is devoted to calculations pertaining to the above subjects. Three lecture hours per week. *Prerequisite:* Chemistry 4103-04, one semester of physics, and Math 3115 or Metallurgy 3201.

**For Undergraduates and Graduates**

*Prerequisite for graduate credit:* At least twelve semester hours of undergraduate credit in Engineering.

- 4403 Mineral Dressing II (\$2) [Formerly 4303]  
Advanced principles of ore dressing, ore testing, flowsheets, and mill design. Three lecture and three laboratory hours per week. *Prerequisite:* Metallurgy 4302.
- 3402 Ferrous Process Metallurgy  
A course in the metallurgy and fabrications of iron, steel and related alloys. One-third of the course is devoted to calculations pertaining to the subject. Three lecture hours per week. *Prerequisite:* Metallurgy 3201 and 4203.
- 3404 Electro-Metallurgy (\$3)  
The fundamental principles of electro-winning and the electro-plating of non-ferrous metals. Two lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 3201, or Chemistry 4103-04 and Physics 4214 or 4216.
- 3471 Engineering Problems — SEMINAR  
Original investigation of special problems in the student's field, the problem to be selected by the student with the approval of the head of the department. *Prerequisite:* Senior standing and consent of the head of the department. May be repeated for credit.
- 4407 Physical Metallurgy I (\$3)  
A study of the structure and properties of metals and alloys. The laboratory is the application of metallography and heat treatment to phase diagrams. Three lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 4203.
- 3409 Corrosion  
A study of corrosion, passivity, and protection of metals and alloys. Three lecture hours per week. *Prerequisite:* Metallurgy 3404 or permission of the Head of the Metallurgical Engineering Department.
- 4411 Physical Metallurgy II (\$3)  
A theoretical study of methods of measuring and controlling variables pertaining to metallurgy; microscopy applying transmitted and reflected polarized light to the study of ores, slags, and metals; and spectroscopy. Three lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 4203 or 3309.
- 4412 Physical Metallurgy III (\$3)  
Introduction to X-ray diffraction, the study of metallic structure, alloy constitution, deformation processes and solid phase reactions. Three lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 4411 or 3309.
- 3413 Thermodynamics of Metals  
The thermodynamics of metals and metallurgical process. Three lecture hours per week. *Prerequisite:* Metallurgy 4203 and Chemistry 4261 or 4361.
- 4415 Mechanical Metallurgy (\$3)  
A study of plastic deformation of metals, dislocation theory, mechanical testing, and the fundamentals of metalmaking. Three lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 4203.



## FOR GRADUATE STUDENTS ONLY

*Prerequisite:* Twelve semester hours of advanced courses in Engineering and a Bachelor's Degree.

- 4501 **Advanced X-Ray Diffraction (\$6)**  
A continuation of Metallurgy 4412. Studies of structure are expanded with the aid of advanced instrumentation. Three lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 4412 or its equivalent as approved by the instructor.
- 3502 **Theory of Welding and Joining (\$6)**  
A study of joining of materials and the resulting metallographic structures. Two lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 4407 or its equivalent as approved by the instructor.
- 4503 **Non-Destructive Testing (\$6)**  
A study of the non-destructive testing of material. The application of radiography, magnaflux, reflectoscope (high frequency) and use of penetrant dyes. Three lectures and three laboratory hours per week. *Prerequisite:* Permission of the instructor.
- 3504 **Theory of Dislocations**  
The theory of dislocations applied to the structure and properties of metals. *Prerequisite:* Metallurgy 4415 or its equivalent as approved by the instructor.
- 3505 **Advanced Mechanical Metallurgy**  
A continuation course of Metallurgy 4415. A solid-state approach of mechanical metallurgy is studied. *Prerequisite:* Metallurgy 4415 or its equivalent as approved by the instructor.
- 4506 **Electron Microscopy (\$6)**  
A study of the theory and application of electron microscopy. The preparation of specimens for transmission and replica procedures. Three lectures and three laboratory hours per week. *Prerequisite:* Permission of the instructor.
- 4507 **Powder Metallurgy (\$6)**  
Basic principles of metal powder compacting and sintering are studied relative to solid-state and solid-liquid reactions. Three lecture and three laboratory hours per week. *Prerequisite:* Permission of the instructor.
- 3508 **Electronic Properties of Materials**  
A study of those properties of materials that are based on solid-state electronic concepts. *Prerequisite:* Metallurgy 3309 or its equivalent as approved by the instructor.
- 4509 **Advanced Metallography (\$6)**  
A metallurgical and metallographic study of recently developed alloys. Three lectures and three laboratory hours per week. *Prerequisite:* Metallurgy 4407 or its equivalent as approved by the instructor.
- 3510 **Advanced Thermodynamics of Metals**  
Metallurgical thermodynamics applied to chemical metallurgy, constitution diagrams, heterogeneous equilibrium and rates of reaction. *Prerequisite:* Metallurgy 3413 or its equivalent as approved by the instructor.
- 3511 **Kinetics**  
A study of the rates of reaction of metallurgical phenomena. *Prerequisite:* Metallurgy 3413 or its equivalent as approved by the instructor.
- 4512-13 **Engineering Ceramics I & II** [Formerly 3512-13]  
A study of the theory of ceramic materials and their application to industrial processes. Three lectures and three laboratory hours per week. *Prerequisite:* Permission of the instructor.
- 1595-3595 **Graduate Seminar**  
Conferences, discussions and/or research, individual or collective, on advanced phases of engineering problems conducted under the direct supervision of a faculty member. Variable credit, and may be repeated for credit to total 6 credits. *Prerequisite:* Permission of the instructor.
- 3598 - 99 **Thesis Course for the Master's Degree**



JOHN O. WEST, *Head*

*Benedict Professor SONNICHSEN*

*Professors BRADY, BURLINGAME, LEACH, PAST, SMALL, WEST;*

*Associate Professors BLANSITT, COLTHARP, DAY, JAMES, RICHESON, WHITE;*

*Assistant Professors ACKLEY, COLLINGWOOD, EHMANN, HERNANDEZ, FUGATE, LACEY  
MORTENSEN, QUARM, SIMMONS, SMITH, STAFFORD, TEMPLE, WADDELL;*

*Instructors ANTONE, BOLEY, BOWSER, CALHOUN, CERVENKA, COCHRAN, CORN, ESCH,  
GLADSTEIN, GOLDBERG, HALL, JUSTICE, KISKA, MACEK, SCHAEGLER, SOMOZA,*

*SPRINGSTEAD, STROUD, C. WALKER, R. WALKER, WRIGHT;*

*Teaching Assistants ARMES,, BYHNE, CONTRERAS, GOLDBLATT, GONYEA, HANSARD,  
HOGARTH, MILNARICH, PEARSON, TAYLOR; Lecturer HERTZOG.*

For the degree of Bachelor of Arts and the degree of Bachelor of Science in the Sciences a minimum of twelve semester hours in English are required: English 3101-02 and either 3211-12, 3213-14, or 3215-16.

**B.A. Degree** — Specific course requirements for the English major are English 3211, 3212, 3320, 3321; twelve other advanced hours in English including six hours of 3400 level courses but not including more than six hours of Creative Writing courses; History 3203, and 3204. A comprehensive English Major Examination is required of all English majors who cannot present, at the time of their graduation, a grade average of "C" in all their English courses. Consult the English Department Head for details.

Students planning to take graduate work in English are advised to take 3411, 3413, and 3419.

### 3101 Freshman Composition

Fundamentals of composition: practice in organizing and writing expository prose; improvement of vocabulary and reading skills.

### 3102 Freshman Composition

Further practice in composition, in vocabulary improvement, and in reading comprehension; emphasis on writing a research paper and mastering research techniques. *Prerequisite:* English 3101.

### 3211 English Literature

English literature from the beginning to Samuel Johnson. Required of all English majors. *Prerequisite:* English 3102.

### 3212 English Literature

English literature from Samuel Johnson to the present. Required of all English majors. *Prerequisite:* English 3211.

Entering students may receive credit for English 3101 and register for English 3102 provided that —

1. They score 2 on the College Entrance Board's Advanced Placement Examination, or
2. They score 550 on the College Entrance Board's Achievement Test in English Composition. (Score of 550-599 is a "B", and a score of 600 and above is an "A".)

Entering students who score at least 3 on the College Board Advanced Placement Examination may receive credit for both English 3101 and English 3102.

Students receiving credit by the College Board Advanced Placement Examination will have grades of "A" or "B" put on their permanent records, the exact grade depending on local evaluation of the quality of the composition.

Students planning to transfer to other colleges or universities before receiving their degrees should be counseled on the advisability of accepting advanced standing.

- 3213 **Appreciation and Analysis of the Novel and Short Story**  
Attention to contemporary works as well as to the historical development of the genres. *Prerequisite:* English 3102.
- 3214 **Appreciation and Analysis of Drama and Poetry**  
Attention to contemporary works as well as to the historical development of the genres. *Prerequisite:* English 3102.
- 3215 **World Literature in Ancient, Medieval, and Early Renaissance Times**  
The works of such writers as Lao Tzu, Homer, Aeschylus, Sophocles, Euripedes, Vergil, St. Augustine, Dante, Boccaccio, Chaucer, Montaigne, Cervantes, and Shakespeare. All foreign literatures are read in modern translations. *Prerequisite:* English 3102.
- 3216 **World Literature from the Early Renaissance to the Present**  
The works of such writers as Milton, Racine, Voltaire, Goethe, Byron, Poe, Hawthorne, Melville, Flaubert, Dostoevsky, Turgenev, Tolstoy, Chekhov, Ibsen, Baudelaire, Lorca, Joyce, Mann, Kafka, and Proust. All foreign literatures are read in modern translations. *Prerequisite:* English 3102.
- 3220 **Introduction to Linguistics**  
Introduction to modern language studies with emphasis on contemporary as opposed to historical linguistics. *Prerequisite:* English 3102.
- 3269 **Technical Writing**  
Written and oral reports: assembling material, organizing, writing, and revising. *Prerequisite:* English 3102.
- ALL 3300 courses require as prerequisite completion of one of the six hour units of sophomore level courses: English 3211-12, or 3213-14, or 3215-16. General prerequisite: Junior standing for all 3300 or 3400 level courses.**
- 3308 **Methods of Teaching English as a Foreign Language**  
Modern foreign-language teaching techniques with particular attention to the problems of the learner of English. Theories of language learning and testing, and the practical use of language laboratory equipment. *Prerequisite:* Six hours sophomore English.
- 3309 **The Structure of the English Language**  
Investigation of Modern English: a study of modern analyses of the language. *Prerequisite:* Six hours sophomore English. *Recommended prerequisite:* English 3220 or Speech 3110.
- 3311 **American Literature**  
Representative writers from the Colonial period to 1860, with emphasis on major figures such as Poe, Emerson, Thoreau, Hawthorne, and Melville. *Prerequisite:* Six hours sophomore English.
- 3312 **American Literature**  
Representative writers from the Civil War to the present, with emphasis on major figures from Whitman to Faulkner. *Prerequisite:* Six hours sophomore English.
- 3313 **The American Novel**  
The representative American novels and novelists from 1787 to the present. *Prerequisite:* Six hours sophomore English.
- 3314 **The American Drama**  
Drama from the Colonial and Revolutionary periods to modern times. Special attention is given to the works of Bird, Boker, Fitch, Crothers, Anderson, Hellman, O'Neill, Williams, and Miller. *Prerequisite:* Six hours sophomore English.

- 3316 **Medieval English Literature**  
Medieval English literature in translation from 1066 to Chaucer: romances, visions, satires, and the morality play. *Prerequisite:* Six hours sophomore English.
- 3319 **Renaissance Prose and Poetry**  
The study of major non-dramatic prose and poetry of the 16th century from More through Drayton with special emphasis on the period of Spenser. *Prerequisite:* Six hours sophomore English.
- 3320 **Shakespeare: Earlier Plays**  
Detailed study of the major plays composed before 1601, with a rapid reading of others belonging to the same period. Required of all English majors. *Prerequisite:* Six hours of sophomore English.
- 3321 **Shakespeare: Later Plays**  
Detailed study of some of the great tragedies, followed by a more rapid examination of the other plays written after 1600. Required of all English majors. *Prerequisite:* Six hours sophomore English.
- 3322 **Elizabethan and Jacobean Drama**  
Development of the comedy, the tragedy, and the chronicle history from earlier types of the drama in England. Plays of Lyly, Marlowe, Greene, Beaumont and Fletcher, Dekker, Jonson, Middleton, Webster, and their contemporaries related to the literary fashions of the times. *Prerequisite:* Six hours sophomore English.
- 3323 **Seventeenth-Century Prose and Poetry**  
Major poetic movements in the seventeenth century in the works of Donne, Jonson, the Cavalier Poets, Milton, and Dryden. A study of the prose works of Bacon, Browne, Dryden, Hobbes, and others. *Prerequisite:* Six hours sophomore English.
- 3329 **Early Neo-Classicism**  
The background of the English classical period in the writers of the Restoration. *Prerequisite:* Six hours sophomore English.
- 3330 **The Neo-Classical Age**  
Pope through Johnson exclusive of the pre-romantics. *Prerequisite:* Six hours sophomore English.
- 3331 **Early Romantic Literature**  
A study of the works of Burns, Blake, Wordsworth, Coleridge, Lamb, Hazlitt, and their contemporaries. *Prerequisite:* Six hours sophomore English.
- 3332 **Late Romantic Literature**  
A study of the works of Byron, Shelley, Keats, Landor, Hunt, DeQuincey, and their contemporaries. *Prerequisite:* Six hours sophomore English.
- 3338 **Early Victorian Literature**  
The works of Tennyson, Browning, Macauley, Carlyle, and their contemporaries. *Prerequisite:* Six hours sophomore English.
- 3339 **Late Victorian Literature**  
The works of Arnold, Newman, Ruskin, Pater, Stevenson, Rossetti, Meredith, Morris, Swinburne, Hardy, Hopkins, Housman, and the early Yeats. *Prerequisite:* Six hours sophomore English.
- 3344 **Contemporary Poetry**  
The most important poets of the twentieth century. Special emphasis is given to Hopkins, Yeats, Eliot, Frost, D. H. Lawrence, Graves, W. C. Williams, Pound, Hart Crane, Stevens, and Dylan Thomas. *Prerequisite:* Six hours sophomore English. May be repeated for credit when the subject varies.

- 3347 **The English Novel**  
Prose fiction in England from the Middle Ages to the nineteenth century, particular attention being given to the novels of Richardson, Fielding, Smollett, Walpole, Burney, Jane Austen, and Scott. *Prerequisite:* Six hours sophomore English.
- 3348 **The English Novel**  
A continuation of English 3347, with study of typical works of Dickens, Thackeray, the Brontës, George Eliot, Hardy, and Meredith. *Prerequisite:* Six hours sophomore English.
- 3352 **The English Novel**  
The important English novelists of the twentieth century, with special study devoted to the works of Conrad, Bennett, Lawrence, Joyce, Forster, Waugh, Woolf, Graham Greene, Henry Green, Cary, and William Golding. *Prerequisite:* Six hours sophomore English.
- 3353 **The Short Story**  
The development of the short story from earliest times; typical specimens from the short-story literature of England, America, Russia, France, and other countries. *Prerequisite:* Six hours sophomore English.
- 3355 **The Drama in English since 1660**  
Historical Study of dramatic theory and convention in England from the Restoration to the present, through reading of representative plays of each period. *Prerequisite:* Six hours sophomore English.
- 3360 **The World of Books – Origins and Design**  
Preparation of manuscripts for publication, design of the format, history of printing and binding, distribution and publicity to establish a book. Two lectures and two workshop hours per week. *Prerequisite:* Six hours sophomore English.
- 3361 **Creative Writing** [Formerly Advanced Composition]  
Basic techniques of writing applicable to both fiction and nonfiction. For students interested in perfecting their powers of written expression and/or critical abilities. Emphasis is on contemporary communication at various reader levels with particular attention to viewpoint and style. The course includes a survey of character portrayal and an introduction to plotting techniques. *Prerequisite:* Six hours sophomore English.
- 3362 **Nonfiction Writing**  
Study and practice in the techniques of contemporary nonfiction. Scope includes analysis of magazine article types and their structure. Attention is given to the use of fictional techniques in nonfiction. *Prerequisite:* Six hours sophomore English.
- 3367 **Advanced Creative Writing** [Formerly Fiction Writing]  
Study and practice in the techniques of contemporary creative writing. Continuance and intensification of the techniques presented in English 3361. *Prerequisite:* Six hours sophomore English.
- 3368 **Advanced Fiction Writing**  
Study and practice in the techniques of contemporary fiction writing, with particular attention to dramatic structure as applicable to both the short story and longer forms. *Prerequisite:* Six hours sophomore English.
- 3370 **The Writing of Poetry**  
Study and practice in the writing of traditional and contemporary forms of poetry, with attention to such basic elements as imagery, symbolism, etc. *Prerequisite:* Six hours sophomore English.
- 3371 **Life and Literature of the Southwest**  
The social background of the Southwest and its reflection in literature. *Prerequisite:* Six hours sophomore English.

- 3372 **Folklore**  
The types and characteristics of folk literature with particular emphasis on the folklore of the Southwest and Mexico. *Prerequisite:* Six hours sophomore English.
- 3373 **Life and Literature of the South**  
Literature of the Old and New South, especially as it reflects the institutions and traditions of the region. *Prerequisite:* Six hours sophomore English.
- 3385 **Russian Literature in Translation**  
Prose fiction beginning with Pushkin and extending through the Golden Age of the nineteenth century, with special emphasis on Lermontov, Gogol, Turgenev, Dostoevsky, Tolstoy, Chekhov, Andreyev, and Gorky. *Prerequisite:* Six hours sophomore English.
- 3395 **Linguistics in the Classroom**  
A study of the use of linguistic theory in the teaching of English. Meets the requirements for English 3309 for undergraduate secondary education majors. *Prerequisite:* Six hours sophomore English.
- 3411 **Milton**  
An introduction to the work and times of John Milton. *Prerequisite:* Six hours of advanced courses in English.
- 3413 **Chaucer**  
A survey of the life and works of Geoffrey Chaucer with emphasis on *The Canterbury Tales*. *Prerequisite:* Six hours of advanced courses in English.
- 3414 **Literary Criticism**  
The development of literary theory as seen in the major critics from Plato to the present. *Prerequisite:* Six hours of advanced courses in English.
- 3419 **The Foundations of the English Language**  
The development of English from Old through Middle English, with selected readings in the original. *Prerequisite:* Six hours of advanced courses in English. *Recommended prerequisite:* English 3220 or 3309.
- 3420 **Workshop in Creative Writing**  
Intensified practice in and perfection of one or more of the techniques of mature creative writing. The scope of the course will vary with the instructor. May be repeated once for credit. *Prerequisite:* English 3368 or 3370.
- 3435 **Studies in American Thought\***  
The origin and significance of the major thought patterns of American Literature. *Prerequisite:* a 3.0 average in nine hours of advanced courses in English. Consult the English Department Head before registering.
- 3440 **Special Studies\***  
Pro-seminar open to English majors, the topic to vary with the professor in charge. See Department Head for details. *Prerequisite:* a 3.0 average in nine hours of advanced courses in English or consent of the instructor. May be repeated for credit when the topic varies.
- 1455-6455 **Workshop in the Teaching of English**  
May be repeated for credit when the subject varies. *Prerequisite:* Permission of the department head.
- 3471 **Studies in English as Language** [Formerly 3470]  
Subject is chosen by the professor in charge. May be repeated for credit when the topic varies. *Prerequisite:* Six advanced hours in English. *Recommended prerequisite:* English 3220 or English 3309, or permission of the instructor.

\* Pro-Seminar.

**3472 Contrastive Linguistics, Spanish, English**

A contrastive study of the phonological, morphological and syntactical systems of Spanish and English. *Prerequisite:* Six hours of advanced courses in English, plus one of the following: Speech 3110, English 3220, Spanish 3400, or permission of the instructor.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Fourth-semester college level proficiency in French, German, or Spanish; twelve semester hours of advanced courses in English, and a Bachelor's degree. Foreign students may be required to take special proficiency tests in the English language before being allowed to register. Write Head, Department of English, for details.

*M.A. degree requirements:*

1. Thirty semester hours of graduate courses in English, at least twenty-four hours of which are courses numbered between 3500 and 3600; the remainder may consist of courses numbered between 3400 and 3600, provided these courses were not taken to satisfy requirements for the B.A. degree.
2. Each candidate for the M.A. degree will be required to make a satisfactory score on a written comprehensive examination.
3. Each candidate for the M.A. degree will submit to the committee on graduate studies evidence of his scholarly ability in one of two ways:
  - a) He may submit two suitably bound graduate seminar research papers, the product of courses entitled *Studies*.
  - b) By special permission of the graduate committee he may submit a six hour thesis (including English 3598 and 3599 in lieu of six hours of course work), suitably bound.

A student may include a minor in his program only by approval of the committee on graduate studies.

**GENERAL COURSES****3511 Scholarly Methods and Bibliography**

The basic course for graduate work in English. Designed to equip the graduate student with effective techniques for research and scholarly writing in the field of English.

**3515 Graduate Reading Course**

Reading of a selected list of English and American masterpieces. No formal classes held, but discussion groups meet regularly.

**3565 Studies in Folklore\*****3598-99 Master of Arts Thesis**

To be taken only by those who have been approved by the graduate committee to write a six hour thesis.

**AMERICAN LITERATURE****3520 Readings in Poe and His Influence****3525 Studies in American Transcendentalism\*****3535 Studies in American Thought\*****3540 Studies in Melville and Hawthorne\*****3541 Studies in American Fiction\***

**ENGLISH LITERATURE**

- 3549 Readings in Old English Translation
- 3550 Studies in Chaucer\*
- 3551 Readings in Middle English Literature
- 3560 Studies in Shakespeare\*
- 3561 Readings in 17th Century English Literature
- 3562 Studies in 18th Century English Literature\*
- 3563 Studies in 19th Century English Literature\*
- 3564 Studies in the English Novel\*

**LANGUAGE AND LINGUISTICS**

- 3570 Studies in English as Language\*

\* Seminar; may be repeated for credit when the topic varies.





## GEOLOGY and GEOGRAPHY



W. N. McANULTY, *Head*

*Professors* McANULTY, QUINN (Emeritus), HILLS, STRAIN;

*Associate Professors* LEMONE, LOVEJOY; *Assistant Professor* HOFFER;

*Instructors* VOWELL, JACKSON.

### GEOLOGY

**B.S. Degree** — Specific course requirements for the geology major are Geology 4101-02, 4216-17, 4218-19, 3322, 3323, 3327, 6465, and six additional advanced hours in geology; Chemistry 4103-04; Physics 4115, 4216 and 1216 or 4217 (Paleontology majors may substitute biological science for physics); Mathematics 3115, 2216, 4111 and 4212. Mechanical Engineering 2103; and English 3269 or Mechanical Engineering 3201.

**B.A. Degree** — Specific course requirements for the geology major are Geology 4101-02, 4216-17, 4218-19, 3322, 3323, and 3327; Chemistry 4103-04; Physics 4115, 4216 and 1216 or 4217; Mathematics 3115, 2216, 4111; Mechanical Engineering 2103; and English 3269 or Mechanical Engineering 3201.

Students who desire to major in the geological sciences have a choice of seven routes of study, one leading to the Bachelor of Arts degree and six leading to the Bachelor of Science degree. The routes leading to the Bachelor of Science degree include (1) general geology, (2) engineering geology, (3) exploration geophysics, (4) petroleum geology, (5) economic geology, and (6) paleontology. Each plan except the one for *general geology* includes at least one appropriate minor. A minor must be selected for *general geology* from one of the following fields: mathematics, chemistry, physics, civil or metallurgical engineering. The Bachelor of Arts degree route permits minors in several other fields.

Students desiring to major or minor in geology or geography should consult with the Head of the Department.

The Department also offers the Master of Science Degree in geology. The Graduate School Bulletin should be consulted for detailed information on the requirements for this degree.

### For Undergraduates

*General prerequisite:* Junior standing for all 3300 or 3400 level courses

#### 3103 Principles of Earth Science (\$5)

Study of the earth as a planet: the physical processes operating in the atmosphere, hydrosphere, and lithosphere, the evaluation of these processes, and the study of earth history as interpreted from and exhibited by plants, animals, minerals and rocks. Two lectures and two hours of laboratory work per week. A one-day field trip is required. For the liberal arts student.

#### 3104 Principles of Earth Science (\$5)

A continuation of Geology 3103. Two hours of lecture and two hours of laboratory work per week. A one-day field trip is required. *Prerequisite:* Geology 3103 or permission.

#### 4101-02 Physical and Historical Geology (\$5-\$5)

The first course, 4101, of this two-semester sequence deals with principles and processes of physical geology. The second course is a critical study of the principles of historical geology. These courses must be taken in sequence. Required for all students majoring or minoring in geology. Recommended for all students majoring in any of the sciences or engineering. Three lectures and three laboratory hours per week for each course. A one-day field trip is required in each course.

- 3205 Principles of Geology (for teachers of Earth Sciences) (\$5) Fall Semester [Formerly 4301]  
Study of the principles and processes of physical and historical geology. Designed for Education and Liberal Arts majors. Two lectures and three laboratory hours per week. A one-day field trip is required. *Prerequisite:* Geology 3104.
- 3210 Principles of Geomorphology (\$2) Spring Semester  
Analysis of geomorphic processes and land forms with special reference to conditions and surface expressions in North America and their interpretation from topographic and geologic maps and aerial photographs. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 4101, or 3205.
- 2215 Mineralogy for Metallurgists (\$2) Spring Semester  
A study of the Physical and Chemical properties of the common ore and gangue minerals and use of these properties in the identification of these minerals. One hour of lecture and three hours of laboratory work per week. *Prerequisite:* Chemistry 4103-4104.
- 4216 Mineralogy (\$4) Fall Semester  
Elementary study of crystallography, crystal chemistry, classification and physical properties of minerals, and identification of the common silicate minerals. Three lectures and three laboratory hours per week. *Prerequisite:* Geology 4101, Chemistry 4103, Math 2116.
- 4217 Petrology (\$4) Spring Semester  
Hand specimen study and classification of igneous, metamorphic, and sedimentary rocks. Three lectures and three laboratory hours per week. *Prerequisite:* Geology 4216.
- 4218 Invertebrate Paleontology (\$4) Fall Semester  
A study of the morphology and classification of the invertebrates, and their developments and geological significance. The course includes an introduction to paleoecology and stratigraphic paleontology. Three lectures and three laboratory hours per week. *Prerequisite:* Geology 4101-02, or 3205.
- 4219 Invertebrate Paleontology (\$4) Spring Semester  
A continuation of Geology 4218.
- 3305 Rocks and Minerals (for teachers of Earth Science) (\$2)  
Hand specimen study of the common rock-forming minerals, gem and ore minerals, and of igneous, metamorphic, and sedimentary rocks. One lecture and four hours of laboratory per week. *Prerequisite:* Geology 4101, or 3205, or permission of instructor. Not open to Geology majors.
- 3320 Paleobotany (\$2) Spring Semester  
A study of the morphology, ecology, classification, development, and geological significance of fossil plants. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 4101-02, 4218-19; or Botany 4103 and permission of instructor.
- 3321 Geology for Engineers – Fall Semester  
The principles of physical geology and their practical applications to civil engineering. Two lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4103-04, Math 4212, Physics 4115, 1216 and 4216, and permission of instructor.
- 3322 Field Course in Geology (\$4) Fall Semester  
A junior-level field course in which the methods and techniques employed in conducting geologic field studies and in the construction of geologic and structure maps are introduced. Selected areas near the college are studied. Two lectures and four hours of field work per week. *Prerequisite:* Geology 4217; Math 2116 or permission of instructor.

- 3323 **Structural Geology (\$2) Spring Semester**  
A study of the principles and theories of structural geology. Special attention is given to primary and secondary rock structures important in mining, petroleum, and engineering operations. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 3322 and Engineering Graphics 2103.
- 3324 **Geochemical Prospecting (\$2) Spring Semester**  
The application of geochemistry to the search for commercial mineral deposits. Two lectures and three hours of field work per week. *Prerequisite:* Geology 4217 or permission of instructor.
- 3325 **Sedimentation (\$2) Fall Semester**  
Methods of study and interpretation of sediments, including grain size and statistical analysis. Consideration is given to the genesis and classification of sedimentary rocks through field observation and laboratory study of hand specimens. Two lectures and three hours of laboratory work per week. *Prerequisite:* Geology 4217 or permission of instructor.
- 3327 **Geological Microscopy (\$4) Fall Semester**  
The optical theory of the interaction of light and minerals and the study of minerals and ores in grains, polished sections, and thin sections with the petrographic and ore microscopes. Two lectures and three hours of laboratory work each week. *Prerequisite:* Geology 4217; Physics 4216 and/or permission of instructor.
- 3330 **Micropaleontology (\$2) Spring Semester, Alternate years**  
Morphology, classification, and distribution of foraminifera, ostracods, conodonts, etc. Methods of collection and preparation: One hour of lecture and six laboratory hours per week. *Prerequisite:* Geology 4218-19 and consent of instructor.
- 3405 **Earth Science Field Course (\$5) Fall Semester**  
Field observation; use of the field as a laboratory; methods and techniques of constructing maps and cross-sections, collecting and preparation of fossils, rocks, and minerals. One hour lecture and four hours of field work per week. *Prerequisite:* Geology 3305 or permission of instructor. Not open to Geology majors.
- 3410 **Workshop in the Teaching of Earth Science (\$5)**  
Spring Semester [Formerly 2401]  
An introduction to the literature and materials of the earth sciences, and instruction in the construction and use of models and use of demonstration techniques. *Prerequisite:* Geology 3405 or permission of instructor.

#### For Undergraduates and Graduates

- 3440 **Igneous and Metamorphic Petrology (\$4)**  
Spring Semester, Alternate years  
The study of the origin, mineralogy, texture, and mode of occurrence, by thin section study of igneous and metamorphic rocks. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 3327.
- 3450 **Advanced Invertebrate Paleontology (\$2)**  
Fall Semester, Alternate years  
A comprehensive analysis of the faunal taxonomy and paleoecology of the geologic systems. Professional methods of collecting and preparing invertebrate fossils will be stressed. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 4218-19, senior standing or permission of instructor.
- 3455 **Vertebrate Paleontology (\$2) Fall Semester, Alternate years**  
Study of the evolution, geologic history and classification of the vertebrates, with emphasis on the practical use of vertebrate fossils in the solution of stratigraphic problems. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 4101-02 or Zoology 4103, senior standing or permission of instructor.

- 3460 Economic Geology [Non-Metallics] (\$2) Spring Semester  
Study of the origin, nature, occurrence, distribution, uses, prospecting and exploration techniques, and economic factors bearing on the exploration of industrial rocks and minerals. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 3323 or permission of instructor.
- 3461 Economic Geology [Metallics] (\$2) Fall Semester  
Study of the origin, nature, occurrence, distribution, uses, prospecting and exploration techniques, and economic factors bearing on the exploration of metallic mineral resources. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 3323, or permission of instructor.
- 3462 Stratigraphy – Fall Semester  
A study of the fundamental principles of stratigraphy, with special emphasis on the stratigraphy of Southwestern United States and Northern Mexico. Three lectures per week. *Prerequisite:* Geology 4218-19, and/or permission of instructor.
- 3463 Geology of Petroleum and Natural Gas (\$2) Spring Semester  
A study of the origin, migration, and accumulation of oil and gas. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 3323, 3325, 3462.
- 3464 The Geology of Groundwater – Spring Semester, Alternate years  
Study of the geology and hydrology of groundwater; occurrences, movement, fluctuations, and production; with emphasis on the groundwater resources of the Southwest. Three lectures per week, with laboratory being substituted occasionally for the third lecture. *Prerequisite:* Geology 3323, 3325, or permission of instructor.
- 6465 Field Geology [Summer Field Course]  
A six-week summer course in field geology. The work will include preparation of topographic and geologic maps, cross-sections, columnar sections, and detailed structural studies of areas embracing both sedimentary and igneous rocks, plane table and aerial photo mapping techniques will be used. A report will be required of each student. Five hours of lecture and thirty-two hours of field work per week. *Prerequisite:* Geology 4216-17, 3323, and permission of instructor. Fee varies depending on where the course is based.
- 1466-3466 Special Problems  
Special problem in geology; hours and subjects to be arranged with each student; for undergraduate students of senior standing who wish to do special work on specific problems. No student may receive credit for more than six hours of special problems work. *Prerequisite:* Permission of Head of Department.
- 3467 Advanced Structural Geology – Spring Semester, Alternate years  
Detailed literature and field research structural geologic problems. Two hours of lecture and three laboratory hours per week. *Prerequisite:* Geology 3323 and permission of instructor.
- 3468-69 Senior Thesis  
Open to senior geology majors who have indicated ability to do research and prepare a professional report on suitable topics. This is a two-semester course and must be taken in sequence. *Prerequisite:* Permission of Head of Department.

## FOR GRADUATE STUDENTS ONLY

- 1501 **Technical Sessions**  
Required of all graduate students. Meets for one hour each week. Discussion of various geological topics by the faculty, graduate students, and speakers from industry and other institutions. May be repeated for credit. *Prerequisite:* Senior or graduate standing.
- 3520 **Paleozoic Biostratigraphy – Fall Semester, Alternate years**  
Classification, paleogeography, and paleontology of the stratigraphic units within the Paleozoic systems. Two hours of lecture and three laboratory hours per week. *Prerequisite:* Geology 4218-19 and consent of instructor.
- 3525 **Mesozoic and Cenozoic Biostratigraphy**  
Spring Semester, Alternate years  
Classification, paleogeography and paleontology of the stratigraphic units of the marine Mesozoic and Cenozoic. Two hours of lecture and three laboratory hours per week. *Prerequisite:* Geology 4218-19 and consent of instructor.
- 3530 **Palynology – Fall Semester, Alternate years**  
Study of the applications of fossil spores and pollens to selected problems in geology and botany. Extraction, mounting, and examination of samples from peats, soils, clays, coals, crude oils, shales, sandstones and carbonate rocks and extant plants. One hour of lecture and six laboratory hours per week. *Prerequisite:* Geology 3320 and consent of instructor.
- 3540 **Petrography of Sedimentary Rocks**  
Spring Semester, Alternate years  
Thin-section and hand-specimen study of sedimentary rocks, with emphasis on paleogeographic, tectonic, and environmental interpretation. Two hours of lecture and three laboratory hours per week. *Prerequisite:* Geology 3325 and 3327.
- 3550 **Stratigraphy of Nonmarine Cenozoic Rocks**  
Spring Semester, Alternate years  
History, stratigraphy, paleontology, and correlation of nonmarine Cenozoic rocks of western North America. Three lectures per week. *Prerequisite:* Geology 3455 and permission of instructor.
- 3560 **Advanced Physical Geology – Fall Semester, Alternate years**  
*Prerequisite:* Senior or graduate standing and consent of instructor. Three lectures per week.
- 3561 **Advanced Historical Geology – Spring Semester, Alternate years**  
*Prerequisite:* Senior or graduate standing and consent of instructor. Three lectures per week.
- 3570 **Geotectonics – Fall Semester, Alternate years**  
A broad areal, temporal, and topical analysis of major earth structures and geotectonic problems. Three hours of lecture per week. *Prerequisite:* Geology 3467 and consent of instructor.
- 3575 **Mining Geology (\$5) Spring Semester, Alternate years**  
Application of geologic principles to prospecting, exploration, and exploration of mineral resources. Mapping and sampling methods, exploration techniques, tonnage and grade calculations, economic evaluation, and preparation of reports. Two lectures and three laboratory hours per week. *Prerequisite:* Graduate standing and consent of instructor.

## GEOLOGY AND GEOGRAPHY

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- 3580 **X-Ray Mineralogy – Fall Semester, Alternate years**  
Theory and application of single crystal and powder diffraction X-ray methods and crystal chemistry of rock-forming silicates and ores. Two lectures and three laboratory hours per week. *Prerequisite:* Senior or graduate standing and consent of instructor.
- 2585 **History of Geology – Fall Semester, Alternate years**  
Study of the development of the geological sciences. Two lectures per week. *Prerequisite:* Graduate standing and/or consent of instructor.
- 2590 **Seminar in Geology**  
Seminar sections (non-concurrently) in paleontology and stratigraphy; mineralogy, petrology, and geochemistry; structural geology and geomorphology; and economic geology. May be repeated for credit. *Prerequisite:* Graduate standing and consent of staff.
- 3598-99 **Thesis Course for M.S. degree**  
*Prerequisite:* Graduate standing and consent of staff.

## PHYSICAL GEOGRAPHY

- 3106 **Elements of Physical Geography (\$2)**  
Study of the elements of the physical environment; earth-science relationships, landforms, weather and climate, and soil. Two lectures and two hours of laboratory work per week. Not to be used for laboratory science credit by liberal arts students.
- 3107 **Elements of Economic Geography**  
Study of the physical and economic factors affecting the distribution of the world's principal commercial products. Two lectures and two hours of laboratory work per week. Not to be used for laboratory science credit by liberal arts students. *Prerequisite:* Geology 3106 or permission.
- 4206 **Introductory Weather and Climate (\$2)**  
A study of the components of weather, weather processes, and their measurement; climatic elements and control factors; geographic classification of climatic and vegetative types on the earth's surface. Three lectures and three hours of laboratory work per week. *Prerequisite:* Geography 4103 and 4104 or Geology 4101.
- 4306 **Physiography of Arid Lands (\$2)**  
A study of physical complexes of the world's dry regions. Salient factors emphasized include climate, landforms, water, soils, natural vegetation and the various aspects of human occupation. Three lectures and three hours of laboratory work per week. *Prerequisite:* Geography 4205.
- 4410 **Advanced Geomorphology (\$2)**  
Quantitative and theoretical geomorphology along the lines of current research on hydraulic geometry of rivers, statistical laws of channel networks, and evolution of slopes and drainage basins. Three lectures and three hours of laboratory work per week. *Prerequisite:* Geology 3210.

# HEALTH and PHYSICAL EDUCATION

BEN W. COLLINS, *Head*

*Associate Professors* COLLINS, HARDIN, HARRIS, McCARTY;  
*Assistant Professors* CRAIGO, GLARDON, LOPER, POTEET; *Instructor* MOORE;  
*Assistant Professor* VARNER (part-time).

## HEALTH EDUCATION For Undergraduates

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

### 3101 Health Science Information

*Open to all students. Required of all physical education majors.* Scientific information essential to the understanding of individual and community health problems with major consideration of the latest research related to such areas as cancer, heart disease, narcotics, smoking, obesity, physiological aspects of exercise.

## For Undergraduates and Graduates

### 3301 Community Hygiene

Consideration of health of people as a group and with the social and governmental agencies which are concerned with environmental control and health protection. Three hours of lecture per week and special field trips. *Prerequisite:* Junior standing or permission of the Head of the department.

### 3302 Elementary School Health Education

Major problems of the organization and administration of elementary school health programs will be analyzed. *Prerequisite:* Junior standing or permission of the Head of the department.

### 3303 Modern Problems in Health Education

A study of the normal functioning of every integral part of the human body. Care and prevention of communicable diseases will be discussed and the value of the new drugs in the treatment of such. This course will try to give the individual a concept in the modern method for a healthful life. *Prerequisite:* Junior standing or permission of the Head of the department.

### 3307 Methods and Materials in Health Education

The scope of Health Education in the Elementary School. Problems in administering the school health education program. Teaching aids and methods for the teacher responsible for health instruction. The teacher's part in the health protection of children. *Prerequisite:* Junior standing or permission of the Head of the department.

### 3401 Health Education in the Secondary School

Responsibilities of school for health instruction; adolescent health problems, and their relationship to instruction; social implications of individual and group health. *Prerequisite:* H.E. 3101. Senior standing.

## PHYSICAL EDUCATION For Undergraduates

### 1101 Service Course for Men (\$2)

Three hours per week. May be repeated for credit.

### 1102 Service Course for Women (\$2)

Three hours per week. May be repeated for credit.

## Skill Courses for Majors (Three hours per week)

Women		Men	
1122	1204	1121	1203
1124	1302	1123	1301
1202	1304	1201	1303

## 3103 Introduction to the Public Schools and to Physical Education

The purposes, objectives, and methods of operation of the public school are described. The student is provided an overview of health, physical education, and recreation. Field trips and demonstrations are included in this course.

## 3203 Curriculum Construction

A study of the principles of curriculum construction, the philosophy of physical education content, progression, and organization of the physical education program for all levels of the educational program. A curriculum to meet a specific situation will be outlined. *Prerequisite:* Six semester hours of Health and Physical Education or permission of the Head of the department.

## 3205 Methods and Materials for Elementary Schools

Consideration is given to the methods and materials of instruction, the content, progression, organization and philosophy of the physical education program including rhythms for the Elementary and Junior High levels. *Prerequisite:* Three semester hours of Health and Physical Education or permission of the Head of the Department.

## 3206 Techniques of Coaching Football and Basketball

Coaching methods and problems. Fundamentals of varsity team play; comparison of systems; strategy; training, conditioning; selection of men for positions; responsibilities of the coach; and public relations. Fall term. *Prerequisite:* Sophomore standing.

## 3207 Techniques of Coaching Track and Field and Baseball

Spring term. *Prerequisite:* Sophomore standing.

## 3215 Historical and Cultural Aspects of Dance

A cultural survey of the emergence of dance on the American scene in the 20th century, with consideration of dance as an expressive art in education.

## For Undergraduates and Graduates

## 3303 Tests and Measurements in Health and Physical Education

A study of tests will be made, both in Health and Physical Education as to their purpose and use, scoring and interpretation. *Prerequisite:* Twelve semester hours in Physical Education or permission of the Head of the department.

## 3304 Current Methods and Materials in Physical Education in Secondary Schools

A course designed to develop methods, teaching techniques, and materials for the teaching of physical education in the secondary schools with major emphasis on teaching of team sports. *Prerequisite:* Four semesters of skill courses and junior standing.

## 3305 Current Methods and Materials in Physical Education in Secondary Schools

Major emphasis on teaching of dual and individual sports. *Prerequisite:* P.E. 3304.

## 3311 Organization and Administration of Physical Education

The place of physical education in the total educational situation will be presented, along with fundamental aspects of a well-rounded physical education program. Particular emphasis on the administrative problems underlying a functional program. *Prerequisite:* Twelve semester hours of Physical Education. Junior standing.



- 3312 Kinesiology**  
Analysis of movements, specialized skills, and motor coordination in terms of the mechanics of skeletal and muscular movement. *Prerequisite:* Biology 3203 and twelve semester hours of Physical Education.
- 3316 Techniques, Methods and Materials of Instruction in Rhythms for High School Grades**  
A class in rhythmical materials in social, country, folk, tap and modern dance. *Prerequisite:* Twelve semester hours of Physical Education or permission of the Head of the department.
- 3408 Sports Officiating**  
Opportunity will be provided for a student to learn and interpret the rules and playing regulations, the mechanics of officiating and the psychological aspects of officiating sports activities included in a sound program of athletics and physical education. *Prerequisite:* Twelve semester hours of Physical Education or permission of the Head of the department.
- 3409 Sports Activities Injuries, Training, and Emergency Care**  
The recognition and prevention of injuries in sports activities as well as the emergency care provisions for the usual physical education and playground injuries are emphasized. *Prerequisite:* Twelve semester hours of Physical Education, Biology 3203. Senior standing.
- 3410 Undergraduate Seminar**  
Directed study in selected areas of Physical Education. This may be substituted for a deficiency in the required advanced Physical Education course in the Physical Education major. *Prerequisite:* Twelve semester hours of Physical Education or permission of the Head of the department. May be repeated for credit.
- 3413 Growth and Development of the School Child**  
The correlation between growth and developmental changes and the chronological ages of the school child with emphasis on gross motor development. A study of the physiological changes that are characteristic of the various age levels of the school child and their relationship to the child's emotional, social, and mental development. *Prerequisite:* Twelve semester hours of Physical Education or permission of the Head of the department.
- 3414 Developmental Programs in Physical Education**  
Programs to meet the needs of those individuals who are sub-par in physical fitness and skills. Emphasis on children with physical handicaps. *Prerequisite:* Twelve semester hours of Physical Education. Senior standing.
- 3496 Professional Laboratory Experience in the Elementary School**  
A minimum of ten hours a week for one semester of laboratory observation and teaching experience in an elementary school program of health and physical education. *Prerequisite:* A grade point average of at least 2.0 in both English 3101-02 and Speech 3101; of at least 2.5 in Health and Physical Education courses; 2.0 over-all; Education 3301-02; P.E. 3205; senior standing and permission of college supervisor of student teaching. Student must file a student teaching application with their college supervisor during the spring semester preceding the taking of the course.
- 3498 Professional Laboratory Experience in the Secondary School**  
A minimum of ten hours a week for one semester of laboratory observation and teaching experience in the health and physical education program in the secondary school. *Prerequisite:* A grade point average of at least 2.0 in English 3101-02 and Speech 3101; of at least 2.5 in Health and Physical Education courses; 2.0 over-all; Education 3310-11; P.E. 3304; senior standing and permission of college supervisor of student teaching. Student must file a student teaching application with their college supervisor during the spring semester preceding the taking of the course.

**6498 Student Teaching in the Secondary School**

Directed and closely supervised performance in the full range of duties of a secondary school teacher, conducted in cooperating schools. Accompanying directed study and evaluative seminars. Required in the professional development sequence for approved programs in secondary education. Consumes a four-hour daily block of time, M-F, in addition to seminar. *Prerequisite:* A grade point average of at least 2.0 in both English 3101-02 and Speech 3101; of at least 2.5 in Health and Physical Education courses; 2.0 over-all; Education 3310, 3311, 3312, 3420; P.E. 3304; senior standing and permission of college supervisor of student teaching. Student must file a student teaching application with their college supervisor during the spring semester preceding the taking of the course.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Twelve semester hours of advanced courses in Health and Physical Education and a bachelor's degree.

**3501 Seminar in Health and Physical Education**

A seminar with emphasis on research in health and physical education in both the elementary and secondary school fields. The course will include methods of research, selecting a problem and preparing a written report on the study of the problem. May be repeated for credit.

**3502 Critical Analysis of Professional Literature**

Designed for advanced students in the field of health, physical education, recreation and safety. Major emphasis will be placed upon health and physical education. Thorough study and consideration will be given to the literature in the field which is likely to have the greatest influence on programs, procedures and practices in health, physical education, recreation and safety in the school and community.

**3503 Supervision of Health and Physical Education**

The purpose of this course is to present and discuss the responsibilities of the supervisor of health and physical education in the school and community. Observation, techniques, standards of judging instruction, the supervisory conferences, cooperative supervision, basic foundation of curriculum construction and lesson planning. Emphasis is placed on the common problems met by the supervisor in health and physical education in elementary and secondary schools.

**3504 Curriculum Construction in Health Education**

The study of curriculum construction with respect to the establishment of basic curriculum philosophies, the application of educational principles, the acquisition of materials, and the comprehension of the sequence of content as recommended by the T.E.A. Health Education curriculum will be studied at all public school levels.



## HISTORY



K. B. SHOVER, *Head*

*Professor Emeritus* REX W. STRICKLAND, JOHN L. WALLER;

*Professors* BAILEY, FULLER, KNIGHT, MCNEELY, PORTER, TIMMONS;

*Associate Professors* JACKSON, SHOVER; *Assistant Professors* CREIGHTON, ISRAEL;

*Instructors* BROADDUS, ISETT, KAWASHIMA, KUZIRIAN, ROLAK.

### For Undergraduates

**B.A. Degree** — Specific course requirements for History major are: 1) History 3101-3102; 3201-3202 or 3203-3204; and eighteen advanced hours; 2) Three semester hours of Sociology.

- 3101 History of the United States, to 1865  
Survey of American history through the Civil War, emphasizing the European background, the colonial contribution, the American Revolution, the republican government, growth of democracy, the background and course of the Civil War.
- 3102 History of the United States, since 1865  
Reconstruction, rise of big business, clash of economic interests, struggle for reform, imperialism and world power status, Progressivism, World War I, the Twenties, the New Deal, World War II, post-war America.

*Prerequisites* for 3200 courses in History: Six hours of History.

- 3201 History of Western Civilization, to 1648  
The ancient and classical civilizations, medieval Europe, Renaissance and Reformation, expansion of Europe, development of national states, and the Thirty Years War.
- 3202 History of Western Civilization, since 1648  
Age of absolutism, development of parliamentary government in England, the Enlightenment, the era of the French Revolution and Napoleon, the Industrial Revolution and its impact, nationalism, intellectual currents, imperialism, World War I, the dictatorships, the world in conflict since 1939.
- 3203 History of England, to 1603  
A survey course in English history embracing primarily the period between the Conquest and the close of the reign of Elizabeth I, with special stress on the evolution of legal, constitutional, and parliamentary institutions.
- 3204 History of England, since 1603  
A continuation of History 3203, with emphasis on constitutional developments in the 17th century, the Industrial Revolution in the 18th century, and social reform during the 19th century.
- 3205 Latin America — The Colonial Period  
A general survey, emphasizing the Indian Civilizations, the Spanish Colonial empire, and the revolutions for independence.
- 3206 Latin America — The National Period  
A continuation of History 3205, emphasizing the national histories of the ABC countries and Mexico.

**For Undergraduates and Graduates**

*Prerequisites:* Junior standing. Twelve semester hours of History, or six hours of History and six hours of other social sciences.

**THE UNITED STATES**

- 3301 Colonial America, to 1763  
Background of European exploration and colonization, settlement and development of the English colonies, British imperial policy, and the Anglo-French conflict in North America.
- 3302 The Era of the American Revolution, 1763-1789  
Causes of the colonial revolt, the military, political, diplomatic, social aspects of the Revolution, the Confederation, and Federal Constitution.
- 3303 The Early National Period, 1789-1829  
The new government under the Constitution, Hamiltonian federalism, development of foreign policy, rise of Jeffersonian Democracy, expansion, War of 1812, the new nationalism, and the emergence of sectional issues.
- 3304 The Jacksonian Era, 1829-1850  
Background and rise of Jacksonian Democracy, Manifest Destiny and westward expansion, the reform impulse, growth of sections, and revival of sectional issues.
- 3305 The Civil War and Reconstruction, 1850-1876  
The prosperous fifties, nativism, immigration, rise of the Republican party, the coming of war, Union and Confederacy, the conflict over reconstruction, Radical rule in the South, emerging social and economic problems, the Compromise of 1876.
- 3306 The Rise of Modern America, 1876-1900  
The legacy of Reconstruction, growth of industry, organized labor, the rise of the city, passing of the frontier, the eclipse of agrarianism, protest and reform, the acquisition of a colonial empire.
- 3307 The Twentieth Century: From Roosevelt to Roosevelt  
The United States as a world power, foreign policies, domestic problems, the Progressive Era, World War I, the Twenties, the Great Depression.
- 3308 Contemporary America, 1933 to the present  
The New Deal at home and abroad, intellectual trends in the Thirties, World War II, post-war domestic problems, the Cold War, the United States as leader of the Free World.
- 3309 American Military History  
Evolution of American military policy, the causes, conduct, and consequences of American wars, analysis of important battles and leaders, peace movements.
- 3310 United States Biography, since 1875  
Deals with men and women in various phases of life who have themselves been important, but who have also helped to create and to exemplify the more important trends in American History.
- 3311 Diplomatic History of the United States, to 1900  
The diplomacy of the American Revolution, problems of the new nation, Jeffersonian diplomacy, the War of 1812, and resulting nationalism in foreign affairs, Manifest Destiny, diplomacy of the Civil War, world power status and the acquisition of empire.
- 3312 Diplomatic History of the United States, since 1900  
Diplomacy of Theodore Roosevelt, Taft, and Wilson, World War I and the peace, diplomacy of the Twenties, Franklin Roosevelt and foreign affairs, World War II, the Cold War and the Revolution in American foreign policy.

- 3314 **Intellectual History of the United States**  
The major intellectual currents in American history in philosophy, religion, literature, and science with special emphasis upon Puritanism, the Enlightenment, Transcendentalism, the Scientific Mind, and the Democratic Faith.
- 3315 **Social History of the United States, from the Revolution to 1875**  
American life, with its changing characteristics and ideals. Emphasis is placed on the knowledge and interests of Americans, including their leisure time activities, with the purpose of describing the development of American culture.
- 3316 **Social History of the United States, from 1875**  
Continuation of History 3315.
- 3317 **History of Texas**  
Special emphasis upon the frontier movements in Texas; a survey of the history and institutional development of the native races, Spanish and Mexican Texas, Anglo-American colonization, the Texas Revolution, the Republic, statehood, expansionism, Civil War and Reconstruction.
- 3319 **The Old South**  
A history of the economic, social, and cultural development of the South to the Civil War.
- 3320 **The New South**  
A history of the American South since 1876, emphasizing the social, economic, and political adjustments in the late 19th century, and the vast changes in Southern society since World War I.
- 3321 **History of the American West, to 1840**  
Concepts governing the frontier interpretation of American history; patterns of settlement, political development, and economic growth in the westward movement from 1607 to 1840.
- 3321 **History of the American West, since 1840**  
The westward movement and the envelopment of the trans-Mississippi West in the continental growth of the American nation, including the mining, railroad, cattle, and agricultural frontier, and military conquest of the area.

**RUSSIA and ASIA**

- 3330 **History of the Far East**  
Modernization of the nations of the Far East with particular attention given to China and Japan. The social, political, economic, and intellectual aspects of this transformation are considered in the light of the impact of Western influences.
- 3331 **History of Russia, to 1905**  
Survey of Russian history from the earliest times with special attention given to the institutions, literature, church, and foreign policy.
- 3333 **History of Russia, 1905 to the present**  
The Revolution of 1905, World War I, the Revolutions of 1917, with special emphasis on the Soviet state since 1917.

**LATIN AMERICA**

- 3346 **The United States and Latin America**  
A history of the Hispanic relations of the United States, emphasizing recognition, Monroe Doctrine, the United States and Mexico, Pan Americanism, the Big Stick, the Good Neighbor, and the Organization of American States.
- 3347 **South America, since 1810**  
A history of the South American countries beginning with revolutions for independence, emphasizing their political, social, economic, and cultural development.

## HISTORY

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- 3348 **Mexico in the Colonial Period, to 1821**  
The native peoples, European discovery, exploration, conquest and colonization of the Caribbean and Spanish North America, colonial institutions and culture, the Mexican movement for independence.
- 3349 **Mexico, since 1821**  
Independent Mexico, the period of Santa Anna, Juárez and the Reform, the Díaz regime, the Revolution, major developments since 1920.

## EUROPE

- 3351 **England Under the Tudors** [New]  
History of England during the Tudor monarchy, 1485-1603, emphasizing the intellectual, religious, economic, and political factors contributing to the growth of the modern state.
- 3352 **England Under the Stuarts**  
Constitutional, political, religious, and social developments in England under the early Stuarts, the Interregnum, and the later Stuarts.
- 3354 **Britain and the Empire in the Twentieth Century**  
The Boer War, imperial affairs, the Liberal party and internal reform, World War I; domestic and imperial developments between the wars, World War II, Britain and the Empire in the post-war era.
- 3356 **British Constitutional History**  
*A survey of the developments of the modern constitution of Great Britain from its Anglo-Saxon beginnings to the present.*
- 3359 **History of Modern France**  
A survey of the social, economic, and political developments of France under the Restoration, the Second Republic, the Second Empire, and the Third, Fourth, and Fifth Republics, with attention given to France's role as a European and world power.
- 3361 **The Early Middle Ages, 200-1100 A.D.**  
The feudalization of Roman civilization, church and state in the later Roman Empire, the migrations and the First Europe, Islamic, Byzantine, and Germanic empires and civilizations, the early European social order, the European Revolution of the 11th century.
- 3362 **The Later Middle Ages, 1100-1400**  
Church and State in the Later Middle Ages, urban civilization and agricultural innovations, international trade, feudal rule in the New Europe, the universities, Europe in transition.
- 3363 **The Renaissance and Reformation**  
Political, social, economic developments in the 14th century, the Papacy, the Renaissance in Italy and northern Europe, the Protestant movement, the Catholic Reformation, religious conflict, and the settlement of 1648.
- 3364 **The Old Regime**  
Absolutism in France, Prussia, Austria, Russia, social and economic trends, international relations, scientific and intellectual revolution, enlightened despotism.
- 3365 **The French Revolution and Napoleon**  
The causes of the Revolution, the constitutional monarchy, the French republic, Jacobin Commonwealth, the era of Napoleon Bonaparte, the Congress of Vienna.
- 3366 **Europe in the Nineteenth Century**  
*The Metternichian era, the Industrial Revolution, liberalism and radicalism, development of nationalism, imperialism in Asia and Africa.*

- 3367 **Europe in the Twentieth Century, to 1939**  
The causes of World War I, the war, the Paris Peace Conference, the totalitarian dictatorships, the democracies, the background of World War II.
- 3368 **Contemporary Europe**  
World War II, the United Nations, the Cold War, the rising tide of nationalism in Asia, the Middle East, and Africa.
- 3369 **Military History of Modern Europe**  
Survey of the military history of the major European powers from the end of the eighteenth century, methods of raising armies, the causes, conduct, and consequences of major wars, analysis of important battles and leaders, NATO and the current scene.
- 3370 **History of Greece** [New]  
The development of Greek civilization, the rise and decline of the city-state, from the Bronze Age to the death of Philip of Macedon in 336 B.C.
- 3371 **History of Rome** [New]  
The Roman Republic, its expansion and overthrow, and the early Empire to the revolution of Septimius Severus, 193 A.D.
- 3372 **Byzantine History** [New]  
The Christian Roman Empire in its medieval Greek form, its survival of barbarian invasions, its destruction of Persia, and its resurgence against Islam, to the capture of Constantinople by the Fourth Crusade, 527-1204 A.D.
- 3381 **Reading Course for Honors Students**  
Reading and discussion of topics in European or American history. Instructor's permission necessary.
- 3414 **Twentieth Century American Thought** [New]  
Major figures and movements dominating the American intellectual scene since the 1890's. Emphasis on philosophical, religious, scientific and social thought. *Prerequisite:* Senior standing and consent of the instructor.
- 3499 **History and Historians** [New]  
A survey of changing styles of historical writing and historical thought from the Greeks to the contemporary era, with emphasis on the concepts and problems of historical interpretation. *Prerequisite:* Senior standing and consent of the instructor.

#### FOR GRADUATE STUDENTS ONLY

*Prerequisite for Graduate credit:* At least twelve semester hours of advanced courses in History and a bachelor's degree. Consent of instructor required except for 3581.

- 3580 **Topics in Regional History**†
- 3581 **Historical Method and Historiography**\*
- 3582 **Studies in European History**†
- 3583 **Studies in Latin-American History**§†
- 3584 **Studies in Texas History, 1803-1850**†
- 3585 **Studies in American History**†
- 3598-99 **Thesis Course for the Master's Degree**

\*Required of all History majors in the M.A. Degree, and offered in the fall semester and once in the summer.

†May be repeated when topic varies.

§A reading knowledge of Spanish is required.

VIRGIL C. HICKS, *Head* (Broadcasting)

JOHN J. MIDDAGH, *Head* (Journalism)

*Professors* HICKS, MIDDAGH; *Instructor* PEREZ;

*Consultant in Publicity and Public Relations*, STEELE JONES.

*Teaching Assistants* CHAVEZ, CHAPMAN, KLINE, MILES.

**B.A. Degree** — Specific courses required for the JOURNALISM MAJOR are Journalism 4207, 3201-02, 3305 and 3312, and six additional advanced hours. Specific courses required for the BROADCASTING MAJOR are RA-TV 3102, 3214-15, 3330-31 and six advanced hours.

(Upon approval of the Head of the Department, Business Administration 3364 will be accepted for credit as part of a major or minor in Journalism.)

**JOURNALISM For Undergraduates**

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

**3101 Introduction to Journalism**

Orientation course into the background of newspaper work and other journalistic fields. Brief history of American newspapers. Designed to acquaint students with general newspaper practices.

**3102 Introduction to News Writing**

A beginning course covering basic principles of news writing and editing, making use of exercises and assignment materials necessary to practice and apply the principles.

**3106 Introductory Course in Public Relations**

Orientation course to acquaint the student with the various public relations media and how to use them. Set up on an elementary basis primarily for the non-journalism and radio major, this course presents the role of public relations in modern business, education, government, civic affairs, etc. Instruction and practice in writing news releases for newspapers, radio and television.

**3201 News Gathering and Reporting**

Instruction and practice in interviewing and writing: Discussion of news sources, news values, and various types of news stories; study of the organization of the newspaper staffs and the news gathering associations. Required of all students majoring in Journalism. Two lectures and four practice hours per week. *Prerequisite:* Sophomore standing including English 3101-02.

**3202 News and Copy Reading**

Theory of writing newspaper copy and writing headlines. Special instruction by leading newspaper men and women. Required of all students majoring in Journalism. Two lectures and four practice hours per week. *Prerequisite:* Sophomore standing including English 3101-02.

**3203 Current Events**

A study of current events in the daily newspaper and interpretation of these current events in regard to the social welfare, future and progress of the world. *Prerequisite:* Sophomore standing.

**3204 Typography**

Emphasis on the mechanics of typography and the understanding of services offered by the typographer. The student learns use and recognition of historical and most widely used type families. The basic function of type, to convey ideas and information, is stressed. Two lectures, three laboratories (Sophomore level).

**4207 Elementary Photography (\$5)**

Instruction and practice in the processes of News Photography. Discussion of lenses and cameras, along with the actual photographic process. Capabilities of the press camera; exposure and development of film; printing and finding news pictures. Three lectures and three laboratory hours per week. *Prerequisite:* Sopho-



more standing or permission of instructor based on applicant's previous experience in photography.

**3303 The Special Article**

Methods of gathering material for newspapers and magazine feature stories, through interviews, research, and observation; study of feature story form and style; discussion of markets for literary material; practice in writing feature stories. *Prerequisite:* Journalism 3201 or 3202, or English 3211-12.

**3305 News Editing**

Study of newspaper style books; instruction in headline writing; study of newspaper make-up; practice in reading newspaper copy for errors in fact, English, and style; also practice in writing headlines and rewriting news stories. Required of all students majoring in Journalism. Two lectures and four practice hours per week. *Prerequisite:* Journalism 3201 or 3202.

**3308 Fields of Photography (\$5)**

A continuation of Elementary News Photography with special emphasis on press photography. A survey of the various fields of photography including a practical working knowledge of cameras and their most effective uses. Two lectures and three laboratory hours per week. *Prerequisite:* Journalism 4207 or permission of the instructor, based on applicant's previous experience with camera and dark-room.

**3312 Editorial Writing and Page Direction**

Instruction and practice in writing newspaper editorials and page columns. Early emphasis on structure and style, make-up, and policies. Practice in writing the signed column. Required of all students majoring in Journalism. *Prerequisite:* Junior standing or consent of the head of the department.

**3350 Fundamentals of Advertising**

Survey of advertising principles used in all media of communications. Discussion of advertising's role in small and large business enterprises. *Prerequisite:* Junior standing or consent of the head of the department.

**3351 Advertising Layout and Copy**

Basic course in understanding production and handling of advertisements. Step by step production of typical ad stresses creativity, mechanical maksup, and final reproduction and evaluation. Agency and trade terms used to specify methods and desired results. Two lectures, three laboratories (Junior standing and "Typography" course).

**3352 Public Relations**

Principles, techniques, and methods used in public relations; necessity and significance in the free enterprise system. Relationships include national, state and local governments; employees; customers; suppliers; social and religious institutions. *Prerequisite:* Junior standing or consent of the head of the department.

**3353 Magazine - Publications Production**

Production of small magazines through offset reproduction. Stresses basics of organization, layout, design, and copy fitting. Basics of color runs and color separations. Includes working with art and photos and business side of publications. Required of students desiring to fill top positions in El Burro and Flowsheet. Two lectures, three laboratories (Required: "Typography" and "Adv. Layout and Copy"), Junior level.

**3354 Photo - Journalism and Professional Practice**

Developing the photo story and editing to obtain professional type magazine or newspaper layout. Stresses creative viewpoint and use of equipment to obtain desired result. Problems in "available" and tungsten lighting. Special use of flash bulb and electronic lighting. Use of 35mm, press type, and view cameras. Two lectures, three laboratories. *Prerequisite:* Junior standing and 3308.

**3401 Public Affairs in the News**

Panel discussions, lectures and field visits comprise this course, which is primarily designed for the senior student needing advanced elective credit having a direct relationship to his major area of study. How the operations of government, politics, the courts, labor and business are reported and interpreted in the news will be studied. *Prerequisite:* Junior standing or consent of the head of the department.

**3402 Cinematography I**

Introduction to professional 16mm cameras. Basics and practice in cameras, exposure, lenses, basic processing, editing, and other production methods. To lectures, three laboratories. *Required:* Senior standing and 4207 or 3308.

**3418 Current Events in Relation to Classroom Teachers Use in Secondary School**

A study of current events in the daily newspapers, national news magazines, and radio, and interpretation of these current events in regard to the social development of the secondary school pupil. *Prerequisite:* Junior standing or consent of the head of the department.

**COLLEGE PUBLICATIONS**

*For Undergraduates*

**1104 and 1204 Publications**

For work on the staff of one of the University's student publications. Students taking the course must work on the staff of the Prospector, El Burro, or the Flow-sheet at prescribed periods under teacher-adviser supervision. May be repeated for credit to the extent of six hours towards graduation. No senior student may take the 1104 course for credit towards graduation.

**BROADCASTING**

Upon approval by the Head of the Department, Education 3412 and 3413 will be accepted for credit as part of a major or minor in Radio-Television.

*For Undergraduates*

**3101 Survey of Broadcasting**

A survey of the American System of Broadcasting including personnel, equipment, terms, station and network organization in television and radio. Practice given in station operational procedures.

**3102 Introduction to Radio**

An introductory course to acquaint the beginning student with basic studio and control room equipment and practices. *Microphone types and techniques, control board operation, tape recordings.* Introduction to educational broadcasting. *Prerequisite:* Radio 3101, or consent of the head of the department.

**3105 Radio-Television News Processing**

A study of the leading world news telegraph services, news writing styles pertinent to radio broadcasting, and the techniques of processing news material for radio broadcast. Laboratory practice under actual radio newsroom conditions is made possible by use of 24-hour daily leased wire Associated Press facilities in the KVOF-FM newsroom.

**3214 Introduction to Television**

An introductory course to acquaint the student with the equipment, terms and personnel of television. Radio and television announcing. The development of an effective, friendly radio and television personality. (Three lectures per week.) *Prerequisite:* Radio 3102 or consent of the head of the department.

**3215 Telecommunications**

*Writing for television and radio, program planning and building, audience surveys, audience promotion.* Introduction to film techniques in television. Three lectures per week. *Prerequisite:* Radio 3214 or consent of the head of the department.

**3218 Dramatic Script Writing**

Beginning principles of dramatic script writing for stage, radio and television. Drama majors will be required to write an original one-act play. Radio and television majors will be required to write an original half-hour script for either radio or television. *Prerequisite:* Completion of English 3101-02 and sophomore standing. Not to be counted in addition to Drama 3218.

**3320 Television Production I**

A practical approach to the presentation of commercials, news films and live programs as encountered in the daily operation of the average commercial tele-

vision station. Beginning instruction in camera work, video and audio control. Survey of educational television. Two lectures and three laboratory hours per week. *Prerequisite:* Six hours of television-radio courses or junior standing.

3321 Television Production II

Advanced television production. Lighting and staging of television forums, quiz shows and dramatic materials. Skills of the technical director. Further camera training. Actual student participation in every phase of television studio and control activity. Two lectures and three laboratory hours per week. *Prerequisite:* Six hours of RA-TV courses or Junior standing and permission from the department head.

3323 Production in Educational Television

Television production problems peculiar to educational television. A companion course to Education 3413, providing opportunity for participation in the production and direction of programs planned for in-school viewing. Content of the course will include basic instructions in staging, lighting, and camera work in the field of educational television. Class members will participate with the staff and crew for daily demonstration programs to be broadcast on the closed-circuit facilities of TWC-TV. *Prerequisite:* Six hours of radio-television or junior standing.

3330 Television-Radio Station Management

Complete survey of management problems in the television-radio industry. Information relating to network affiliation, staff training, public service policies, systems of records, legal restrictions. Survey of job opportunities. Counselling with industry personnel. Required of all television-radio majors. Two lectures and four laboratory hours per week. *Prerequisite:* Six hours of television-radio courses or junior standing. (Cannot be taken in conjunction with any other Radio or Television course.)

3331 Seminar in Telecommunications

Studies in the literature of television and radio; current bibliography and publications; evaluation of philosophies; research problems in mass communications. Required of all television-radio majors. Recommended for students majoring or minoring in education. Two lectures and four laboratory hours per week. *Prerequisite:* Six hours of television-radio courses or junior standing. (Cannot be taken in conjunction with any other Radio or Television course.)

3412 Classroom Use of Audio-Visual Equipment and Materials

Consideration of various kinds of audio-visual equipment and materials in relation to classroom instruction in elementary and secondary education. *Prerequisite:* Junior standing.

3413 Educational Television and Radio:

Preparation and Presentation of In-School Programs

A survey course in the public school applications of television, including techniques of teaching by closed circuit TV. Production of in-school programs for presentation on commercial and educational stations. *Prerequisite:* Junior standing.

**RADIO STATION KVOF and KVOF - FM**

**For Undergraduates**

1104-05 Radio Station KVOF

Work on the staff of Radio Station KVOF. Three hours per week for two semesters. *Prerequisite:* Consent of the head of the department.

1204-05 Radio Station KVOF (second year)

Work on Radio Station KVOF with increased responsibility. Three hours per week for two semesters. *Prerequisite:* Radio 1104-05 and consent of the instructor.

1304-05 Radio Station KVOF - FM (third year)

Work on Radio Station KVOF-FM with increased responsibility. Three hours per week for two semesters. *Prerequisite:* Radio 1204-05 and consent of the instructor.

1404-05 Radio Station KVOF - FM (fourth year)

Work on Radio Station KVOF-FM with increased responsibility. Three hours per week for two semesters. *Prerequisite:* Radio 1304-05 and consent of the instructor.

C. H. GLADMAN, *Head*

*Professors* BOYER, McINTYRE; *Associate Professors* BENTZ, GLADMAN, NYMANN; *Assistant Professors* BAILEY, BALL, FITZPATRICK, FOX, HUNTLEY, KRUSCHWITZ, LIGUORI, MARTIN-WILLIAMS, MICULKA, RESLEY; *Instructors* BURGETT, HANSEN, HARKEY, McDONALD, PRYOR, ROSS, THREADGILL; *Part-time Instructors* DURAN, EZZELL, FARIES, KINGSLEY, PROVENCIO, SCHNEE, WHITT; *Teaching Assistants* J. ARMENDARIZ, M. ARMENDARIZ, BENSON, ELLIOTT, HASSAN, MORALES, VALENZUELA.

**MATHEMATICS**

Mathematics 3101 and 3102 are recommended for those students whose mathematics requirements are not explicitly stated in degree plans. Mathematics 3201 is an elective course which will open the way to some advanced elective work in mathematics to the liberal arts or social science student who does not wish to major in mathematics.

**B.A. and B.S. Degree** — A student who wishes to take the B.A. degree with a major in Mathematics must include at least one senior level Mathematics course in his program. A student who wishes to take the B.S. degree with a major in Mathematics must include at least two senior level courses in Mathematics in his program. The advanced hours used to fulfill the major or minor requirements must be approved by the Mathematics Department.

**For Undergraduates**

*General prerequisite:* Junior standing for all 3300 or 3400 level courses. †

**3101 Introductory Mathematics**

An introductory course designed to fit the needs of liberal arts students. The objectives are to give the student an appreciation of the logical structure of mathematics and its use as a language to express ideas. Topics include the nature of proof, the number system, and elementary algebra.

**3102 Introductory Mathematics**

A continuation of Mathematics 3101. Topics include the algebra of sets, the function concept, and elementary coordinate geometry, trigonometry, statistics, inequalities, and maxima and minima. *Prerequisite:* Mathematics 3101.

**3115 College Algebra**

Further study of those topics of algebra which are especially useful to students in mathematics, the natural sciences and engineering. It includes a study of the quadratic, exponential and logarithmic functions, determinants, systems of linear and quadratic equations, mathematical induction, and the binomial theorem. *Prerequisite:* Two units of high school algebra and one unit of high school geometry, or three semester hours of mathematics.

**2116 Trigonometry**

A study of plane trigonometry with major emphasis on its analytical aspects. *Prerequisite:* Same as for Mathematics 3115.

**4111 Analytical Geometry and Calculus**

The study of plane analytical geometry and the calculus of one independent variable carried on together. *Prerequisite:* Mathematics 3115 and 2116, or sufficiently high score on the College Entrance Examination Board test (S.A.T.).

**4212 Analytical Geometry and Calculus**

Continuation of Mathematics 4111. *Prerequisite:* Mathematics 4111.

†*May be waived upon recommendation of department head in the case of a student who is a declared major in the department and who has credit for 12 semester hours of work in his major.*

- 4217 **Analytical Geometry and Calculus**  
 The study of solid analytical geometry and the calculus of more than one independent variable. Surfaces and curves in space, cylindrical and spherical coordinates, multiple integrals, partial derivatives, and infinite series. *Prerequisite:* Eight semester hours of combined analytical geometry and calculus or six semester hours of calculus.
- 3201 **Introductory Analysis**  
 A study of selected topics of special interest to the liberal arts student. An introduction to the calculus is included in the course. *Prerequisite:* Mathematics 3102 or its equivalent or a sufficiently high score on the College Entrance Examination Board Test (S.A.T.). Not counted for credit in addition to Mathematics 4111.
- 3302 **A Course for Teachers or Supervisors of Elementary Mathematics**  
 A concrete study of topics in mathematics usually taught in the elementary school. Modern concepts are introduced and used throughout the course. Structure and properties of the number system are emphasized. *Prerequisite:* Current registration in elementary education and junior standing. May not be counted as part of the advanced hour requirements for a major or minor for the B.A. or B.S. degree in Mathematics.
- 3303 **A Course for Teachers or Supervisors of Elementary Mathematics**  
 A continuation of Mathematics 3302. *Prerequisite:* Mathematics 3302.
- 3319 **Elementary Number Theory**  
 An introduction to the theory of primes, congruences, and related topics. *Prerequisite:* Nine hours of mathematics or permission of the instructor.
- 3323 **Vector Spaces and Matrix Algebra** [Formerly 3423]  
 An introduction to the algebra of vectors and matrices, and to linear transformations on vector spaces. *Prerequisite:* Mathematics 4217, or concurrent registration in 4217, or twelve hours of Mathematics and the consent of the instructor.
- 3324 **Computer Programming (\$8)**  
 Introduction to digital computer programming and problem formulation for computers. *Prerequisite:* Mathematics 4217 or its equivalent.
- 3326 **Differential Equations**  
 Study of the common types of ordinary differential equations of geometry, mathematics, mechanics, and electricity. *Prerequisite:* Mathematics 4217 or concurrent registration in Mathematics 4217.
- 3327 **Selected Topics in Modern Mathematics**  
 A study of selected topics in finite Mathematics, especially useful to prospective teachers and students in the social sciences. *Prerequisite:* Nine hours of mathematics or permission of the instructor. May not be counted as part of the advanced hour requirement for a major or minor for the B.A. or B.S. degree in Mathematics.
- 3328 **Selected Topics in Modern Mathematics**  
 An introduction to the logical methods of mathematics. A detailed development and study of the natural, rational and real number systems starting from Peano's postulates. Well ordering, axiom of choice, countability, uncountability and related topics. Recommended for teachers and mathematics majors. *Prerequisite:* Nine hours of mathematics or consent of the instructor.
- 3331 **Statistics**  
 An introductory course in the fundamental concepts of mathematical statistics. *Prerequisite:* Mathematics 4212 or Mathematics 3201 with grade of "C" or better and permission of the instructor.

- 3335 Higher Mathematics for Engineers and Physicists [Formerly 3435]  
Line and surface integrals, change of variable in multiple integrals, vector analysis and vector calculus. *Prerequisite:* Mathematics 4217.
- 3421 Theory of Equations  
Theory of polynomials, cubic and quartic equations, approximate methods, determinants, symmetric functions, and other topics. *Prerequisite:* Mathematics 4212.
- 3422 Modern College Geometry  
A course in modern plane geometry involving an extension of some of the material of elementary geometry, together with an introduction to projective geometry. Properties of the triangle, properties of the circle, similitude, inversion, cross ratio, and principle of duality. *Prerequisite:* Mathematics 4212.
- 3425 Modern Algebra  
Groups, rings, integral domains, and fields. *Prerequisite:* Mathematics 3323 or consent of instructor.
- 3426 Modern Algebra  
Continuation of Mathematics 3425. *Prerequisite:* Mathematics 3425.
- 3429 Numerical Analysis (\$8)  
Numerical techniques and the mathematics of computation, including finite difference, curve fitting and the solution of equations. *Prerequisite:* Mathematics 4217.
- 3431 Introduction to Point Set Topology  
Topological spaces, continuous mappings, homeomorphisms and topological properties. *Prerequisite:* Mathematics 3323.
- 3436 Higher Mathematics for Engineers and Physicists  
Series solutions of differential equations, Fourier series, Bessel's equation and Bessel functions, Legendre's equation and Legendre polynomials, the Sturm-Liouville theorem and eigen function expansions. *Prerequisite:* Mathematics 3323 and 3326, or six advanced hours of Mathematics and approval of the instructor.
- 3437 Introduction to Complex Variables  
The definition of the elementary analytic functions, differentiation, integration, Taylor series, and an introduction to conformal mapping. *Prerequisite:* Mathematics 3323 and 3326, or six advanced hours of Mathematics and the consent of the instructor.
- 3441 Introduction to Real Functions  
A study of those topics usually considered in courses in advanced calculus and intermediate analysis with emphasis on the theoretical aspects of the content. *Prerequisite:* Mathematics 3323 and 3326, or six advanced hours of Mathematics and consent of the instructor.
- 3442 Introduction to Real Functions  
A continuation of Mathematics 3441. *Prerequisite:* Mathematics 3441.
- 3443 Intermediate Differential Equations  
A continuation of Mathematics 3326, emphasizing series and numerical methods for solving ordinary differential equations. Some partial differential equations. Development of some existence and uniqueness theorems. *Prerequisite:* Mathematics 3323 and 3326, or six advanced hours of Mathematics and consent of the instructor.

FOR GRADUATE STUDENTS ONLY

- 3511 Applied Mathematics I  
Spectral Theory of operators, distribution theory, perturbation theory. Green's functions. Applications to ordinary and partial differential equations, integral equations and calculus of variations. *Prerequisite:* Mathematics 3435 and 3436 or the equivalent as approved by the instructor.
- 3512 Applied Mathematics II  
A continuation of Mathematics 3511. *Prerequisite:* Mathematics 3511 or its equivalent as approved by the instructor.
- 3521 Advanced Abstract Algebra I  
Groups, rings, fields, modules, with an introduction to homological methods. *Prerequisite:* Mathematics 3426 or its equivalent as approved by the instructor.
- 3522 Advanced Abstract Algebra II  
A continuation of Mathematics 3521. *Prerequisite:* Mathematics 3521 or its equivalent as approved by the instructor.
- 3531 Real Variables I  
Measurable sets and functions, Lebesgue-Stieltjes integration, Baire categories,  $L_p$  spaces and various types of convergence. *Prerequisite:* Mathematics 3442 or its equivalent as approved by the instructor.
- 3532 Real Variables II  
A continuation of Mathematics 3531. *Prerequisite:* Mathematics 3531 or its equivalent as approved by the instructor.
- 3541 Topology I  
A study of topological spaces, uniform spaces and function spaces, with an introduction to algebraic topology. *Prerequisite:* Mathematics 3431 or its equivalent as approved by the instructor.
- 3542 Topology II  
A continuation of Mathematics 3541. *Prerequisite:* Mathematics 3541 or its equivalent as approved by the instructor.
- 3551 Complex Variables  
Analytic continuation, Riemann surfaces, Riemann mapping theorem, infinite series and product representations of meromorphic functions, elliptic functions. *Prerequisite:* Mathematics 3437 or its equivalent as determined by the instructor.
- 3562 Functional Analysis  
Normed linear spaces and linear operators. *Prerequisite:* Mathematics 3532 or consent of the instructor.
- 3570 SEMINAR  
Various topics not included in regular courses will be discussed. May be repeated once for credit as the content changes. *Prerequisite:* Consent of instructor.
- 3598-99 THESIS Course for the MASTER'S DEGREE



## MILITARY SCIENCE



COLONEL LEON F. LAVOIE, *Commandant*

*Professor* COLONEL LAVOIE;

*Assistant Professors* MAJOR HARPER, CAPTAIN BASSETT, CAPTAIN SMITH;

*Instructors* SERGEANT MAJOR STEWART, MSG WILBORN.

**GENERAL:** Courses offered by this department are designed to produce junior commissioned officers, who by their education, training, and demonstrated leadership qualities, are considered suitable for continued development as officers in the United States Army. Army ROTC Courses provide leadership training and experience that is not duplicated in any other college course. Instruction is designed to develop self-assurance, personal discipline, physical stamina, poise, bearing, acceptance of responsibility, and other basic qualities required of an Army Officer. These same qualities also contribute significantly to success in civilian careers.

Military Science Courses are offered during the fall and spring semesters only. The first two years (Military Science 1101-02 and 2201-02) form the Basic Course and are normally taken during freshman and sophomore years. The second two years (Military Science 3301-02 and 3401-02) form the Advanced Course and are taken during the student's junior and senior years. Military Science (ROTC) is elective.

**ELIGIBILITY:** *Basic Course.* Normally a student may only enroll in Military Science courses that correspond to his academic year in college, and he may be permitted to begin ROTC only if sufficient time remains for him to complete his Military Science studies by the time he is scheduled to obtain his baccalaureate degree. Enrollment is limited to students who can qualify for a degree prior to their 28th birthday. Exemptions may be granted by the Professor of Military Science (PMS) for as much as one year of the Basic Course for students having satisfactorily completed three years of high school ROTC. Veterans with four or more months of active military service may be exempted, by the PMS, from the entire Basic Course and apply for admission to the Advanced Course upon attaining approximate junior standing.

To enroll in ROTC a student must be a full-time student carrying 12 or more semester hours, physically qualified as evidenced by a recent physical examination, and be a male citizen of the United States, or must qualify for U. S. citizenship prior to admission to the Advanced Course. To accommodate transfer students from Junior Colleges, other college or universities not having a Senior ROTC Program, or sophomores at U.T. El Paso, who wish to obtain an Army Officers' commission through ROTC; it is possible to qualify for the two-year Army ROTC Program. Application for the two-year Army ROTC Program must be made in January of the year that the student approaches junior standing. Upon satisfactorily passing a mental screening test, a physical examination and approval of applicant by PMS, the student must attend a six weeks Basic Summer Training Camp, in lieu of the Basic Course, and thereby qualify for admission to the Advanced Course.

*Advanced Course.* Upon satisfactorily completing the Basic Course (MS I and MS II) or the Basic Summer Camp under the two-year ROTC Program (attended between student's sophomore and junior years) or exemption from the Basic Course by the PMS for four or more months active military service, a student may qualify for admission to the Advanced Course provided he is selected by the PMS, based upon a mental screening test, a physical examination, and the student's overall academic performance. If accepted for the Advanced Course the student is required to execute a contract with



the government whereby he agrees to enlist in the Army Reserve for a period of six years, complete the Advanced Course, accept a commission if offered, and serve on active duty for two years.

**SCHOLARSHIPS:** Several hundred Four and Two-Year Army ROTC Scholarships are available annually. All scholarships are on a national competitive basis with some emphasis placed upon geographical distribution. Four-Year Army ROTC Scholarships are for high school graduates. Interested high school seniors should apply by December of their senior year to: Commanding General, Fourth U.S. Army, ATTN: AKAAG-RR, Fort Sam Houston, Texas, for information packets and application forms. Two-Year Army ROTC Scholarships are exclusively for sophomores at U.T. El Paso who have completed or are about to complete the Basic Course (MS I and MS II). Sophomores interested in Two-Year Army ROTC Scholarships should obtain applications from the Office of the PMS, Memorial Gym, prior to January of their sophomore year.

**PAY AND ALLOWANCES:** All students enrolled in ROTC are furnished summer and winter uniforms, textbooks, and equipment on a loan basis. A \$20.00 deposit is required at initial registration to cover loss or damage to government and/or college property. This deposit, less charges, is refunded upon completion of Military Science studies. Non-scholarship Advance Course cadets are paid \$50.00 per month for a maximum of twenty months, excluding the six week Advanced Summer Training Camp, where pay is at the rate of \$160.50 per month. Both Four and Two-Year Army ROTC Scholarship cadets have their tuition, required fees, textbooks, and essential classroom supplies paid for by the government. Additionally, Four and Two-Year Army ROTC Scholarship recipients are paid \$50.00 per month for the full period of their scholarship, except for the six week Advanced Summer Training Camp, where the pay is at the rate of \$160.50 per month. The government also provides a mileage allowance of six cents per mile to and from Basic and Advanced Summer Training Camps. Pay at the six week Basic Summer Training Camp, attended by candidates for the Two-Year ROTC Program, is at the rate of \$95.70 per month.

**FLIGHT TRAINING:** Flight training at a local flying school is available in a limited quota to ROTC Cadets in their senior year. A more rigid physical examination is required and special mental screening tests must be passed. Flight training cadets must take flight instruction on their own time. The ROTC Flight Training Program seeks to qualify the individual for a Federal Aviation Agency Private Pilot's License. All instructional costs are paid by the government. Selected ROTC Flight Training Cadets must agree to serve on active duty for three years and to volunteer for Army Aviation training.

**COMMISSIONS OFFERED:** Upon successful completion of all Military Science studies and requirements for a Baccalaureate Degree, a cadet is tendered a commission as a Second Lieutenant in the United States Army Reserve and will be required to serve on active duty, not to exceed two years (three years for those taking ROTC Flight Training). Students who qualify as Distinguished Military Students at the end of their junior year and maintain the prescribed academic and leadership standards through Advanced Training Camp and their senior year, will be designated as Distinguished Military Graduates of U.T. El Paso. Distinguished Military Graduates may apply and qualify for a Regular Army Commission — the same as given at the United States Military Academy at West Point. Since U.T. El Paso offers a General Military Science Curriculum, a commission in most branches of the Army is obtainable, excepting those requiring professional graduate work. Following graduation, the newly commissioned officer is sent to an Orientation Course of about eight weeks duration to qualify him in his Branch, and then completes his tour of active duty through challenging assignments

## MILITARY SCIENCE

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overseas and in the United States. Following one year's active duty, promotion to First Lieutenant can be reasonably expected with a substantial increase in pay. Likewise, upon the completion of two year's active Military Service, another substantial increase in pay will occur. Delays in call to active duty are generally obtainable for those students who wish to pursue graduate studies leading to a Master's Degree.

### BASIC COURSE

#### 1101-02 Military Science I\*

Organization of the Army and ROTC; Individual Weapons and Marksmanship; United States Army and National Security; and Leadership Laboratory. One classroom hour and one drill hour per week. Academic credit: One hour per semester.

#### 2201-02 Military Science II

Map and Aerial Photograph Reading; Introduction to Operations and Basic Tactics; American Military History; Counterinsurgency; and Leadership Laboratory. Two classroom hours and one drill hour per week. Academic credit: Two hours per semester.

### ADVANCED COURSE\*

#### 3301-02 Military Science III

Leadership; Military Teaching Principles; Branches of the Army; Small Unit Tactics and Communications; Counterinsurgency; and Leadership Laboratory. Three classroom hours and one drill hour per week. *Prerequisite:* Junior standing basic course or equivalent military training, and selection by Professor of Military Science and President of the College. Academic credit: Three hours per semester.

#### 3401-02 Military Science IV

Operations; Logistics; Army Administration; Military Justice; The Role of the United States in World Affairs; Service Orientation; and Leadership Laboratory. Three classroom hours and one drill hour per week. *Prerequisite:* Military Science 3301-02. Academic credit: Three hours per semester.

- \* In addition to the above schedule, Military Science I and advanced course students are required to take one 3 semester hour class per year in an elective academic subject from one of the following general academic areas: Effective Communication, Science Comprehension, General Psychology, Political Institutions and Developments.



## MODERN LANGUAGES



WILLIAM M. RUSSELL, *Head*

*Professors* BEVANS, RUFF, SHARP; *Associate Professors* CHRISTIAN, RUSSELL, TAPPAN, WEBB; *Assistant Professors* ASTIAZARAN, BAILEY, BREWER, EWTON, HAUGHTON, SCRUGGS; *Instructors* HERRERA, IRWIN, NAVAR, ORTEGA, RODRIGUEZ SMITH, BALDWIN.

### *Registration Instructions:*

- a) Native speakers – register for 4102, subject to placement
- b) No previous courses in the language – register for 4101
- c) Two units in high school – register for 4102
- d) One, three, or four units – confer with Department for placement.

Courses 4101-02 and 3201-02 should be taken without interruption and supplemented with Courses 3108, 3110, 3111, and 3114 as needed for fluency.

**B.A. Degree** – Special requirements for the degree of Bachelor of Arts in a foreign language: foreign language 4101-02, 3201-02 (or placement) and twelve advanced hours. Completion of course 3201-02 in a second foreign language. For Spanish majors, History 3347 or 3348 or 3349; for French majors, History 3365 or equivalent. Major examination required. Teaching majors who wish departmental recommendation must meet the same requirements, plus those for the certificate on an earlier page of this catalog. First semester, basic courses numbered 4101 are not counted in addition to two units in same language in high school.

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

### **FRENCH**

#### 4101-02 Fundamentals of Reading, Writing and Speaking

Oral drill, dictation, grammar, reading of elementary and intermediate texts, laboratory and written exercises.

#### 3110 Civilisation française

Illustrated lectures in intermediate French. Extensive use of travelogs, slides and films of everyday life to teach conversational French. Intended as a supplement to required courses for students who do not already speak French. *Prerequisite:* French 4101.

#### 3111 La France contemporaine

A conversational course in intermediate French based on a study of the provinces of France. Extensive use of slides, films, and travelogs to teach vocabulary and conversational usage. A supplementary course for students who do not already speak French. *Prerequisite:* French 4101.

#### 3201-02 Intermediate Readings in the Modern Period

Readings from the nineteenth and twentieth centuries. Oral and written summaries, some grammar review. *Prerequisite:* French 4102.

### **For Undergraduates and Graduates**

#### 3321 The Literary History of France

A survey of French literature and culture, stressing the simultaneous development of French institutions, thought and art forms. Conducted in French. *Prerequisite:* French 3202.

#### 3332 The French Classical Period

A study of the representative works of Corneille, Racine, Moliere, La Fontaine, etc. Outside reading. *Prerequisite:* French 3202.

- 3333 **Masterpieces of French Literature**  
 A survey of masterpieces of French literature, including the *Chanson de Roland*, Montaigne's *Essais*, etc. At least four important works will be covered in class. Outside reading reports. *Prerequisite: French 3202.*
- 3335 **Nineteenth Century French Novel: Early Period**  
 Reading of such eighteenth century novelists as Lesage, l'Abbé Prévost and Bernardin de Saint-Pierre and the nineteenth century novelists up to 1850. *Prerequisite: French 3202.*
- 3337 **Nineteenth Century French Novel: Later Period**  
 A study of the French novel during the last half of the nineteenth century. Emphasis on the naturalistic and realistic movements. *Prerequisite: French 3202.*
- 3341 **Modern French Drama**  
 The French drama from the end of the eighteenth to the end of the nineteenth centuries. Combines previous courses 3336 and 3340. *Prerequisite: French 3202.*
- 3357 **Advanced Composition and Grammar Review**  
 Oral and written composition on topics of current interest; correspondence and commercial letters. *Prerequisite: French 3202.*
- 3358 **Contemporary French Literature**  
 Emphasis on the novel with some attention to the contemporary drama. Study of such authors as Proust, Romains, Saint-Exupéry, Gide, Camus, Cocteau, Giraudoux, Anouilh, etc. *Prerequisite: French 3202.*
- 3377 **The History of French Poetry: A Survey**
- 3490 **SEMINAR**  
*Prerequisite: Six hours of advanced French.*
- 3491 **Advanced Reading Course: SEMINAR**  
*Prerequisite: Six hours of advanced French.*

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite: Twelve hours of advanced courses in French and a Bachelor's degree.*

- 3590 **SEMINAR**  
 May be repeated for credit.
- 3591 **Graduate Reading Course: SEMINAR**  
 May be repeated for credit.

**GERMAN**

- 4101-02 **Fundamentals of Reading, Writing and Speaking**  
 Oral drill, dictation, grammar, reading of elementary and intermediate texts, laboratory and written exercises.
- 3110 **German Civilization**  
 An intermediate course in conversational German. Extensive use of slides and films of everyday life to teach spoken German. A supplementary course for students who do not already speak German. *Prerequisite: German 4101.*
- 3201-02 **Intermediate Readings in the Modern Period**  
 Readings from the nineteenth and twentieth centuries. Oral and written summaries, some grammar review. *Prerequisite: German 4102.*

- 3321 **The Literary History of Germany**  
 An introductory survey of German literature and culture stressing the parallel development of German institutions, thought and art forms. *Prerequisite:* German 3202.
- 3333 **Masterpieces of German Literature**  
 Intensive readings from masterpieces of German literature. At least four complete works from such authors as Goethe, Schiller, Kleist, etc. *Prerequisite:* German 3202.
- 3339 **The German *Novelle* and Short Story**  
 A study of the shorter fictional forms in German from the time of Goethe to the present. *Prerequisite:* German 3202.
- 3341 **Modern German Drama**  
 A study of the modern German drama through the works of such authors as Büchner, Grillparzer, Hebbel, Hauptmann, etc. *Prerequisite:* German 3202.
- 3357 **Advanced Composition and Grammar Review**  
 Examination of the best modern German writing styles. Original composition on topics of current interest: some correspondence and commercial letters. *Prerequisite:* German 3202.
- 3358 **Contemporary German Literature**  
 Emphasis on the novel with some attention to the contemporary drama. Study of such authors as Hesse, Mann, Kafka, Grass, etc. *Prerequisite:* German 3202.

**JAPANESE**

- 4101-02 **Fundamentals of Japanese**  
 An intensive course designed to enable the more mature student to master the fundamentals of a major non Indo-European language. Oral drill with a native informant. Basic structure, reading of elementary texts, laboratory. *Prerequisite:* Completion of Course 4102, or equivalent, in a foreign language with a grade of at least "B", or permission of the head of the department.

**LATIN**

- 4103-04 **Fundamentals of Latin (reading emphasis)**  
 Reading of elementary and intermediate texts; grammar, written exercises. Intended to provide a basis for advanced study in Romance Languages.

**RUSSIAN**

- 4101-02 **Written and Spoken Russian**  
 An intensive course designed to enable the more mature student to master the fundamentals of written and spoken Russian. *Prerequisite:* Completion of Course 4102, or equivalent, in a foreign language with a grade of at least "B," or permission of the head of the department. Two double recitation hours per week.
- 3108 **Conversational Russian**  
 Intended to broaden the vocabulary of Russian 4101 for oral use. Attention will be given to basic military terminology. *Prerequisite:* With or after Russian 4101.
- 3201-02 **Intermediate Readings in the Modern Period**  
 Readings from the nineteenth and twentieth centuries, with emphasis upon contemporary literary, journalistic and scientific prose. Oral and written summaries; some grammar review. *Prerequisite:* Russian 4102.

**SPANISH**

- 4101-02 Fundamentals of Reading, Writing and Speaking**  
 Oral drill, dictation, grammar, reading of elementary and intermediate texts, laboratory and written exercises.
- 3201-02 Intermediate Readings in the Modern Period**  
 Readings from the nineteenth and twentieth centuries. Oral and written summaries, some grammar review. *Prerequisite:* Spanish 4102.
- 3108 Conversational Spanish**  
 Intended to broaden the vocabulary of Spanish 4101 for everyday use. A supplementary course for students who do not already speak Spanish. Extensive use of audio-visual aids. *Prerequisite:* With or after Spanish 4101.
- 3110 Cultura hispánica**  
 Illustrated lectures in intermediate Spanish. Extensive use of slides and films of everyday life in Latin America to teach conversational Spanish. A supplementary course for students who do not already speak Spanish. *Prerequisite:* Spanish 4101.
- 3111 España contemporánea**  
 A conversational course in intermediate Spanish based on a study of the provinces of Spain. Extensive use of slides, films and travelogs to teach vocabulary and conversational usage. A supplementary course for students who do not already speak Spanish. *Prerequisite:* Spanish 4101.
- 3114 México contemporáneo**  
 A conversational course in intermediate Spanish based on a study of city and rural life in the various regions of Mexico. Extensive use of slides, films and travelogs to teach vocabulary and conversational usage. A supplementary course for students who do not already speak Spanish. *Prerequisite:* Spanish 4101.

**For Undergraduates and Graduates**

- 3309 The Structure of Spanish**  
 A study of the structure of Spanish, using modern linguistic models. Attention will be paid to the phonology, morphology and syntax of the language. *Prerequisite:* Spanish 3202.
- 3321 The Literary History of Spain**  
 A survey of Spanish culture and literature, stressing the parallel development of Spanish institutions, thought and art forms. Conducted in Spanish. *Prerequisite:* Spanish 3202.
- 3322 La cultura hispánica en las Américas**  
 An interpretation of the culture of Spanish America through contemporary Spanish American literature. Conducted in Spanish. *Prerequisite:* Spanish 3202.
- 3324 The Literary History of Mexico**  
 Principal movements and writers in Mexican literature. Emphasis on the novel of the Revolution. Conducted in Spanish. *Prerequisite:* Spanish 3202.
- 3328 Golden Age Drama**  
 A study of the leading dramatists: Lope de Vega, Tirso de Molina, Calderón de la Barca, Ruiz Alarcón, Moreto and others. *Prerequisite:* Spanish 3202.
- 3333 Masterpieces of Spanish Literature**  
 Extensive readings from masterpieces of Spanish literature. At least four complete works including the *Poema de Mío Cid*, *Libro de Buen Amor*, *La Celestina*, etc. *Prerequisite:* Spanish 3202.

- 3335 **Nineteenth Century Spanish Novel: Early Period**  
The Spanish novel of the first half of the nineteenth century: Fernán Caballero, Valera, Alarcón, Pereda, Pérez Galdós, Pardo Bazán, etc. *Prerequisite:* Spanish 3202.
- 3337 **Nineteenth Century Spanish Novel: Later Period**  
The Spanish novel of the second half of the nineteenth century: Palacio Valdés, Blasco Ibáñez, Pío Baroja, Pérez de Ayala, Valle Inclán, Concha Espina, etc. *Prerequisite:* Spanish 3202.
- 3339 **The CUENTO and the Short Story**  
Shorter fictional forms in Spain and Spanish America from the time of Juan Manuel to the present. *Prerequisite:* Spanish 3202.
- 3341 **Modern Spanish Drama**  
The Spanish drama from the end of the eighteenth to the end of the nineteenth centuries. *Prerequisite:* Spanish 3202.
- 3356 **Twentieth Century Spanish Literature: Early Period**  
The "Generation of '98," including Unamuno, Benavente, Ortega y Gasset, Azorín, García Lorca, etc. *Prerequisite:* Spanish 3202. (Not counted in addition to Spanish 3358.)
- 3357 **Advanced Composition and Grammar Review**  
Examination of the best modern Spanish business, epistolary, journalistic and polemic styles. Original composition on topics of current interest. *Prerequisite:* Spanish 3202.
- 3359 **Twentieth Century Spanish Literature: Later Period**  
The "Generation of '36," including Cela, Laforet, Gironella, Casona, Zuzunegui, etc. *Prerequisite:* Spanish 3202.
- 3360 **The Regional and Historical Novel in South America**  
A study of the famous regional and historical novels of South America, exclusive of Brazil. At least one representative author of each country or region. Special attention to major regional language differences. Outside reports. *Prerequisite:* Spanish 3202.
- 3362 **The New World in Spanish Literature (Northern Hemisphere)**  
A literary study of the diaries, accounts and biographies of the Spanish explorers in the New World: Columbus' *Diario de Navegación*; Cortés' *Cartas de Relación*; Cabeza de Vaca's *Naufragios*; Castañeda's *Jornada de Cibola*, etc. Special attention to the American Southwest. *Prerequisite:* Spanish 3202.
- 3363 **The Literary History of Argentina**  
The principal movements and writers in Argentine literature. At least four representative works will be read in class. Conducted in Spanish. *Prerequisite:* Spanish 3202.
- 3364 **Contemporary Poets of Latin America**  
The most significant works of the leading poets of Latin America. Emphasis on the modern period. *Prerequisite:* Spanish 3202.
- 3365 **Contemporary Urban Novel of Latin America**  
A survey of the increasing tendency among Latin American novelists to portray life in rapidly growing population centers. *Prerequisite:* Spanish 3202.
- 3366 **The New World in Spanish Literature (Southern Hemisphere)**  
A literary study of the diaries, accounts and biographies of the Spanish explorers and *conquistadores* in the New World: Cabeza de Vaca's *Comentarios*; El Inca Garcilaso de la Vega's *Comentarios reales*; Ercilla's *La Araucana*, etc. *Prerequisite:* Spanish 3202.

MODERN LANGUAGES

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- 3377 **History of Spanish Poetry**  
A survey of Spanish poetry to the middle of the twentieth century. *Prerequisite:* Spanish 3202.
- 3400 **Language Theory and Analysis**  
*Seminar in language improvement and Spanish literature and culture. Methods for teaching Spanish on all levels. Practical linguistics; written and oral participation in language improvement; problems of literary analysis, appreciation, criticism and explication with sociological and cultural anthropological factors. Prerequisite:* Six hours of advanced Spanish.
- 3432 **Classical Spanish Prose**  
A study of the Spanish picaresque, chivalresque and pastoral novels and shorter forms. Some consideration of mystic and satirical masterpieces. Outside reading reports. *Prerequisite:* Six hours of advanced Spanish.
- 3461 **Don Quixote**  
The literary value and influence of the *Quijote*. Traditional and modern interpretations. The life and times of Cervantes. Collateral readings and reports. *Prerequisite:* Six hours of advanced Spanish.
- 3467 **El ensayo hispánico**  
A study of the Spanish and Spanish American essay of the nineteenth and twentieth centuries: Larra, Ganivet; Rodó, Bello, Sarmiento, Martí, Sierra, Caso, Reyes and others. Conducted in Spanish. *Prerequisite:* Six hours of advanced Spanish.
- 3472 **Contrastive Linguistics, English - Spanish**  
A contrastive study of the phonological, morphological and syntactical systems of Spanish and English. *Prerequisite:* Six advanced hours of Spanish.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Twelve hours of advanced courses in Spanish and a Bachelor's degree.

- 3590 **SEMINAR**  
Spanish and Spanish-American literary or linguistic problems to be announced by the instructor at the beginning of each semester. May be repeated for credit.
- 3591 **Graduate Reading Course: SEMINAR**  
May be repeated for credit.
- 3592 **Seminar on the History of the Spanish Language (Phonology)**
- 3593 **Seminar on the History of the Spanish Language (Morphology)**
- 3594 **Cervantine Studies: SEMINAR**
- 3595 **Seminar on the Latin American Novel**
- 3598-99 **Thesis Course for the Master's Degree**  
Confer with the head of the department immediately upon registration.





OLAV E. EIDBO, *Head*

*Professors* EIDBO, THORMODSGAARD; *Associate Professors* BRIGGS, HENDERSON,\* HILLYER, REYNOLDS; *Assistant Professors* CARDON,\* SWINGLE, THAYER;  
*Instructors* EICHER, GEYER, KENNESON, KRESS, PAUL, STANLEY;  
*Part-time Instructors* GAIDRY, HEUSER.

**THEORY** For Undergraduates

- 2111, 2112 Music Fundamentals, Sight Singing and Dictation  
Functional experiences in the basic fundamentals of music with simple melodic, harmonic and rhythmic instruments; one through four-part sight singing and dictation. Two lectures and one workshop hour per week.
- 3113, 3114 Essentials of Acoustics and Music Theory  
The combination, transmission and effects of musical sounds, utilizing symbols. The logic of order in music as exemplified in acoustics, overtone series, scales, diatonic harmony, rhythm, melody writing, non-harmonic devices, simple modulation. Open to all students. Three lectures per week.
- 1211, 1212 Sight Singing and Dictation  
Continuation of Music Theory 2112. Concurrent registration with 3113-14 recommended. One lecture and one workshop hour per week. *Prerequisite:* Music Theory 2112, or equivalent background.
- 3213, 3214 Harmony  
Continuation of melodic and harmonic dictation and part writing; harmonic analysis and simple forms; seventh chords; altered chords; keyboard practice. Three lecture and two workshop hours per week. *Prerequisite:* Music 3113-14.

**For Undergraduates and Graduates**

- 2311, 2312 Counterpoint (SEMINAR)  
Continuation of melodic and harmonic dictation; mixed chords; foreign modulation. Survey of sixteenth and eighteenth century contrapuntal techniques as exemplified in Palestrina and Bach. Introduction to Composition. Two lectures per week. *Prerequisite:* Music 3213-14.
- 2313, 2314 SEMINAR: Composition  
Modern styles of composition, including techniques from the Schillinger System, are integrated with traditional theory and composition in a practical course covering the smaller forms in vocal and instrumental music. *Prerequisite:* Theory 3213-14 or equivalent.
- 2315, 2316 Form and Analysis (2316 SEMINAR)  
Detailed study of the logic of musical structure as exemplified in representative works beginning with song forms and including the larger forms. *Prerequisite:* Music 3213-14.
- 3411 Choral Arranging  
A study of basic principles of writing, arranging, and editing choral music in two to eight parts. Emphasis upon music suitable for public school choral groups. *Prerequisite:* Music 3213-14.
- 3412 Instrumentation and Orchestration  
A study of orchestral and band instruments by classification. The range capabilities and limitations, timbre, transposition, etc. Practical experience in scoring for various combinations of instruments from trios to full orchestra and band. *Prerequisite:* Music 3213-14 and four semester hours, or equivalent, of class instruments.

\* On leave of Absence.

- 2413, 2414 **SEMINAR: Advanced Composition**  
 A continuation of Music 2313-14 with emphasis upon modern music and larger forms. *Prerequisite:* Music 2313-14.
- 2415 **Dance Band Arranging**  
 A study of melodic, harmonic, and rhythmic devices and styles used in modern music; practical experience in scoring for various combinations of dance groups. *Prerequisite:* Music 3213-14 and four semester hours, or equivalent, of class instruments.

**LITERATURE For Undergraduates**

- 1141 **Band Literature\***  
 A study of selected works in the field of band literature. Concurrent registration with band is required. *Prerequisite:* Placement.
- 1151 **Choral Literature\***  
 A study of selected works in the field of choral literature. Concurrent registration with choir or chorus is required. *Prerequisite:* Placement.
- 1165 **Chamber Music and Ensembles\***  
 Reading of music and the study of selected works characteristic to the performing group. *Prerequisite:* Preceding course or placement.
- 3121 **Introduction to Musical Literature**  
 A course for Music Majors. A brief survey of musical literature from the beginning of music through Modern Music, hearing recordings of representative works of each period, with major emphasis on the development of music up to the Classical Period.
- 3122 **Trends in Musical Literature**  
 A survey, through directed listening, of the trends found in the great musical literature of the world, from the beginning of music through Modern Music; major emphasis on understanding the literature and styles of the Classical through Modern Periods. For Music Majors.
- 3124 **Our Fascinating World of Music**  
 A course for all students, except music majors, who wish to derive understanding and enjoyment from musical experiences. Guided listening to live and recorded music typical of significant periods from antiquity through the present. Familiarization with listener's terminology. Development of background for selection of personal libraries. Group introductory experiences with social instruments and folk songs. Three hours per week.
- 3125 **Our Music Heritage**  
 Continuation of 3124. More detailed and expanded study of the basic elements, forms (symphonic, etc.) and major style periods for increased understanding and listening pleasure. Relationship of a nation's music to its daily life, activities, ideals and conditions. Experimental comparison of the music of major ethnic groups. Emphasis on the style periods from the Baroque era through the 20th Century. Continued group participation and experiences with social instruments and folk songs. Three hours per week. *Prerequisite:* Music Literature 3124.

**For Undergraduates and Graduates**

- 3321 **Music History**  
 Chronological survey of the composers and their works through directed listening beginning with Greek Music and continuing through the Baroque period, with emphasis on the growth of our culture. *Prerequisite:* For music majors, Theory 3214 and junior standing; for others, six hours of music and junior standing.
- 3322 **Music History**  
 Continuation of Music History 3321, beginning with the Classic Period and continuing through contemporary music. *Prerequisite:* For music majors, Theory 3214 and junior standing; for others, six hours of music and junior standing.

\*May be repeated for credit.

**MUSIC EDUCATION For Undergraduates**

- 2131 **Church Music Leadership**  
Basic functions and techniques of conducting and accompanying. Recruiting for volunteer choirs. Selected problems in church choirs. Selection and preparation of suitable materials. Techniques for the conductor-accompanist. Two lectures and one laboratory per week.
- 3136 **Church Music Materials, Organization and Direction**  
Basic administration and direction of a church music program; pastor and music director relationships; worship and training materials for all choirs; functions of lay groups; budgeting; choice and use of equipment. *Prerequisite:* Permission of the Head of the department.
- 3232 **Age Group Choirs and Church School Music**  
Purposes and functions of age group choirs; care of child voices and changing voices; suitable materials; worship training; rote songs and reading. Integrating music with graded church school lessons; parent cooperation. *Prerequisite:* Music Education 3136 or equivalent experience and permission of the Head of the department.
- 3233 **Hymnology and Liturgics**  
History, interpretation and use of hymns and hymn tunes, plainsong, spirituals, and carols. Twentieth century trends in hymnology. Uses of introits, responses, chants, and other similar forms in liturgical and non-liturgical services. *Prerequisite:* Music Education 3136 or equivalent experience and permission of Head of the department.

**For Undergraduates and Graduates**

- 3331 **Choral Procedures, Techniques and Conducting in Elementary Schools**  
A study of unique problems in choir organization including the selection of voices. Special attention is given to the musical needs of the Elementary Grades, including rehearsal techniques phonetics, literature, interpretation, and baton techniques. *Prerequisite:* For music majors, 20 hours in music and Junior standing; for others, Music Theory 3114 and Junior standing.
- 3333 **Techniques, Materials and Conducting in Secondary Schools**  
Selected problems in conducting, including instrumental experiences. Methods of developing good posture, baton techniques; fundamental principles in obtaining balance, color, shading, interpretation, score reading, etc. Program building and practical application of the conducting of smaller concert numbers. *Prerequisite:* For music majors, 20 hours in music and junior standing; for others, Music Theory 3114 and Junior standing.
- 3334 **Teaching of Music in the Elementary Schools**  
Consideration of music in relation to the child voice and song repertory, rhythm bands, dramatic play, discriminating listening, as determined by the child's stage of growth, correlation and integration with the elementary curriculum. Curricular plans and materials. For Elementary Education Majors. *Prerequisite:* Junior standing in Education.
- 3335 **Teaching of Music in the Elementary Schools**  
Continuation of Music Education 3334, with emphasis on activities suitable for the classroom teacher. For Elementary Education Majors. *Prerequisite:* Music Education 3334, or equivalent musical training.

\*May be repeated for credit.

3336 Teaching of Music in the Elementary Schools

*Pre-adolescent growth and development as the basis of procedures in the teaching of music in the Elementary grades. Designed to meet the needs of the special music teacher. The child voice, its development and classification. Introduction of notation, song materials, rhythm bands, appreciation methods and creative music for children. For Elementary School Music Majors. Prerequisite: Junior standing in music education, and Theory 3214.*

3433 Teaching of Music in the Junior and Senior High Schools

The study of adolescent growth and development, and related procedures in the teaching of music in the upper level grades and in high school. Choral and instrumental music materials, organization of ensembles, teaching of music appreciation and theory; correlation and integration with the entire school curriculum; public school type music as it is related to the life and needs of a community. *Prerequisite: Junior standing in music education, and Theory 3214.*

3435 SEMINAR: Selected Problems in Music Education

The student may receive individual instruction and guidance in the area in which a specific need is demonstrated. Credit may be received in the elementary or secondary school field. *Prerequisite: Six hours of Education, six hours of Music, senior standing, or equivalent background as determined by the instructor and Head of the department.*

3436 Church Music Materials, Organization and Direction

Continuation of 3136. Required of students planning to be "Ministers of Music." *Prerequisite: Music Education 3136, or equivalent training and experience, and senior standing. Offered Summer Sessions only.*

3496 Professional Laboratory Experience in the Elementary Grades

A minimum of ten hours per week for one semester of laboratory observation and teaching experience in the elementary school music classes. For all-level teacher certification. *Prerequisite: Six hours of Education, six hours of upper level Music Education, senior standing and approval of Music Faculty Teacher Education Committee.*

3498 Professional Laboratory Experience in Junior and Senior High Schools

Continuation of 3496. *Prerequisite: Music Education 3496, or concurrent registration, and approval of the Music Faculty Teacher Education Committee.*

FOR GRADUATE STUDENTS ONLY

3531, 3532 SEMINAR: Problems in Music Education

Educational research in the elementary and secondary school fields. Each student may conduct research on a problem of his own selection in his field of major interest. *May be taken for credit in supervision, if desired. Prerequisite: Twelve semester hours of advanced courses in Music and a bachelor's degree.*

3535, 3536 SEMINAR: Field Work in Music Education

The student works individually on a selected topic with an assigned specialist in that area under supervision of department head. *Prerequisite: Twelve semester hours of advanced courses in Music and a bachelor's degree.*

**APPLIED MUSIC For Undergraduates**

Placement auditions are required on the major and secondary instruments. Students who demonstrate adequate proficiency on any required instrument (or voice) will be encouraged to substitute other courses outside of the music area. Students will perform before the Music Faculty at the close of each semester. The audition at the close of the second year also determines admission to upper division courses. A grade of "B" is required on the major instrument for permission to continue with the succeeding course. For full description of the course of study for any Applied Music course consult the Head of the department.

*Only Secondary Level courses numbered 2300 and above may be taken for graduate credit.*

**Ensembles** — Band, Choir, Orchestra, Chorus, Lab Dance Band, a fully equipped symphony orchestra, a concert and marching band, a laboratory band, small chamber groups and two large choirs are maintained. These organizations are open to all students who wish to enjoy the performance of a great variety of music. On special occasions each year, several organizations are combined in large productions including operas and oratorios. Home concerts and concert tours are a part of the program. Consent of instructor is required for admission.

1143 Band, Choir, Orchestra, Lab Dance Band\*  
Three hours per week. *Prerequisite:* Permission of instructor.

1155 University Chorus\*  
A mixed singing organization open to all students interested in any kind of choral work. Audition is not required. Oratorios and operas are presented with orchestral accompaniment, occasionally in combination with the Texas Western Choir. Two hours per week. *Prerequisite:* Permission of instructor.

1102 Golddiggers\*  
A course for women in dancing, twirling, pom pom and marching activities; participation in football shows and other public appearances. *Prerequisite:* Admission by try-out only.

**GROUP INSTRUCTION**

Credit granted only when taken as a minor or elective. Open to all students. These courses will be designated as Voice 2171, Piano 2171, etc.

2171, 2172, 2271, 2272, 2371, 2372 (\$4)  
Two classes and six practice hours per week. *Prerequisite:* Preceding course or placement. (Exception: only \$2.00 for Class Voice.)

3190 Diction  
A survey course in Italian, German and French pronunciation; free translation. Open to all.

2223, 2224 Opera Workshop  
Study and participation in all phases of opera production, dramatic interpretation, preparation of scenes and directing of small-scale productions. Survey of practical opera literature for community and public school performances. *Prerequisite:* Sophomore standing, permission of the instructor, and preceding course where listed. Two lectures and one laboratory hour per week as assigned.

**For Undergraduates and Graduates**

2323, 2324 Opera Workshop  
Continuation of 2224. *Prerequisite:* Junior standing, permission of the instructor, and preceding course where listed. Two lectures and one laboratory hour per week as assigned.

\*May be repeated for credit.

MUSIC

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2373, 2374 Piano Sight Reading Class (\$2)

Emphasis on actual playing experience and sight reading at the piano. Two classes per week. *Prerequisite:* Junior standing and permission of instructor.

2493 Pedagogy of Voice

Psychological and physiological problems in voice-building; study of the boy voice, the "monotone," and registers in all voice classifications. Methods of voice development through song literature. *Prerequisite:* Senior standing in music, or equivalent in vocal study and experience, Voice 2292, and permission of instructor.

BALLET

For Undergraduates

2141, 2142 Ballet

Basic Ballet techniques combining the methods of the Russian, Cecchetti and French Schools. Public performance opportunities with the Texas Western-Civic Ballet and the College-Community Opera. Three hours per week.

1241, 1242 Character and Jazz Dance\*

Interpretation of national dancing; fundamentals and techniques of Jazz. Two hours per week. *Prerequisite:* Ballet, modern dance, or athletic (football, basketball, etc.) background, and permission of Head of department.

3241, 3242 Intermediate Ballet

Continuation of 2142, with more advanced work in the creative aspects of dance movements. Four and one-half hours per week. *Prerequisite:* Ballet 2142 or permission of Head of department. (Formerly 2241, 2242.)

3341, 3342 Ballet Techniques

Continuation of 3242; advanced techniques with increased emphasis on certain creative aspects of dance movements. Four and one-half hours per week. *Prerequisite:* Ballet 3242, or equivalent, junior standing, and permission of the Head of the department.

INDIVIDUAL INSTRUCTION

Junior and senior courses on the secondary level may be used for undergraduate and graduate credit, may be repeated for credit on the undergraduate level. Students are expected to study on campus with members of the College music faculty.

For Undergraduates and Graduates

Only *junior* and *senior* courses with "g" as the third digit are acceptable towards a graduate degree.

SECONDARY LEVEL

3491, 3492 Selected Problems in Applied Music (\$50)

Designed to meet the needs of students in specific areas omitted in previous studies. Required of students who have not taken courses on their major instruments at Texas Western College within three years of graduation. Two thirty-minute lessons and twelve practice hours per week. *Prerequisite:* Applied Music 2292, senior standing, or equivalent, in music, and experience, and permission of instructor.

PIANO, ORGAN

Courses designated as Piano 2181-82, Piano 2281-82, Organ 2181-82, etc.

PRIMARY: For non-majors and for students needing preparatory study; Undergraduate credit only.

2181, 82, 2281, 82, 2381, 82, 2481, 82 (\$25)

One thirty-minute lesson and six practice hours per week. *Prerequisite:* Preceding course or placement.

\*May be repeated for credit.

- 3181, 82, 3281, 82 (\$45)  
Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.
- 3381, 82, 3481, 82 (\$50)  
Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.

SECONDARY: For majors in Theory, Music Education, and qualified students.

- 2191, 92, 2291, 92, 2391, 92, 2491, 92 (\$25)  
One thirty-minute lesson and six practice hours per week. *Prerequisite:* Preceding course or placement.
- 3191, 92, 3291, 92 (\$45)  
Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.
- 3391, 92, 3491, 92 (\$50)  
Two thirty-minute lessons and nine practice hours per week. Recital participation. *Prerequisite:* Preceding course or placement.

#### FOR MAJORS IN APPLIED MUSIC

- 4191, 92, 4291, 92 (\$45)  
Two thirty-minute lessons and nine practice hours per week. Recital participation. *Prerequisite:* Preceding course or placement.
- 4391, 92, 4491, 92 (\$50)  
Two thirty-minute lessons and nine practice hours per week. Recital participation. *Prerequisite:* Preceding course or placement.

#### ORCHESTRAL AND BAND INSTRUMENTS

(Flute, Oboe, Clarinet, Bassoon, Saxophone, Violin, Viola, Violoncello, String Bass, Cornet or Trumpet, French Horn, Trombone or Baritone, Tuba, Percussion, Harp)

PRIMARY: For non-majors and for students needing preparatory study; Undergraduate credit only.

- 2181, 82, 2281, 82, 2381, 82, 2481, 82 (\$25)  
One thirty-minute lesson and six practice hours per week. *Prerequisite:* Preceding course or placement.
- 3181, 82, 3281, 82 (\$45)  
Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.
- 3381, 82, 3481, 82 (\$50)  
Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.

SECONDARY: For majors in Theory, Music Education, and qualified students.

- 2191, 92, 2291, 92, 2391, 92, 2491, 92 (\$25)  
One thirty-minute lesson and six practice hours per week. *Prerequisite:* Preceding course or placement.
- 3191, 92, 3291, 92 (\$45)  
Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.

## MUSIC

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3391, 92, 3491, 92 (\$50)

Two thirty-minute lessons and nine practice hours per week. Recital participation. *Prerequisite:* Preceding course or placement.

### FOR MAJORS IN APPLIED MUSIC

4191, 92, 4291, 92 (\$45)

Two thirty-minute lessons and fifteen practice hours per week. *Prerequisite:* Preceding course or placement.

4391, 92, 4491, 92 (\$50)

Two thirty-minute lessons and fifteen practice hours per week. Recital participation. *Prerequisite:* Preceding course or placement.

### VOICE

During the first two years of vocal study there is considerable emphasis on voice building, using methods of the old Italian school. Varying amounts of song literature are studied depending upon the progress of the individual. Voice building is continued throughout the junior and senior years, although increasing emphasis is placed upon coaching.

At the end of the senior year the student should be able to sing in three foreign languages, including in his repertoire four operatic arias, four oratorio arias, twenty classics and twenty standard modern songs.

**PRIMARY:** For non-majors and for students needing preparatory study;  
Undergraduate credit only.

These courses are designed for all students interested in singing and for those who require preparation for the college level course in voice. Students with vocal and hearing difficulties, including "monotones," are urged to take these courses. All students studying primary or secondary voice are expected to participate in one of the two college choirs.

2181, 82, 2281, 82, 2381, 82, 2481, 82 (\$25)

One thirty-minute lesson and six practice hours per week. *Prerequisite:* Preceding course or placement.

3181, 82, 3281, 82 (\$45)

Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.

3381, 82, 3481, 82 (\$50)

Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.

**SECONDARY:** For majors in Theory, Music Education, and qualified students.

2191, 92, 2291, 92, 2391, 92, 2491, 92 (\$25)

One thirty-minute lesson and six practice hours per week. *Prerequisite:* Preceding course or placement.

3191, 92, 3291, 92 (\$45)

Two thirty-minute lessons and nine practice hours per week. *Prerequisite:* Preceding course or placement.

3391, 92, 3491, 92 (\$50)

Two thirty-minute lessons and nine practice hours per week. Recital participation. *Prerequisite:* Preceding course or placement.





## PHILOSOPHY



J. H. HADDOX, *Head*

*H. Y. Benedict Professor* ROMANELL;  
*Professor* HADDOX; *Assistant Professors* O'NEILL, SANKARAN.

**B.A. Degree** – Specific courses required for the Bachelor of Arts in Philosophy are Philosophy 3203, 3204, 3205, and 3451 or 3452.  
(Philosophy 3203 is the prerequisite for all courses in philosophy except Phil. 3104.)

- 3104 **Logic**  
A study of deductive reasoning.
- 3203 **Introduction to Philosophy** [Formerly 3103]  
An introduction to the basic problems of philosophy, with readings from primary sources.
- 3204 **Ancient and Medieval Philosophy** [Formerly 3201]  
Philosophic thought from the Greeks to the Scholastics.
- 3205 **Modern Philosophy** [Formerly 3202]  
Philosophic thought from Descartes through Kant.
- 3206 **Ethics** [Formerly 3301]  
A discussion of moral principles.
- 3207 **Philosophy of Civilization** [Formerly 3321]  
A philosophical analysis of the various phases of human culture.
- 3208 **Aesthetics** [Formerly 3412]  
An analysis of the various theories of beauty.
- 3212 **Latin American Philosophy**  
A Survey of Latin American thought.
- 3311 **Philosophy of Science**  
A study of the methods and implications of the mathematical and natural sciences.
- 3322 **Philosophy of Religion**  
A philosophical analysis of the various aspects of religion.
- 3331 **Ethical Theory**  
An analysis of the various approaches to the significance of moral belief.
- 3332 **Contemporary Philosophy**  
A study of recent philosophical thought.
- 3401 **Symbolic Logic**  
A study of contemporary mathematical logic.
- 3402 **Metaphysics**  
A comparative analysis of the basic theories of reality.

PHILOSOPHY

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- 3403 Problems in the Philosophy of Science.  
A detailed analysis of a small number of selected problems in the Philosophy of Science.
- 3411 Epistemology  
A study of the ways of knowing and the nature of truth.
- 3451 History of Philosophy – SEMINAR  
The life and work of one or more of the great philosophers will be the subject of study. May be repeated when the course content varies. *Prerequisite:* Philosophy 3204 and 3205 or the equivalent as determined by the instructor.
- 3452 Problems of Philosophy – SEMINAR  
May be repeated when the course content varies. *Prerequisite:* As determined by the instructor.
- 3453 Independent Study  
Independent student work under the supervision of the staff. Permission of the instructor required.



## PHYSICS



MAX C. BOLEN, *Head*

*Professors* BARNES, BOLEN, KNAPP, MCINTYRE, MCMAHAN;  
*Associate Professors* BLUE, BRIENT, BRUCE, SCHUMAKER; *Assistant Professors* BOWEN,  
COOPER, LAWSON, SLUSHER; *Lecturer* WEBB; *Visiting Professor* WELLS;  
*Instructors* DEAN,\* PREVENCIO; *Teaching Assistants* GEMOETS, HEIRAS,  
KIRKWOOD, PEARTREE.

### *Departmental Requirements:*

For the Bachelor of Science degree in Physics the student is required to take thirty-six semester hours of Physics, including Physics 4115, 4216, 1216, 4217 or their equivalent, which are the prerequisites for all upper division Physics courses, and Physics 3351, 3352, 3441, 3442 and at least eleven additional semester hours to be selected in conference with the Physics faculty advisor or the Head of the Physics Department.

Those persons in Geophysics (including Atmospheric Physics) will be allowed to substitute equivalent courses from Physics 3427 and 3428 for Physics 3352 and 3442 with permission from the Head of the Physics Department.

For the Bachelor of Arts in Physics the student is required to take twenty-five semester hours of Physics, including Physics 4115, 4216, 1216, 4217 or their equivalent, and Physics 3351 and 3441 and at least nine additional hours to be selected in conference with the Physics faculty advisor or the Head of the Physics Department.

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

### 3101 Principles of Physical Science (\$2) – Fall Semester

Designed to introduce as clearly and simply as possible the concepts of physical science to the liberal arts students, and especially those students with a limited background in mathematics. Emphasis is strongly placed on principles and the discovery of these by means of the laboratory. Attention is focused on the study of solid matter. May not be counted as physics toward a major or minor in physics or as a prerequisite to any physics course other than Physics 3102. Two lectures and two laboratory hours per week. Open to all students.

### 3102 Principles of Physical Science (\$2) – Spring Semester

Continuation of Physics 3101. *Prerequisite:* Physics 3101. May not be counted as physics toward a major or minor in physics or as a prerequisite to any other course in physics. Two lectures and two laboratory hours per week.

### 4103 General Physics (\$2)

Mechanics and heat. This course may not count as physics toward a major or minor in physics or as a prerequisite to any course in physics other than Physics 4104. Three lectures and two laboratory hours per week.

### 4104 General Physics (\$2)

Electricity, magnetism, sound, and light. This course may not be counted as physics toward a major or minor in physics or as a prerequisite to any course in physics. Three lectures and two laboratory hours per week. *Prerequisite:* Physics 4103.

### 3106 Elementary Theory of Sound – Spring Semester

A study of sound as related to speaking, singing, and to musical instruments. It includes physical principles of sound production, transmission, interference, hearing, resonance, pitch, quality, musical intervals, stringed instruments, wind instruments, acoustics of rooms, and associated electronic equipment. May not be counted as physics toward a major or minor in physics or as a prerequisite to any course in physics.

\**On Leave of Absence.*

PHYSICS

- 4107 **Elementary Astronomy (\$2) – Fall Semester**  
 A survey of the solar system. The main ideas of physical science in their relation to the universe. Topics covered are the earth, moon, planets, minor planets, comets, and meteors. The mathematical level is the same as in a freshman physics course. Three lectures and one two-hour night laboratory per week. May not be counted as physics toward the major or minor in physics or as a prerequisite to any physics course but may be counted as a laboratory science in the liberal arts curriculum.
- 4108 **Elementary Astronomy (\$2) – Spring Semester**  
 A continuation of Astronomy 4107. The sun, stellar properties, binary and variable stars, star cluster, and galaxies. Three lectures and two laboratory hours per week. *Prerequisite:* Astronomy 4107. May not be counted as physics toward the major or minor in physics or as a prerequisite to any physics course but may be counted as a laboratory science in the liberal arts curriculum.
- 4115 **Mechanics (\$2)** [Formerly Physics 4215]  
 Three lectures and three laboratory hours per week. *Prerequisite:* Mathematics 4111 or concurrently and one unit of high school physics or approval of Head of the Physics department.
- 4216 **Electricity and Magnetism**  
 Three lectures and one two-hour problem session per week. *Prerequisite:* Mathematics 4212 or concurrently and Physics 4115 or Civil Engineering 3238, Physics 1216 concurrently for all except those in Engineering.
- 1216 **Laboratory for Physics 4216 (\$2)**  
 This laboratory must be taken concurrently with Physics 4216, *Electricity and Magnetism*, by all persons with the exception of those in Engineering. This laboratory meets two hours per week.
- 4217 **Optics, Sound and Heat (\$2)** [Formerly Physics 4317]  
 Three lectures and three laboratory hours per week. *Prerequisite:* Physics 4115 or Civil Engineering 3238 and Mathematics 4212 or concurrently.

**For Undergraduates and Graduates**

All of the following courses have the prerequisites of Physics 4115, 4216, 1216, 4217, or the equivalent and any other prerequisites shown in the description of the course.

- 4320 **Introduction to Geophysics (\$2) – Fall Semester**  
 A study of the application of the principles and practices of physics to the solution of problems related to the earth. It includes a study of geochronology, temperature of the earth, seismology, dimensions of the earth, gravity, isostasy and tectonics, and geomagnetism. Three lecture hours and three laboratory hours per week. Not counted in addition to Physics 3320.
- 4321 **Introduction to Geophysics (\$2) – Spring Semester**  
 A study of geophysical prospecting. A general discussion of the methods of physics applied to exploration problems. Topics covered are seismic and gravimetric methods of prospecting. Three lectures and three laboratory hours per week.
- 3322 **Thermodynamics – Spring Semester**  
 A study of the fundamental principles of Thermodynamics, Kinetic Theory and Statistical Mechanics.
- 3323 **Physical Optics – Fall Semester**  
 A brief study of geometrical optics, Physical Optics dealing with waves, interference, diffraction, absorption, scattering, polarization, magneto- and electro-optics. Quantum Optics is introduced.

- 4324 **Applied Geophysics (\$2) – Spring Semester**  
A study of geophysical prospecting with special emphasis on geomagnetism and nuclear geophysics. Includes theory and field work on the various magnetic and nuclear techniques. Three lectures and three laboratory hours per week.
- 3325 **The Fundamentals of Modern Physics**  
A study of gaseous ions, electrons, cathode rays, isotopes, alpha, beta, and gamma rays, positrons, neutrons, relativity, the quantum, natural radioactivity, and the various accelerators of charged particles. The most recent developments and applications will be emphasized.
- 3326 **Fundamentals of Modern Atomic Physics**  
A study of the atom using the vector Model for Hydrogen atom and complex atoms. Spectra, selection rules, Zeeman, Paschen-Bach and complete Paschen-Bach effects. An introduction to the operator algebra of Quantum Mechanics and the Quantum Mechanical study of the particle in a box, harmonic oscillator and Hydrogen atom.
- 3427 **Theoretical Geophysics – Fall Semester**  
A study of hydrodynamics, elasticity, and gravitational potential fields. A working knowledge and understanding of fundamentals of geophysics is emphasized with special emphasis on earth problems. *Prerequisite:* Mathematics 3326 or 3436.
- 3428 **Theoretical Geophysics – Spring Semester**  
A continuation of Physics 3427. *Prerequisite:* Mathematics 3326 or 3436.
- 3330 **Applied Radiation Physics (\$2) – Spring Semester**  
A study of the physics of ionizing radiation and its interaction with matter. An introduction to the effects of ionizing radiation, to exposure units and related calculations, to the use of instruments for measuring radiation, to the calibration of sources, to the use of isotopes, and to protective measures. Two lectures and three laboratory hours per week. *Prerequisite:* Physics 3325.
- 4339 **Electronics (\$2) – Fall Semester**  
Physical electronics, transistors and other semiconductor elements. Also includes elementary equivalent circuits and circuit theory. Three lectures and three laboratory hours per week. May not be counted in addition to Electrical Engineering 4339.
- 4340 **Electronic Systems (\$2) – Spring Semester**  
Theory and applications of a wide variety of semiconductor circuits and systems, including digital systems. Also includes advanced analysis methods and recent developments in electronics. Three lectures and three laboratory hours per week. *Prerequisite:* Physics 4339. May not be counted in addition to Electrical Engineering 4340.
- 2343 **Advanced Laboratory Practice (\$2) – Fall Semester**  
A course covering theory and practice in the measurement of electrical and magnetic quantities. Certain phases of modern physics are discussed and dealt with in the laboratory. The sensitive galvanometer is studied in detail. Attention is given to various types of bridges. Measurements are made of such quantities as the charge on the electron, the ratio of charge to mass, and other quantities related to modern physics. Electrical discharge through gases and attendant phenomena are also studied. One lecture and three laboratory hours per week.
- 2344 **Advanced Laboratory Practice (\$2) – Spring Semester**  
A continuation of Physics 2343.
- 3351 **Analytical Mechanics – Fall Semester** [Formerly Physics 3451]  
Equilibrium and motion of a particle and a rigid body in two and three dimensions. *Prerequisite:* Mathematics 4217. Mathematics 3326 recommended.

- 3352 Analytical Mechanics – Spring Semester [Formerly Physics 3452]  
Continuation of Physics 3351. *Prerequisite:* Physics 3351 and Mathematics 3326.
- 3441 Electricity and Magnetism – Fall Semester [Formerly Physics 3341]  
Maxwell's field equations are postulated and conventional laws of electricity and magnetism are derived from electromagnetic theory. Vector theory is developed in the course as needed. *Prerequisite:* Physics 3351, or permission of Department Head. Mathematics 3435 is recommended.
- 3442 Electricity and Magnetism – Spring Semester [Formerly Physics 3342]  
Continuation of Physics 3341. Includes electromagnetic waves and radiation systems and Lorentz transformation of field vectors. Some elementary circuit theory is derived from electromagnetic theory. *Prerequisite:* Physics 3441.
- 3445 Electromagnetic Waves and Radiating Systems – Fall Semester [Formerly Physics 4445]  
Application of Maxwell's equations to electromagnetic wave transmission, reflection, and refraction, including the study of guided waves, transmission lines, and antennas. *Prerequisite:* Physics 4340 or Engineering 4340 or Physics 3441 or concurrently.
- 2446 Senior Laboratory (\$2) (Both Semesters)  
May be repeated once for credit. *Prerequisite:* Senior standing and Physics 2343 or 2344.
- 2447 Undergraduate Research (\$2) (Both Semesters)  
Credit will be granted only on the recommendation of the Head of the Physics Department, in consultation with the research advisor. May be repeated once for credit. *Prerequisite:* Senior standing and must have a 3.0 average in Physics and have the permission of the research advisor and Head of the department, and Physics 2343 or 2344.
- 3447 Fundamentals of Acoustics – Spring Semester [Formerly Physics 3347]  
The principles underlying the generation, transmission, and reception of acoustic waves. Mathematical analyses of the various types of vibration of solid bodies. Propagation of plane and spherical sound waves through fluids, transmission and absorption phenomena, resonators and filters. *Prerequisite:* Mathematics 3326 or 3436. (Offered 1964-65 and subsequently when demand is sufficient.)
- 3453 Methods of Mathematical Physics  
Selected topics in Mathematical Physics. *Prerequisite:* Mathematics 3326 and Physics 3351.
- 3454 Methods of Mathematical Physics  
Continuation of Physics 3453. *Prerequisite:* Physics 3454.
- 3457 Introduction to Quantum Mechanics [Formerly 3460]  
Boltzmann and quantum statistics, electron theory of metals, atomic interactions with radiation, the Hamiltonian and Schroedinger's equation, the square well, harmonic oscillator, hydrogen-like atoms, and the theory of transitions. *Prerequisite:* Physics 3326.
- 3458 Solid State, Nuclear, and Particle Physics  
Theory of lattice vibrations and conduction, paramagnetism, and ferromagnetism; Nuclear Structure, scattering processes, and models, Beta decay; Cosmic rays and Elementary particles. *Prerequisite:* Physics 3457 and 3351; and Physics 3322 is recommended.

- 3470 **Atmospheric Physics – Fall Semester**  
 Considers the physical structure of the atmosphere as related to the Earth and near-space environment. The time and spatial distribution of its composition; the kinetic, atmospheric, and electromagnetic parameters—all are presented in detail. The effects on man's operation in the atmosphere are discussed with emphasis on the relatively new factors presented by recent expansion into the new speed and space regime.
- 3471 **Atmospheric Physical Process – Spring Semester**  
 The occurrence of energy transfer processes such as convection, advection, condensation, evaporation, ionization, radiation, and absorption are considered in relation to the over-all atmospheric physical structure. The development of ionized regions of the atmosphere, the state changes incident to the precipitation cycle, and the electrical environment in which these processes operate will be studied. Interaction between the Earth's surface, the troposphere, the stratosphere, and the ionosphere as well as the new space environment will be discussed. *Prerequisite:* Physics 3470.
- 3472 **Stratospheric Circulation**  
 Background of the historical development of our knowledge of the structure of the stratosphere with particular attention to the development of the Meteorological Rocket Network. Rocket techniques, sensor systems and data acquisition and processing systems employed in MRN, climatological structure of the stratospheric circulation, and the changes which may be expected as a longer period of record is obtained will be considered. Crometric influences on the solar heat disposition as well as the distribution of atmospheric absorbers and the dynamic factors which exert an influence on the global stratospheric circulation. *Prerequisite:* Physics 3470.
- 1476 **Seminar in Advanced Topics (Both Semesters)**  
*Prerequisite:* Senior standing and permission of Head of the department. May be repeated once for credit.

#### FOR GRADUATE STUDENTS ONLY

The department offers a program of courses and research leading to the degree of Master of Science in Physics. Fields of concentration for thesis research are Atmospheric Physics, Geophysics, Molecular Physics, Nuclear Physics, Solid State Physics, and Theoretical Physics. Twenty-one semester hours of graduate work at the 3500 level including the thesis are required, specific courses required are Physics 3521, 3541, and 3561.

The following courses have the prerequisites of the equivalence of a B.S. degree in Physics from The University of Texas at El Paso and any other prerequisite shown in the description of the course.

- 3501 **Principles of Geodynamics – Fall Semester** [Formerly Physics 3581]  
 An extensive mathematical and physical study of geodynamics. Study takes up the geophysical data regarding the earth, mechanics of deformations, effects of the rotation of the earth, orogenesis, dynamics of earthquakes, dynamics of volcanism, and related topics. Given 1964-65 and in alternate years.
- 3502 **Principles of Geodynamics – Spring Semester** [Formerly Physics 3582]  
 Given 1964-65 and in alternate years.
- 3506 **Physics of the Upper Atmosphere**  
 Upper atmospheric circulation influences on photochemical equilibrium. State changes involving water vapor, ozone, oxides and ionized and neutral components of the atmosphere and their relation to formation and destruction processes and

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equilibrium conditions. Interactions between the gravitational, magnetic, flow and plasma fields. Sources, sinks and propagation characteristics relative to a spectrum of wave motions ranging from acoustic waves to diurnal tides. *Prerequisite:* Physics 3470.

- 3521 **Mechanics – Fall Semester** [Formerly Physics 3587]  
 D'Alembert's and Variational Principles, Lagrange's Equations, Hamilton's Principle, Two-body central force, Rigid Body, Kinetics and Force Equations, Lagrangian Relativistic Mechanics, Principle of Least Action.
- 3522 **Mechanics – Spring Semester**  
 Hamilton's and Hamilton-Jacoby theory, small oscillations, continuous systems and fields. Poisson's and Lagrange brackets invariants, conservation theorems and symmetry. Relativistic mechanics. *Prerequisite:* Physics 3521.
- 3531 **Statistical Mechanics – Fall Semester**  
 Classical and quantum statistics of systems in equilibrium. Treatment of fluctuations and transport phenomena. Introduction to the many-body problem. *Prerequisite:* Physics 3322 and Physics 3457.
- 3532 **Plasma Physics – Spring Semester**  
 Physics of fully ionized gases. Fluid and kinetic description. Waves and instabilities. Transport properties. Interaction of charged particles with electromagnetic fields. *Prerequisite:* Physics 3531.
- 3541 **Electricity and Magnetism – Fall Semester** [Formerly Physics 3588]  
 Boundary value problems: polarization, and stress tensor; Conservation laws and energy momentum-tensor. Relativistic electrodynamics. Covariant form of field equations. Potentials and gauge invariance.
- 3542 **Electricity and Magnetism – Spring Semester**  
 A continuation of Physics 3541. Multipole radiation, radiation damping, "Bremsstrahlung." Interference, diffraction and scattering. Special resolution, the Lagrangian to terms of second order, and other topics. *Prerequisite:* Physics 3541.
- 3550 **Advanced Modern Physics – Spring Semester** [Formerly Physics 3575]  
 Topics of Physics since 1900 supplementing the Atomic Spectra, Quantum Mechanics, and Nuclear Physics in other courses.
- 3551 **Nuclear Physics – Fall Semester**  
 Systematics of nuclei, binding energy, nuclear models, scattering of protons and neutrons, nuclear reactions, passage of charged particles and gamma rays through matter. *Prerequisite:* Physics 3458.
- 3552 **Nuclear Physics – Spring Semester**  
 Continuation of Physics 3551. *Prerequisite:* Physics 3551 and Physics 3561 or permission of Head of the Physics Department.
- 3554 **Cosmic Radiation** [Formerly Physics 3586]  
 Topics of Cosmic Radiation and high energy, Nuclear Physics. (Given on sufficient demand.)
- 3561 **Quantum Mechanics – Fall Semester** [Formerly Physics 3583]  
 Solution of the Schroedinger wave equation for discrete and continuous energy eigenvalues; Representation of Physical variables as operators and the matrix formulation of quantum mechanics; approximation methods. *Prerequisite:* Physics 3457 and Mathematics 3423 recommended.



- 3562 Quantum Mechanics – Spring Semester [Formerly Physics 3584]  
Continuation of Physics 3561. Relativistic wave equations and quantization of fields. *Prerequisite:* Physics 3561.
- 3571 Solid State Physics – Fall Semester [Formerly Physics 3585]  
Electromagnetic, elastic and particle waves in periodic lattices as applied to the electrical, magnetic and thermal properties of solids. *Prerequisite:* Physics 3457 and 3458 recommended.
- 3572 Quantum Theory of Matter – Spring Semester  
Phonon, magnon, polaron and photons and their interactions in matter. Selected topics in super-conductivity, energy bands, cyclotron resonance, impurity state, optical absorption, and recoilless emission. *Prerequisite:* Physics 3571 and Physics 3562 or concurrently.
- 1591-3591 Research Problems in Physics – Every Semester  
May be repeated for credit; maximum credit allowed is six hours. May not be counted as thesis research. *Prerequisite:* Permission of Head of the Physics Department.
- 1595-3595 Graduate Seminar  
– Every Semester [Formerly Physics 1576-3516]
- 3598 Thesis Course for the Master's Degree – Every Semester
- 3599 Thesis Course for the Master's Degree – Every Semester



KENNETH E. BEASLEY, *Head*

*Professors* BEASLEY, COOK, MYRES, RAY, STRAUS, WINGFIELD;  
*Associate Professor* CARDENAS; *Assistant Professors* BATH, GRAVES, GROSSER, HOVEL,  
LEONARD, PETERSON; *Instructor* BETHUNE.

**B.A. Degree** — In addition to the basic American Government courses 3110 and 3111 (formerly 3210-3211) required of all students, a major in Political Science will include twenty-seven (27) semester hours in the Department, fifteen (15) of which must be at the advanced (300-400) level. Normally, at least one course in each of the sub-fields of the discipline, plus 3480, will be required for a major in Political Science. 3110 and 3111 are prerequisite to all other Political Science courses. A total of twelve (12) semester hours in Political Science must be earned before a major may enroll in a course for advanced credit. A minor will consist of at least eighteen (18) hours, six (6) of which must be at the advanced level and with junior standing.

**For Undergraduates**

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

Political Science 3110 and Political Science 3111 fulfill the legislative requirement of the State of Texas for a course on the Constitutions of the United States and Texas.

**3110 American Government**

The government of the United States — national, state, and local with special emphasis upon the Constitutions of the United States and Texas. This course meets teacher certification requirements for out-of-state graduate students.

**3111 American Government**

The government of the United States — national, state, and local with special emphasis on the functions of the United States government. *Prerequisite:* Political Science 3110.

**3221 State and Local Government**

Organization, powers, functions, and business methods of state and local administrative agencies; problems of integration, centralization, budget and fiscal control and plans for reorganization; and intergovernmental cooperation among federal and local agencies. Special reference to Texas. *Prerequisite:* Political Science 3110-3111.

**3230 International Politics**

Principles and political problems involved in foreign policies and international relations of the states of the world with particular emphasis on nationalism and imperialism. *Prerequisite:* Political Science 3110-3111.

**3231 Survey of Latin American Government and Politics**

An examination of Latin American governmental processes and political institutions, and the cultural, economic, and social environment in which they develop.

**3250 Introduction to Public Administration**

A study of the processes involved in the management of men and materials in the accomplishment of the purposes of government; analysis of the structure and procedures of the administrative or executive branch of government, with particular reference to national, state and local governments in the United States. *Prerequisite:* Political Science 3110-3111.

**3260 Introduction to Political Science**

An introduction to the methods and processes of the discipline of political science — its scope and substantive framework.

**For Undergraduates and Graduates**

*Prerequisite:* Political Science 3110 and 3111 plus six (6) additional hours of political science for majors. Political Science 3110 and Political Science 3111 and junior standing for non-majors.

**AMERICAN GOVERNMENT AND POLITICS**

- 3322 **Urban Government and Administration**  
The organization, politics, problems, and administration of urban governments in the United States. May be counted as public administration.
- 3325 **The Party System in the United States**  
An analysis of the nature and role of American parties and pressure groups and their impacts upon the political process.
- 3327 **The Legislative Process**  
A study of the legislative system, organization, and procedures; analysis of recruitment patterns, and the nature of the relation of the legislature to the rest of the political system.
- 3330 **Public Opinion and Propaganda**  
A study of the nature and formation of public opinion, its measurement, and the impact of public opinion on policy formation.
- 3420 **American Government and the Military**  
An examination of civil-military relations in the United States; American military policy formation and administration; martial law; military government; state military forces; the doctrine of civil supremacy. Some comparisons will be made with civil-military relations abroad.

**PUBLIC LAW**

- 3328 **Constitutional Law I**  
A study, by use of court cases, of the allocation of governmental powers, with special emphasis on the national government, and an introduction to the judicial function and the American legal system.
- 3332 **Constitutional Law II**  
A study of the limitations on governmental power in the United States, with primary emphasis on civil and political rights. *Prerequisite:* Political Science 3328.
- 3329 **Law and Society**  
An analysis of the role of law in society and the causes and consequences of judicial behavior.
- 3427 **Administrative Law and Regulation**  
The study of law as it affects public officials and agencies in their relations with private citizens and the business community. Attention is given to appropriate case materials and regulatory practices.

**INTERNATIONAL RELATIONS**

- 3331 **International Organization and Administration**  
The development of the machinery and procedure of international government for the peaceful settlement of international disputes.
- 3343 **Foreign Policies of the United States**  
Origin and development of fundamental principles of American diplomacy concerning neutrality, recognition, naturalization and expatriation, and promotion of trade and commerce with special attention devoted to post-war problems.

- 3344 **The Conduct of American Foreign Affairs**  
The historical development and present organization of the Department of State and of the Foreign Service; the nature of the foreign relations power and the conduct and control of American foreign relations.
- 3347 **Inter-American Relations**  
Latin American relations of the United States; the political, economic, and cultural relations among the Latin American states.

**COMPARATIVE GOVERNMENT**

- 3323 **Great Britain and the Commonwealth**  
An examination of British political institutions, phenomena, and problems in the mother country and in selected parts of the Commonwealth.
- 3333 **Problems in Latin American Government**  
A study of the nature and scope of problems in the political development of Latin American nations.
- 3424 **Comparative Political Institutions**  
Classroom application of the comparative approach to the study of traditional and new political institutional arrangements. Most examples will be taken from European governments.

**POLITICAL THEORY AND THOUGHT**

- 3334 **Western Political Heritage**  
From Plato to Burke. A study of the ideas of the major political philosophers of the ancient, medieval, and early modern periods, including the Enlightenment.
- 3335 **Western Political Heritage**  
From Kant to the Present. Political thought from the late eighteenth century to the present, with an emphasis on the development of contemporary ideologies.
- 3336 **American Political Thought**  
From the Colonial Period to the Civil War. The ideas of the earlier American Political thinkers. Attention will be given to the conflicts over the American Revolution, the framing and adoption of the Constitution, Jacksonian democracy, and the abolition of slavery.
- 3337 **American Political Thought**  
From the Civil War to the Present. A study of recent American political and legal thought. Attention will be given to shifting ideas about democracy, the role of government, and the nation's place in international affairs, as well as to the changing meanings of liberalism and conservatism.
- 3433 **Latin American Political Thought**  
A study of representative thinkers who have influenced political development in Latin America.
- 3435 **Contemporary Political Thought**  
The ideas of contemporary political thinkers concerning the great modern issues of democracy, dictatorship, industrial order, and the political needs of the developing peoples. Emphasis also will be placed upon the process of political theorizing.
- 3439 **Scope and Methods of Political Science**  
A survey of the scope and methodology of political science. An analysis and criticism of research in the field with emphasis on methods and techniques. Required of majors planning graduate study.

**PUBLIC ADMINISTRATION**

- 3340 **Public Policy Formulation**  
The dynamics of public policy formulation in the governments of the United States. Emphasis will be placed upon the National bureaucracy.
- 3351 **Municipal Planning Administration**  
History, principles and theories of urban growth, planning, and development with emphasis on public policy, and the administrative and legislative processes.
- 3438 **The Administration of Complex Organizations**  
An analysis of administration in government with emphasis on administrative theory. Emphasis is placed on Administrative decision-making, leadership, supervision, communications and control in public and private, civil and military organizations.
- 3450 **Internship in Public Administration**  
This course is open only to seniors and graduate students with the approval of the Head of the Department. It is a work-study program in which the student is assigned two days (or 16-20 hours) each week to a governmental agency. A weekly seminar session is also required. Normally open only to students interested in professional preparation in public administration.

**GENERAL**

- 3480 **Senior Seminar in Political Science**  
A terminal research and writing experience for undergraduates in Political Science. An intensive investigation into the foundations of political science with emphasis on research.

**FOR GRADUATE STUDENTS ONLY**

All SEMINARS may be repeated for credit.

(Prerequisite: Graduate Standing)

- 3510 **Seminar in American Government**  
Research, writing, and discussion.
- 3524 **Seminar in Comparative Government**  
Research, writing, and discussion.
- 3525 **Seminar in Latin American Studies**  
Research, writing, and discussion.
- 3526 **Seminar in Political Parties and Politics**  
Research, writing, and discussion.
- 3528 **Seminar in Public Law**  
Research, writing, and discussion.
- 3530 **Seminar in International Relations**  
Research, writing, and discussion.
- 3536 **Seminar in Political Theory**  
Research, writing, and discussion.
- 3537 **Seminar in Political Classics**  
Research, writing, and discussion.
- 3550 **Seminar in Public Administration**  
Research, writing, and discussion.
- 3551 **Seminar in Urban Problems**  
Research, writing, and discussion.
- 3580 **Selected Problems in Government**  
Research, writing, and discussion.
- 3598-99 **Thesis in Government**



## PSYCHOLOGY



PHILIP HIMELSTEIN, *Head*

*Professors* COLEMAN, HIMELSTEIN;

*Associate Professors* BARRIENTOS, BOSWORTH, MILLER, WHITWORTH;

*Assistant Professors* DEVINE, LUCKER;

*Instructor* BOWLES; *Part-time Instructors* NEAL, SMITH.

### *Degree Requirements:*

The Psychology Department offers two programs leading to the Bachelor of Arts Degree:

1. **Pre-Professional.** B.A. Degree for students who intend to get advanced degrees. Required courses are:
  - a) Psychology 3101, 3103, 3221, 3222, 3310, 3417 and 3452 or 3453.
  - b) Sciences: 12 hours in Chemistry; 12 hours in Physics; or Biology 3110, Zoology 4103 and/or Biology 4202-4203 or Zoology 5201.
  - c) Mathematics 4111, 4212.
  - d) Language: German, French, or Russian.
  - e) Minor: Select after consultation with advisor. Students without firm plans for specialization should minor in Zoology, Mathematics, Chemistry, or Physics.

### *Additional courses especially recommended are:*

- a) Psychology 3202, 3206, 3212, 3309, 3411.
  - b) Chemistry 3330, 3331, or Physics 4339, or Zoology 5201.
  - c) Mathematics 3324, 3331, 3429.
2. **Liberal Arts.** B.A. Degree for students who do NOT intend to get advanced degrees. Required courses are:  
Psychology 3101, 3103, 3221, or 3222; Chemistry 3101-02; or Physics 4103-04; or Biology 3110, 4202 or Zoology 4103.

### **For Undergraduate Credit Only**

*General prerequisite:* Psychology 3101 is prerequisite for all psychology courses.  
Junior standing for all 3300 or 3400 level courses.

- 3101 Introduction to Psychology  
A survey of basic principles in general psychology. *Prerequisite:* College entrance.
- 3103 Statistical Methods [Formerly 3102]  
A study of the basic concepts of descriptive and inferential statistics as applied to research in the behavioral sciences. Topics include descriptive statistics, experimental design, correlation, analysis of variance, and non-parametric tests. Three lectures and one laboratory session per week. Required of all psychology majors.
- 3201 Child Psychology  
Principles of growth and development from infancy to adolescence.
- 3202 Social Psychology  
The individual in society, dealing with human relations, group effectiveness, and conflicts among people. Principles of social behavior. Applied social psychology, cognition, motivation, attitudes, society, culture, groups, leadership. Three lectures or field trips per week.
- 3204 Differential Psychology  
A survey of the psychological principles and methods of investigating individual and group differences.

- 3206 **Psychology of Personality**  
 A study of the normal personality. Includes such topics as biological and social determinants of personality; appraisal of personality; and reactions to anxiety, frustration, and conflict.
- 3210 **Developmental Psychology**  
 A study of the behavior and special problems characteristic in the development of the individual.
- 3212 **Introduction to Abnormal Psychology**  
 A review of historical approaches to the problems of abnormal behavior. Topics will include the dynamics of abnormal behavior, its classification, symptomatology, and treatment.
- 3221 **Experimental Psychology: Learning**  
 An introduction to method and theory in contemporary experimental psychology. Emphasis is on method rather than on content. Topics emphasize the phenomena of learning. Three lectures and one laboratory session per week. *Prerequisite:* Psychology 3103.
- 3222 **Experimental Psychology: Sensation and Perception**  
 An introduction to method and theory in contemporary experimental psychology. Emphasis is on method rather than on content. Topics emphasize the phenomena of sensation and perception. Three lectures and one laboratory session per week. *Prerequisite:* Psychology 3103.
- 3302 **Theories of Personality**  
 A study of major systematic positions, i.e., Freud, Lewin, Cattell, etc. Major emphasis is put on the various theoretical interpretations of human dynamics.
- 3305 **Personnel Psychology** [Formerly 3205]  
 A survey of principles and methods used for selection and placement in personnel management and industry.
- 3308 **Principles of Testing and Counseling** [Formerly 3208]  
 The basic principles underlying testing and counseling.
- 3309 **History and Systems of Psychology** [Formerly 3211]  
 A study of the historical development of psychological views.
- 3310 **Introduction to Learning Theory**  
 Introduction to the nature of the learning process and the application of learning principles. Three lectures per week.
- 3316 **Psychoanalytic Psychology**  
 A study of the theoretical and experimental foundations of psychoanalysis. *Prerequisite:* Psychology 3302 or permission of the instructor.

**For Undergraduates and Graduates**

*General prerequisite:* Six advanced hours in psychology.

- 3401 **Psychological Testing (\$3)**  
 Introduction to and training in the administration, scoring, and interpretation of psychological tests. Two lectures and two laboratory hours per week.
- 3406 **Psychology of the Exceptional Child**  
 Application of psychological principles to the study of the atypical child, including a survey of etiological theories.

- 3410 **Clinical Psychology** [Formerly 3311]  
 A study of clinical problems, case study methods and discussion of psychological tests used in common clinical situations. Three lectures per week.
- 3411 **Physiological Psychology**  
 Basic psychological processes in relation to structure and function. Three lectures per week.
- 3412 **Advanced Abnormal Psychology** [Formerly 3312]  
 A study of the psychological factors contributing to pathological behavior. Emphasis will be placed on current research in genetics, biochemistry, and learning theory, in the area of schizophrenia and neurotic processes. *Prerequisite:* Psychology 3212.
- 3417 **Advanced Statistics** [Formerly 3317]  
 Further study of experimental design, analysis of variance, covariance, correlation, orthogonal polynomials, complex experimental designs, and non-parametric statistics. *Prerequisite:* Psychology 3103.
- 3421 **Learning Theory**  
 A consideration of some of the major issues on which learning theories divide; critical review of some of the important relevant experiments. *Prerequisite:* Psychology 3310.
- 3441 **Motivation and Emotion**  
 A critical evaluation of present theories as to the causes of behavior. *Prerequisite:* Psychology 3221, 3310.
- 4442 **Comparative Psychology**  
 A study of behavior at different phylogenetic levels with emphasis on recent contributions from ethologists and psychologists. Three lectures and two laboratory hours per week. *Prerequisite:* Psychology 3221.
- 3447 **Behavior Modification**  
 A review of contemporary studies involving the application of classical and operant conditioning techniques in the treatment of behavior disorders. Emphasis will be given to clinical cases. *Prerequisite:* Psychology 3310 or 3421.
- 3448 **Problem Solving**  
 An analysis of thought which will include principles and research approaches to information processing, concept formation, decision processes (judgment) solution and creative accomplishment. *Prerequisite:* Psychology 3221, 3222, and 3310.
- 3450 **Behavior Genetics**  
 A study of the role of genetics in variations in behavior. *Prerequisite:* Biology 3304 or permission of instructor.
- 3451 **Readings in Psychology**  
 Readings and papers in selected fields of psychology. Independent study under the supervision of a member of the faculty. May be repeated once when topics vary. *Prerequisite:* Permission of department head and instructor.
- 3452 **Independent Research**  
 Independent student research under the supervision of a member of the faculty. Regular meetings and reports are required. *Prerequisite:* Permission of department head and instructor.



- 3453 **Independent Research**  
Independent student research under the supervision of a member of the faculty. Regular meetings and reports are required. May not be taken with same instructor as in Psychology 3452. *Prerequisite:* Permission of dept. head and instructor.
- 3454 **Seminar in Psychology**  
Topic to be discussed will be selected. May be repeated with different instructors. Permission of instructor required.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Twelve semester hours of advanced courses in Psychology and a bachelor's degree.

- 1501-6501 **Individual Research**  
Student, in conference with a member of the staff, will design and perform an original experiment. Results will be prepared for possible publication in a psychological journal. Permission is required from head of department.
- 3502 **Advanced Experimental Psychology**  
A study of the experimental procedure appropriate for various areas. Each student will design, execute and report on one or more original experiments.
- 3511 **Advanced Statistics: Experimental Design**  
Consideration of problems of analysis and design commonly encountered in psychological research. *Prerequisite:* Psychology 3417 or the equivalent.
- 3513 **Seminar in Personality Theory**  
Intensive study of selected aspects of the various theories of personality.
- 3514 **Seminar in Psycholinguistics**  
Advanced studies of verbal learning in the light of advances in psycholinguistics.
- 3521 **Projective Techniques**  
Introduces the student to projective theory and acquaints him with the more widely-used projective instruments, their uses and limitations. Two hours lecture and two hours laboratory.
- 3522 **Theories and Methods of Psychotherapy**  
An analysis of theory, technique, and research methods used in various current psychotherapies. Permission of instructor required.
- 3523 **Individual Mental Tests (Laboratory Fee)**  
Supervised practice in the administration, scoring, and interpretation of individual tests of intelligence. Permission of instructor required.
- 3560 **Clinical Practicum**  
Supervised experience with clinical instruments. May be repeated once for credit. *Prerequisite:* Permission of instructor, Psychology 3521, 3523.
- 3598-99 **Thesis Course for the Master's Degree**



## SOCIOLOGY



CLARK S. KNOWLTON, *Head*

*Professors* KNOWLTON, ROEBUCK, CARTER; *Associate Professors* GOODMAN, STODDARD;  
*Assistant Professors* BUCK, GERALD;  
*Instructors* GRIFFIN, PETERSON, BARDING, WENGER.

**B.A. Degree** — Specific requirements for a Sociology major are:

a) Thirty semester hours including the following required courses:

I. Basic Core Courses (9 hours).

Principles of Sociology.

Three hours of Sociological Theory.

Three hours of Research Methodology.

II. Areas Diversification (a minimum of three hours in EACH of the following three areas):

*Social Organization and Social Institutions:* 3212, 3213, 3214, 3325, 3336, 3345, 3349, 3360, 3453.

*Social Disorganization:* 3327, 3333, 3348, 3352, 3442, 3455.

*General Sociology:* 3246, 3250, 3340, 3347, 3462.

b) Three semester hours of Anthropology.

### SOCIOLOGY

*General prerequisite:* Junior standing for all 3300 or 3400 level courses.

*Unless otherwise noted, Sociology 3101 is a required prerequisite for all other courses in Sociology. Exceptions to this must receive permission from Head of Department.*

#### 3101 Principles of Sociology

Nature and scope of sociology, its terminology and concepts; study of social processes, social institutions, development of society and characteristics of group life.

#### 3102 Social Problems

A study of selected social problems of our society including crime, juvenile delinquency population; family problems, alcoholism and drug addiction; Causes of social problems and their interrelationships; programs for rehabilitation will be analyzed. *Prerequisite:* None.

#### 3212 Urban Sociology

A study of the function, growth, characteristics, and problems of cities and urbanized areas. Emphasis will be given to urbanization in Texas.

#### 3213 Rural Sociology

A study of the characteristics of rural people, their ways of life, and rural social organization. Emphasis will be placed upon the rural people of the Southwest.

#### 3214 The Community

A comparative study of community types; methods of studying the community, analyses of underlying social processes and institutions; trends and problems of community change.

#### 3215 Courtship and Marriage

A study of the factors involved in an adequate preparation for marriage, marital adjustment, parenthood and adult life. *Prerequisite:* None except Sophomore standing.

#### 3246 Sociology of Religion

A study of the role of religion in society and its relation to other social institutions. Emphasis will be placed on the changing role of religion and its orientation to the values of society.

- 3250 **Medical Sociology**  
An analysis of the medical profession, recruitment, training and professional organizations: Doctor-patient, Doctor-Nurse relationship; cultural variations in medical practices and responses to pain; minority groups and medical practice.
- 3310 **Guided Readings**  
Students will be required to read 20 books assigned by staff and prepare written reports on their readings.
- 3312 **Measurement and Inference in Social Research**  
Sociological factors and their measurement; development and use of scales; assumptions underlying the use of statistical models in analysis of social data; application and limitations of statistical analysis; recent trends in methodology.
- 3320 **Fields of Social Work**  
A survey of the various fields of social work, both public and private, with particular attention given to those organized on a regional and national basis. An examination will be made of the methods used in the various fields of social work.
- 3323 **Elements of Social Case Work**  
Theory and practice of case work from journals and social agency records; role of caseworker and techniques for diagnosis, development, evaluation, and treatment. Supportive resources. *Prerequisite:* Sociology 3320 or its equivalent and 3 hours of Psychology.
- 3325 **Social Class and Stratification**  
Social class differences in static and dynamic societies; theories of social class and criteria of measurement; selected community studies and social mobility patterns in U. S. and foreign societies.
- 3327 **Minority Groups in the United States**  
A study of the principal minority groups in the United States and of the processes of accommodation, acculturation, and assimilation.
- 3333 **Juvenile Delinquency**  
An investigation of the social and legal definitions of Juvenile Delinquency; major theories of juvenile deviancy; the social system of the gang; factors contributing to apprehension, conviction, detention and parole; assessment of present and potential prevention programs.
- 3336 **Comparative Cultures**  
A study of the folk-ways, changing mores, and the growth of democratic ideas in the United States and the Republic of Mexico. Special emphasis upon the fusion of cultures along the border.
- 3340 **Industrial Sociology**  
A structural-functional analysis of management and labor organizations; social consequences of work and occupation in U. S. society; dynamic changes in automation and problems of leisure; community-industrial relations.
- 3345 **Border Sociology**  
A survey of the major ethnic groups, social processes, problems and characteristics of the inhabitants in Northern Mexico and Southwestern United States.
- 3347 **Demography**  
Statistical analysis of the world population, the U. S. and the southwest. Study of fertility, mortality, and migration patterns.
- 3348 **Criminology**  
Theories, causes, characteristics, and social function of crime in our society. Methods of prevention and reduction of crime will be analyzed.
- 3349 **The Family**  
A study of the development of the family as a social institution. Emphasis is placed upon the American family and the problems which confront it today.

- 3350 **Child Welfare and Sociology of Childhood**  
 Use of Sociological concepts in understanding child development, interaction of the child with the family, school and peer groups; Process of socialization and an analysis of problems in child development and measures taken by society to serve children with problems.
- 3352 **Sociology of Poverty**  
 A systematic survey of the causes of poverty, the characteristics of group living in poverty, and problems of dealing with impoverished peoples and the reduction of poverty.
- 3355 **Contemporary Sociological Theory**  
 Study of major theories in Sociology. Analysis of the contributions of Max Weber, Emile Durkheim, Talcott Parsons, R. K. Merton, and other contemporary Sociologists.
- 3358 **Spanish-Speaking Groups in Texas and the Southwest**  
 A survey of the culture, social structure and social change among the Spanish-speaking groups of Texas and the Southwest.
- 3360 **Institutions and Cultures of Latin America**  
 Survey of social institutions, the diverse cultures, and the processes of social change in Latin America.
- 3440 **Independent Social Research**  
 Planning and conducting independent research projects under staff supervision. Open only to Seniors and Juniors with written approval of the Department Head. Some prior course work in methodology strongly recommended.
- 3442 **Sociology of Deviants**  
 A study of deviations from social norms which encounter disapproval and to which theory and concepts derived from sociology and social psychology may be applied. Deviators and societal reaction to deviators are included.
- 3453 **Human Ecology**  
 Study of the Interdependence of human groups, institutions and resources in their spacial and temporal relations.
- 3455 **Social Change and Technological Development**  
 The impact of technological advances on society; functional requisites for effecting social change; latent and manifest consequences of unplanned social change; impact of and resistance to domestic and foreign aid programs.
- 3460 **Internship in Social Work**  
 A work-study program open only to sociology majors of Senior standing preparing for a social work career. Students are assigned two days (16-20 hours) each week to a given social agency plus a weekly seminar. *Prerequisite:* Written approval of Department Head.
- 3462 **The Sociology Profession**  
 Requisites of a profession—legal, medical, academic. Journals and professional organizations and their function; recent trends in specialty areas, methodology and theory since World War II; applied fields, training and limitations of Sociology discipline.
- 3465 **Field Methods of Social Research**  
 Nature of scientific research with emphasis upon actual field experience; techniques of social research from initial formulation of proposal, collection and analysis of data, to preparation of final report. *Prerequisite:* Twelve hours of Sociology.
- 1450-6450 **Workshops in Sociology**  
 Area of study will be designated.

**ANTHROPOLOGY**

- 3103 **The Nature of Man**  
Systematic survey of the evolution of man and the development of his culture, as exemplified in the physical remains and associated tools of such fossil and modern men as Australopithecus, Pithecanthropus, Homo neanderthalensis, and Homo sapiens. The cause and nature of race and religious prejudices are also discussed.
- 3104 **Social Institutions**  
A consideration of the various forms of social institutions, such as the family, clan, kin groups, community, sodalities, religion, and government, found over the world and exemplified by such peoples as the Apache and Hopi Indians, Australians, Samoans, and Hottentots. Various schools of Social Anthropology theory will be summarized.
- 3210 **Southwestern Archaeology**  
The development and characteristics of Indian culture, from the Elephant Hunters to the Pueblos, is considered, with particular attention being given to the later Mogollon, Hohokan, Anasazi, and Casas Grandes cultures. *Prerequisite:* Sociology 3103 and 3104.
- 3211 **Southwestern Ethnology**  
The economy, social life, religion, mythology, language, and material culture of living Indian groups studied with a detailed examination of the cultures of the Apache, Papago, Acoma, and Zuni. *Prerequisite:* Sociology 3103 and 3104.

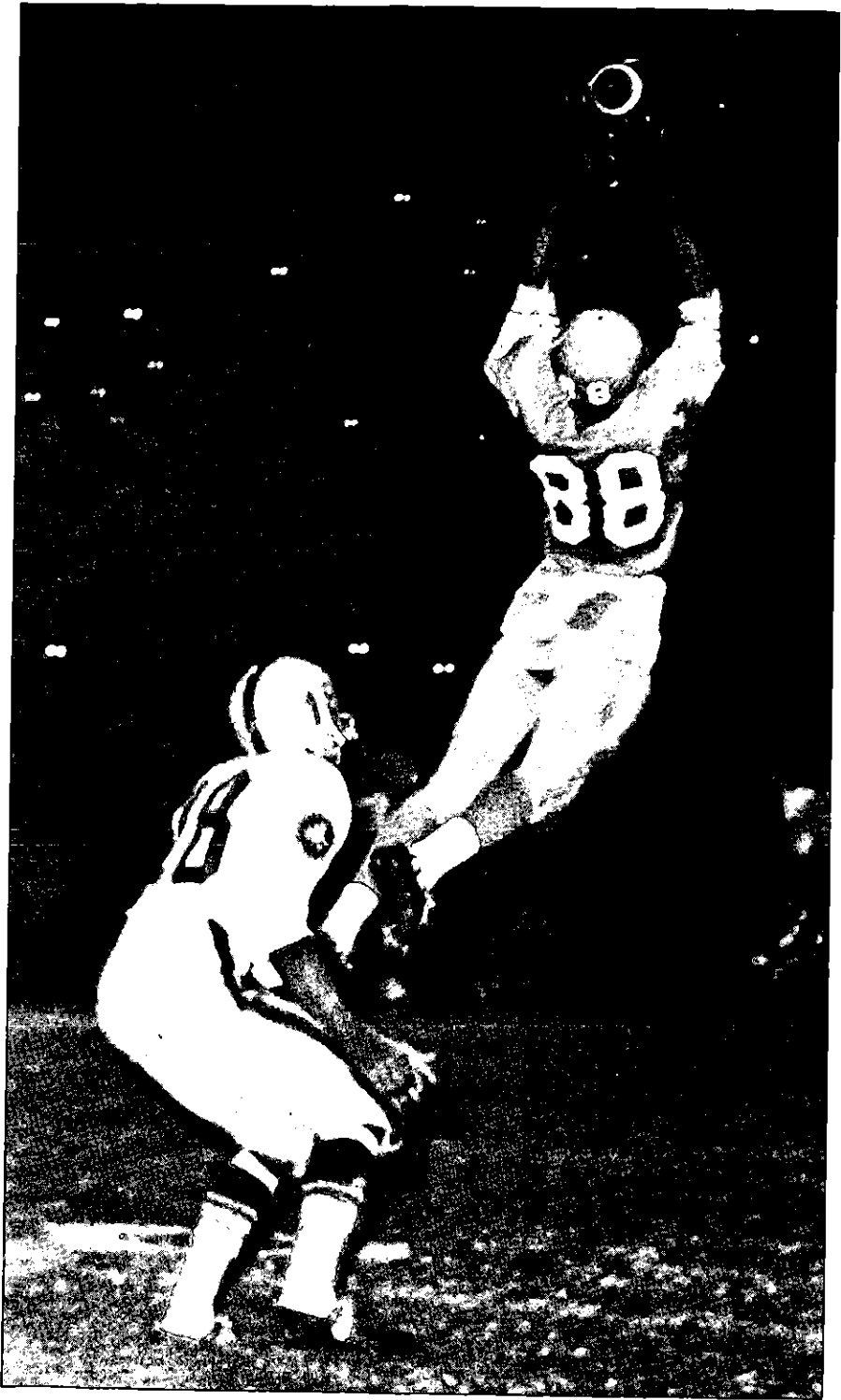
**GEOGRAPHY**

- 3210 **Cultural Geography**  
A study of other nations and other people, to better appreciate and understand their way of life. Racial and cultural backgrounds, political, social and economic developments and geographic physical factors are considered, initially by world regional patterns, followed by variations within political subdivisions. *Prerequisite:* Six semester hours of Sociology or sophomore standing. Not counted as laboratory science.
- 3312 **Geography of Latin America**  
A systematic survey of the geographical characteristics of Latin America. The interrelations between social structure, the culture and the geography of these countries will be analyzed. *Prerequisite:* Junior standing.

**FOR GRADUATE STUDENTS ONLY**

*Prerequisite:* Graduate standing and consent of Head of Department.

- 3510 **Seminar on Social Organization**  
(May be repeated for credit when topics vary.) Theories and types of social organizations; field research and social theory.
- 3515 **Seminar in Social Disorganization**  
(May be repeated for credit when topics vary.) Theories and types of social deviancy and social disorganization; specific areas such as Criminology and Correction emphasized.
- 3518 **Seminar in Social Differentiation**  
(May be repeated for credit when topics vary.) Stratification and non-hierarchical differentiation; plural and homogeneous ethnic systems, social mobility, differentiation and subcultural groupings, economic, religious and cultural differentiation.
- 3525 **Seminar in Sociological Theory**  
(May be repeated for credit when topics vary.) Changing developments in sociological theory as related to ongoing research.
- 3535 **Seminar in Social Systems**  
(May be repeated for credit when topics vary.) Macroscopic studies, institutional analysis; rural and urban systems; types of societies and societal change.



## ☞ DIVISION OF STUDENT AFFAIRS ☞

The Office of the Dean of Students is responsible for all student affairs. The Dean of Students coordinates the total student personnel program which is designed to complement the academic program of the University. This division consists of the Office of the Dean of Students, the Assistant Deans of Students, the Counseling Service, the Financial Aid and Placement Offices, the Student Association, Intramural Athletics, the Student Health Service, and the Union Program. The staff members are available to talk over personal or organizational problems, and to answer questions that concern members of the student body.

The Assistant Deans of Students supervise student housing and student organizations.

The Counseling Service is maintained by the University to assist students in the selection of their careers, planning their college courses, and in meeting personal problems.

The personnel in the Office of the Dean of Students are concerned with the welfare of the entire student body and all are available for the discussion of any problems the student may have.

### *Scholarships*

The University of Texas at El Paso has an excellent Scholarship Program which is administered to attract and retain outstanding students and to reward academic excellence. These awards are made possible by the generosity of numerous business firms, civic organizations, professional groups, and individuals. Persons wishing to establish scholarships or contribute to the scholarship fund may secure information from the Assistant Dean of Students. The average amount of awards is \$200.00 per year although awards range up to \$1,250.00 per year.

To be considered for a scholarship, an applicant must have a "B" average. All selections are made by the Faculty Committee on Scholarships and recipients ordinarily are selected from those who have a 3.5 (B+) high school final average and who score above 1,000 on the College Entrance Examination Board Scholastic Aptitude Test.

Scholarship Applications may be obtained from the Office of the Assistant Dean of Students or from High School Counselors. Applications will not be considered unless accompanied by a transcript of high school grades, two letters of reference, and Scholastic Aptitude Test scores. The deadlines for application is March 1; however, SAT scores may be submitted at later dates when necessitated by national testing schedules.

The University of Texas at El Paso is especially desirous of attracting students who show high academic promise. Advanced placement and credit, honors classes, honorary organizations, and an honor dormitory have been instituted to

challenge superior students and facilitate their achievement.

For further information write:

ASSISTANT DEAN OF STUDENTS  
The University of Texas at El Paso  
El Paso, Texas 79999

### *Placement*

The Placement Office, located in The Union, is available as a service to students. The main purpose of the Office is to assist students in finding employment based upon their ability, training and experience.

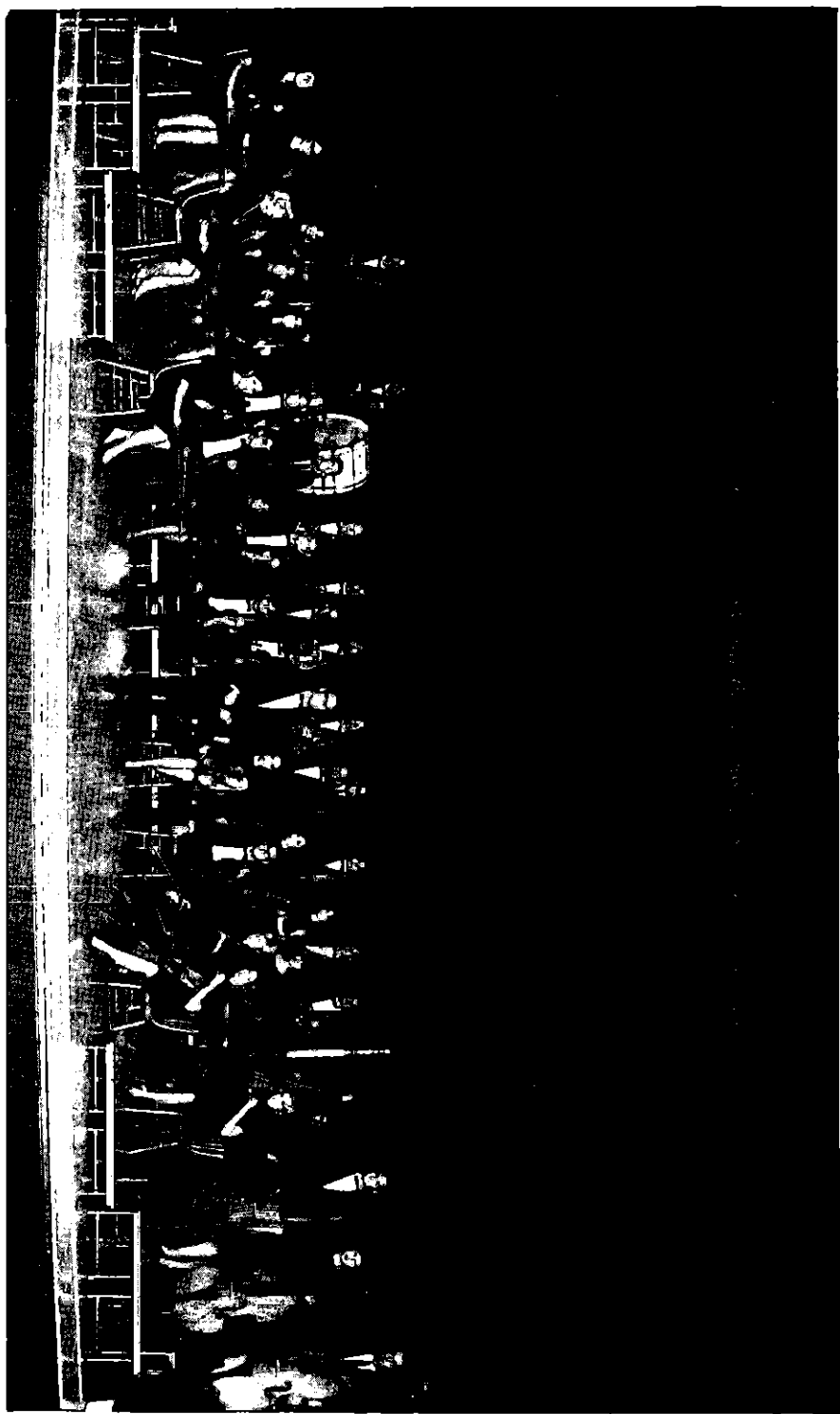
#### **Employment by the University**

Several hundred students are employed by the University in jobs ranging from semi-skilled laborers to student readers, research assistants, and laboratory and teaching assistants. The University participates in the Work-Study Program for employment of students with financial need. Payment is normally on an hourly basis, the rate depending upon the individual's knowledge and skills. Students work varying hours, in accordance with their academic loads and the requirements of their jobs.

Many husbands and wives of students have full-time jobs with the University, enabling their spouses to devote full attention to academic work during the period of university attendance.

#### **Career Employment**

All graduating seniors are required to register with the Placement Office prior to graduation. Seniors should check with the Placement Office at the beginning of their





senior year in order to take advantage of the many opportunities available.

Each fall and spring, representatives from many companies both local and national visit the campus to interview seniors and graduate students. Many graduates are offered career positions with these companies.

Records of all seniors are filed in the Placement Office and are made available to prospective employers upon request of the student.

### **Teacher Placement**

Senior students majoring in education should register with the Placement Office early in their senior year. These students are assisted in securing positions locally and throughout the country. The Placement Office receives many requests for teachers each year.

Many school districts recruit on the campus during the school year for teachers and any senior education major is eligible to sign up for an interview. Personnel records are maintained and upon request of the student a copy is furnished to the prospective employer.

### **Part-time Employment**

Part-time jobs and summer employment are also a function of the Placement Office. Any student interested in obtaining part-time work or summer employment is encouraged to register with the Placement Office for assistance.

### **Co-op Program**

Co-op Programs have been established with the White Sands Missile Range, National Aerospace Agency, I.B.M., Good-year Tire and Rubber Company, U. S. Army Strategic Communications Command, and Corps of Engineers. These Co-ops are for students majoring in Engineering, Physics, and Mathematics. A Co-op Program with Internal Revenue Service has been established for students majoring in Business. Each student accepted for the program must have a "B" average or above in his high school work. He must maintain a 2.5 or better grade point average to remain in the program once he is accepted. Each student works six months on the job and attends school for six months.

Information on the programs and applications may be obtained from the Placement Office.

### **Educational Opportunity Grants Program**

The Educational Opportunity Grants Program, authorized by the Higher Edu-

cation Act of 1965, was established to assist students in extreme financial need who, without the grant, would be unable to attend college.

Grants ranging from \$200 to \$800 are made to students for each of the four years of undergraduate study. Colleges and Universities participating in this Program select the recipients and determine the individual need of the student.

Application for this grant is made to the Financial Aid Office and should be turned in no later than June 15 to receive consideration for the following school year. Applicants must be previously accepted for admission, or be enrolled and in good standing before applying for this grant.

## **Loans**

Student loan funds are administered by the Director of Financial Aid and Placement. Applicants are required to complete the Parents Confidential Statement of the College Entrance Examination Board and have a personal interview. All loans are determined on the basis of financial need.

### **Long Term Loans**

These loans are payable after graduation or after the borrower ceases to be a full-time student. Generally, an undergraduate student may borrow up to \$1,000 per year and a graduate \$2,500. These loans are payable within the semester in which the loan is granted and draw 4% simple interest. Interested students should contact the Office of Financial Aid.

*The National Defense Loan Program* is jointly sponsored by the Federal Government and The University of Texas at El Paso. The National Defense Loan draws no interest until nine months after the borrower ceases to be a student. At this time, interest begins to accumulate at the rate of 3% per annum on the unpaid balance. The deadline for applying for NDEA loans is June 1 of each year.

*The Texas Opportunity Loan Program* is operated by the State of Texas through the Coordinating Board, Texas College and University System. These loans are for Texas residents attending Texas schools. They are repayable within five years after the student graduates or ceases to attend college. The first payment is due four months after graduation or withdrawal.

The deadlines for applying for TOP loans are August 1st for Fall semester, December 15 for Spring semester, and April 15 for Summer loans.

*The Federal Guaranty Loan Program* is operated through commercial lending institutions such as banks, credit unions, and savings and loan associations. The loans are guaranteed to the lending institution with reserve funds from the Federal Government by an agency designated by the State of Texas. They are repayable within five years after the student graduates or ceases to attend college. The first payment is due four months thereafter.

*The Franklin Lindsay Student Aid Fund* is a long term loan plan set up by the late Franklin Lindsay for students attending institutions of higher learning in the State of Texas. This plan has very low interest rates and exceptionally flexible repayment requirements. Applications and information may be obtained from the Office of Financial Aid and must be submitted to that office by May 1st for the following September.

#### **Emergency Loans**

These loans are payable within the semester in which the loan is granted and draw 4% simple interest. Some of the funds are highly restrictive. It is suggested that interested students contact the Office of Financial Aid.

*The Rebekah Coffin Loan Fund:* This loan fund was established in July, 1963 by donations from friends of Rebekah Coffin who taught in El Paso and Barstow, Tex.

*The Hogg Foundation Loan Fund:* This is a division of the Hogg Foundation. It was set up in the will of the late Will C. Hogg, to be administered by the University as the agent. It was originally chartered in July, 1931 in the amount of \$30,869.86. A total of \$9,900.00 is invested in government bonds and the balance is in cash. It was originally established as a memorial to Will C. Hogg and ex-students of the College of Mines and of the University of

Texas. Applicants should be native Texans and graduates of Texas Public Schools.

*U.T. El Paso Women's Auxiliary Loan Fund:* This fund was established by the Women's Auxiliary and is administered by the loan office of the University.

*Mining and Metallurgy Loan Fund:* This fund was established in September of 1958. Loans are to be made available on recommendations of the Chairman of the Mining and Metallurgy Department.

*Foreign Student Loan Fund:* This fund was established to assist foreign students attending The University of Texas at El Paso.

*Rebecca Stoddart Chapter — D. A. R. Loan Fund:* This fund was established in January of 1961 with the amount of \$175. It has one restriction, that the Loan Fund be kept in the name of the Rebecca Stoddart Chapter—Daughters of the American Revolution.

*U.T. El Paso Ex-Student's Loan Fund:* This fund was established by the Ex-Students of The University of Texas at El Paso and is administered by the Student Loan Committee.

*Engineering Loan Fund:* This loan fund was established in October, 1939, by John W. Kidd for loans to Engineering and Geology students.

*U.T. El Paso Loan Fund:* This fund is made up of small contributions from students and friends of the University. It is administered by the Student Loan Committee.

*El Paso Chapter—National Office Management Association:* This fund was established in the amount of \$200 in September of 1959, for Business Administration students.

#### **All inquiries regarding Financial Aid & Placement should be sent to:**

Director  
Financial Aid & Placement  
The University of Texas at El Paso  
El Paso, Texas 79999

# STUDENT ACTIVITIES *and* ORGANIZATIONS

## STUDENT ASSOCIATION

The Student Association is the governmental structure through which the students participate in the planning, coordination, and execution of their activities. They operate within a budget established by the Board of Regents of The University of Texas and the Texas state legislature. Fiscal responsibility and the manifest goals of the student body are reconciled by the student government. The basic framework of the "SA" resembles the pattern established by our national government. The Executive, Legislative and Judicial branches all function to provide a balanced program for the benefit of the students. All full-time students are automatically members of the Student Association and part-time students may become members by paying the "SA Fee" during registration.

## ATHLETICS

### Intercollegiate

The University of Texas at El Paso participates as a member of the Western Athletic Conference in a variety of intercollegiate sports. U.T. El Paso teams have gained national attention in recent years. The Miners beat "Ole Miss" in the Sun Bowl last season and the 1966 basketball team swept to the NCAA championship. Two members of the track team hold indoor world records and the baseball team has made a step in the right direction as has every sport in the well balanced program. The football team meets such schools as Wyoming, Arizona, Arizona State, and New Mexico. Basketball is also a big time sport and the Miners have made appearances in Madison Square Garden and the Chicago Stadium in recent years. The overall program gives students, staff and community residents a great deal of spectator enjoyment.

### Intramurals

A wide range of competitive activities are provided through the Intramural Activities Program. The program is administered by the Director of Intramurals and by the Intramural Council composed of representatives of participating organizations. Men compete in these major sports: football, basketball, volleyball, swimming, track, wrestling, and softball. The major sports for women are basketball, volleyball, track, swimming, softball, and bowling.

Other activities ranging from handball to ping pong and golf are included in the program. Sororities, fraternities, Residence Councils, religious and independent organizations prepare for intramural competition and vie for the overall championship. The Intramural season is culminated by an annual Awards Banquet.

## UNION PROGRAM COUNCIL

The Director of Student Activities supervises seven different committees which comprise a great variety of programs in The Union of The University of Texas at El Paso. In addition to promoting educational, social, and recreative activities, the UPC provides an ideal laboratory for the development of student leadership and initiative.

## ORGANIZATIONS

Other major participation areas include student publications, governmental organizations, five national sororities, and eight national fraternities, music and drama groups, and departmental organizations. There are more than one hundred different groups from which a student may choose his activities. They are:

- Alpha Beta* — Men's service club.
- Alpha Chi*—Scholastic honorary for Juniors and Seniors.
- Alpha Epsilon Phi*—National social society.
- Alpha Epsilon Rho* — Honorary radio society.
- Alpha Kappa Lambda* — National social fraternity.
- Alpha Lambda Delta* — National honorary society for freshmen women.
- Alpha Phi Omega*—Local social fraternity.
- Alpha Psi Omega* — Honorary drama society.
- Alpha Sigma Mu*—National honorary metallurgical engineering society.
- American Chemical Society* — Collegiate branch of professional society.
- American Institute of Mining, Metallurgical, and Petroleum Engineers*—Collegiate branch of professional society.
- American Society of Civil Engineers*—Collegiate branch of professional society.
- Associated Women Students* — Organization of all regularly enrolled women students.
- Association for Childhood Education*—Organization of future elementary school teachers.

- Baptist Student Union.*  
*Bell Hall Dorm Council.*  
*Benedict House Committee.*  
*Burges Hall Dorm Council.*  
*Canterbury Association* — Episcopal students.  
*Campus Crusade for Christ.*  
*Cardinal Key* — Junior women honorary service organization.  
*Chi Gamma Iota* — Veterans Club, Service and social organization.  
*Cherizig* — Scholastic and service honorary for senior women.  
*Chess Club.*  
*Chi Omega* — National social sorority.  
*Christian Science*—A campus organization of Christian Science students and faculty members.  
*Circle K International*—Men's service club.  
*Collegiate Chorale* — College choir sponsored by the Department of Music.  
*Delta Delta Delta* — National social sorority.  
*Delta Sigma Pi* — Professional society for men Business majors.  
*Engineering Council*—Co-ordinating group for all Engineering activities.  
*Goldiggers*—Girls Marching unit.  
*Hawthorne House Council.*  
*Hillel*—Social, cultural and religious organization for Jewish students.  
*Honors Council*—Co-ordinating group for Honorary organizations.  
*Hudspeth Hall Dorm Council.*  
*Institute of Electrical and Electronic Engineers* — Collegiate branch of professional society.  
*Interdormitory Council* — Representatives from men's and women's dorms who coordinate the athletic, social, cultural and scholarly activities among dormitory students.  
*Inter-Faith Council*—Co-ordinating group for all religious clubs on campus.  
*Interfraternity Council* — Co-ordinating group for fraternities.  
*Intramural Council* — Co-ordinating group for intramural athletics.  
*Kappa Delta* — National sorority for women.  
*Kappa Delta Pi*—National honorary education society.  
*Kappa Kappa Psi* — Honorary Band and Marching Cavalcade organization.  
*Kappa Pi* — Honorary art society.  
*Kappa Sigma*—National social fraternity.  
*Karate Club.*  
*Lambda Chi Alpha* — National social fraternity.  
*Lampglitters* — Social and service organization to foster fellowship among members of the Church of Christ.  
*LDS Deseret* — Campus organization of Mormon students.  
*Literary Society* — This group encourages interest in and knowledge of literature through meetings, group discussions, and lectures. It is open to all students.  
*Lloyd A. Nelson Geology Club.*  
*Mechanical Engineering Society.*  
*Music Educators National Conference* — Student chapter for those going into Music professionally.  
*National Art Education Association.*  
*Newman Club* — Campus organization of Catholic students.  
*Orange Key*—Scholastic and service honorary for Freshmen and Sophomore men.  
*Panhellenic Council*—Co-ordinating group for sororities.  
*Pershing Rifles*—National honorary ROTC fraternity.  
*Phi Alpha Theta* — Honorary history society.  
*Phi Delta Kappa* — Honorary education fraternity.  
*Phi Kappa Tau*—National social fraternity.  
*Phrateres International* — International independent service and social group for women.  
*Physical Education Majors Club.*  
*Pi Delta Phi*—Honorary French society.  
*Pi Kappa Delta* — National honorary Forensic fraternity.  
*Pi Sigma Alpha* — Honorary political science society.  
*Pre-Med Club.*  
*Press Club* — Honorary service club for journalism majors and minors.  
*Psi Chi Society*—Honorary Psychology society.  
*Rodeo Club.*  
*ROTC Sponsors* — Auxiliary drill team to the Cadet Corps.  
*Sardonyx*—Scholastic and service honorary for Junior and Senior men.  
*Scabbard & Blade* — ROTC honorary society.  
*Sigma Alpha Epsilon*—National social fraternity.  
*Sigma Alpha Iota* — Women's Honorary Professional Music Fraternity.

*Sigma Alpha Mu* – National social fraternity.

*Sigma Delta Pi*—Honorary Spanish society.

*Sigma Gamma Epsilon* – Honorary society for earth sciences.

*Sigma Pi Sigma* – Honorary Physics society.

*Society of American Military Engineers* – National professional society for ROTC and Engineering students.

*Sociology Club.*

*Spurs* – National service organization for Sophomore women.

*Student Action Committee on Foreign Policy.*

*Student Education Association.*

*Student Legal Association.*

*Sybarites*—Local Art Society.

*Tau Beta Sigma*—Honorary service society to promote band activities.

*Tau Kappa Epsilon* – National social fraternity.

*United Afro-American Students.*

*United Campus Christian Fellowship*—Interdenominational religious organization consisting of the following groups: Presbyterian, Churches of Christ, United Lutherans of America, Congregational Christian, Christ Christian Churches, and the Churches of the Nazarene.

*University Players* – Drama group.

*Wesley Foundation*—Campus organization for Methodist students.

*Worrell Hall Dorm Council.*

*Young Democrats Club.*

*Young Republicans Club.*

*Zeta Tau Alpha*—National social sorority.

## ANNUAL EVENTS

And of course there are a number of all-campus activities every year in which a student may participate. Some of these are:

### Student Leader Conferences

Before each semester, selected student leaders participate in a Student Association function designed to stimulate, revise, and evaluate the student activities for the coming semester. This is one of the programs in which the Student Association seeks to keep abreast of the continual changes in our modern campus community.

### "M" Day

"M" Day originally began in 1923, when the "M" was first laid out on the east side of Mt. Franklin. Since then the Student Association has moved the "M" to the more appropriate location overlooking the Sun Bowl stadium. The freshmen of every fall semester are intrusted with the task of repairing and re-whitewashing the "M" under the supervision of the Student Association and the Student Senate. The refurbishing of the "M" is followed by the traditional "Bean Feed" where all participants enjoy their first taste of college life.

### Homecoming

Homecoming is the festive occasion when students display their enthusiasm and spirit by honoring Ex-students in their annual return to the University campus. A Homecoming Queen is selected by a vote of the student body to reign over the week's activities. Classes are dismissed Homecoming Day and the students participate in the Downtown Parade featuring beautiful floats, bands, and gala costumes. A barbecue follows the parade at which time trophies are awarded to the most outstanding floats and house decorations. The Homecoming Queen and her court are crowned at the dance and are presented at the Homecoming football game.

### Sing Song

The annual Sing Song is a concert in which independent, fraternity and sorority choruses compete. Trophies are awarded to the outstanding groups based on their productions and everyone is invited to join in the song-fest.

### Co-Ed Ball

A Christmas dance is held each year and is sponsored by the Associated Women Students. At this time, the girls make all the arrangements including making the date and paying for it. The "beaus" are feted at this traditional dance where the selection of the Co-Ed King and his court is announced and they are crowned.

### Variety Show

Alpha Psi Omega, the drama fraternity, sponsors a program in which organizations get a taste of the theatrical world. Campus talent shows itself, and winners are selected and awarded trophies. The proceeds of the contest go toward a drama scholarship.

**Religion in Life Week**

In the life of every wholly developed individual a spiritual foundation is essential. Speeches by religious leaders, informal discussions, and personal conferences are presented as a means of acquainting—or reminding—the student of religion's vital place in his world. Catholic, Jewish, and Protestant authorities are given the opportunity to encourage the student in his spiritual quest.

**Beard Growing Contest**

January 1st is the date of commencement for the traditional Beard Growing Contest sponsored by the Engineering Council at The University of Texas at El Paso. Anyone entering the contest must begin this day and may not shave until St. Patrick's Day when the winners are selected. All male students are eligible to enter this traditional engineer's contest.

**St. Pat's Day and the  
Hard Luck Dance**

The proud engineers at The University of Texas at El Paso initiate their freshmen engineers during an all-day picnic. The Hard Luck Dance follows the day's activities and the winners of the annual Beard Growing Contest are announced. Prizes are awarded to the person with the longest and handsomest beard and the one showing the least results with the most effort. Prizes are also given to the couple wearing the best Hard Luck costume. The public is invited to attend this dance and reminisce about the traditions of the Texas College of Mines.

**Women's Honors Night**

In the Spring Semester, AWS, with the cooperation of Chenrizig, Spurs, Alpha Lambda Delta and Cardinal Key, honors women students for scholastic achievements. Candidates for AWS officers for the following year are introduced and new members for Chenrizig, Spurs, Alpha Lambda Delta, and Cardinal Key are tapped. Awards are presented to an outstanding faculty woman and to the outstanding freshman woman. Also, at this time, Panhellenic trophies are presented to sororities with the highest scholastic average.

**Military Ball**

In the spring, the ROTC Cadets will hold their annual Military Ball. The ROTC Queen will be crowned and her Court of Sweethearts will be honored followed by a gala evening of dancing to the music of a popular orchestra. The University of

Texas at El Paso Company of the National Society of Scabbard and Blade sponsors this event and promises all cadets and their invited guests an evening to be remembered.

**Miss UTEP Contest**

In April the annual Miss UTEP contest will be held. Judges select a Miss UTEP on the basis of talent and beauty. Four awards are given. The overall winner is awarded the title of Miss UTEP until the following contest. An alternate Miss UTEP, a talent winner, and a beauty winner are also chosen.

**Campus Carnival**

This annual Spring Fiesta finds campus organizations preparing fun booths of various types trying to capture the business of the huge crowds. Beautiful decorations and festive music are the keynotes of the dance held that evening culminating one of the highlights of the Spring semester.

**Flowsheet Queen**

Each year a nationally known celebrity is asked to act as judge in the Flowsheet Queen Contest. The identity of the Queen is not revealed until the yearbook is distributed in May. Any woman student at The University of Texas at El Paso may participate by submitting an 8 x 10 glossy photograph to the Flowsheet. From these photographs come the winner and runners-up in the contest.

**Beauty Contest**

The selection of Campus Beauty Queens is sponsored annually by the Flowsheet for their feature section. Nominations are made by organizations on campus. A preliminary and final contest are held. Five winners are usually announced.

**Aggie - Miner Day**

Each spring, The University of Texas at El Paso and New Mexico State hold an annual Spring Play Day. Competition consists of Basketball, Volleyball, Swimming, Track, Tennis, Bowling, and Ping-Pong. Each school's Intramural champions compete for trophies in each activity.

The highlight after a full day of competition is the Awards Banquet.

**Honors Convocation Day**

This is a traditional May Assembly in which honor is paid to those students excelling in scholarship during the previous year. The installation of the newly elected officers of the Student Association and the Student Senate as well as the Supreme Court Justices takes place.

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# ***Official Regulations***

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***Student Expense***

[ TUITION ]

***Regulations Affecting Student Life***

[ CONDUCT - DISCIPLINE ]

***Scholastic Regulations***

[ GRADES ]

***Statistics***

***Index***

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## STUDENT EXPENSES



Average registration cost for RESIDENT liberal arts students runs from \$87.00 to \$94.00 per semester. Average registration cost for RESIDENT engineering students runs from \$87.00 to \$103.00 per semester. Registration and laboratory fees are payable on a semester basis at the beginning of each semester and must be paid in full before the student will be permitted to enter class or laboratory. The Business Office does not cash checks. However, checks are accepted in settlement of obligations to the University provided they are in the amount owed the University. No change can be given for the balance of a check.

### Resident and Non-Resident Students

1. A student under 21 years of age is classified as a RESIDENT student if his parents are living in the State of Texas at the time of his registration and have lived within the state for a period of at least 12 continuous months immediately prior to the date of registration.

2. Persons in the military services who are stationed in Texas by assignment to duty within the borders of this State shall be permitted to enroll themselves, their husbands or wives as the case may be, and their children in State institutions of higher learning by paying the tuition fees and other fees or charges provided for regular residents of the State of Texas, without regard to the length of time such officers, enlisted men, selectees or draftees have been stationed on active duty within the State.

A person on military service who wishes to pay the resident tuition fee for himself or his dependents must submit at the time of EACH registration a statement from his Commanding Officer or Personnel Officer certifying that he is then on permanent as distinguished from temporary military assignment in Texas.

3. A student under 21 years of age is classified as NON-RESIDENT if his parents do not reside in the State of Texas or have not lived within the State during the full 12 months prior to his registration.

4. A student over 21 years of age who comes from out of the State of Texas is classified as a NON-RESIDENT student unless he has resided within the State for 12 full months, not enrolled in an educational institution, prior to the date of registration.

5. An alien is classified as a NON-RESIDENT, except as provided in paragraph 9 of next section.

### Legal Residence

The following statements are intended to clarify certain points and answer some of the questions that may arise. For additional information contact the Registrar's Office.

1. The legal residence of one who is under 21 years of age is that of the father. Upon death of the father, the legal residence of a minor is that of the mother.

2. If the parents are divorced, the residence of a minor is the same as that of the parent with whom he has lived during the 12 months preceding registration. If he has not lived with either parent, the residence of the father shall control. If custody is granted to some person other than a parent, the residence of that person shall control for so long as the minor actually makes his home with such person.

3. The residence of a wife is that of her husband.\*

4. Individuals who have come from without the State of Texas and who are within the State primarily for educational purposes are classified NON-RESIDENT. Registration in an educational institution within 12 months after having arrived in the State is considered as evidence that the individual is in the State for educational purposes.

5. The fact that an individual or family has bought property, established a business, paid taxes, voted, has become the legal ward of or has been adopted by a Texas resident does not affect the 12 months residence requirement.

6. The fact that a student is self-supporting or is supported wholly or in part by a Texas resident does not affect his classification as RESIDENT or NON-RESIDENT.

\* *Exception: A woman student of the University who is classified as a resident student and, while so classified, marries a non-resident student of the University will be permitted to continue to pay the resident fee until such time as she receives her undergraduate degree, provided there is not a break of longer than a semester in her education, and if her parents have been residents and tax payers of Texas for at least three years immediately prior to her marriage and continue to provide their daughter's tuition, fees, and other school expenses.*

**STUDENT EXPENSES**

7. Employees of Texas State institutions of higher learning or their dependents who have lived in Texas less than one year are eligible for resident classification under the same provisions that are made for military personnel in paragraph 2 of the preceding section. Applications must be made in the Office of the Registrar.

8. If the parents of a RESIDENT student under 21 years of age move out of the State, that student is classified as NON-RESIDENT for all subsequent semesters.

9. In the case of an alien who has applied for naturalization in the United States, the 12 months period required to establish residence begins with the date of acceptance of his petition for citizenship.

10. Every student classified as a non-resident student shall be considered to retain that status and shall be obligated for the payment of the non-resident tuition fee until such time as he shall have made written application for re-classification in the form prescribed by the University and shall have been officially re-classified in writing as a resident by the Registrar of the University.

11. If emancipation in the case of a minor is clearly proved, the residence classification of the minor will be determined by the statutory requirements applicable to those over 21 years of age.

12. It is the responsibility of the student to pay the correct fee at the beginning of each semester or term for which he may register.

**TUITION**

Under the authority of House Bill No. 265 enacted into law by the Fifty-fifth Legislature, the Board of Regents has fixed rates of tuition. These rates of tuition are subject to change by the Legislature of the State of Texas.

**Long Session (each semester)**

Semester Hours	Resident	Non-resident
12 or more	\$50.00	\$200.00
11	47.00	183.50
10	43.00	167.00
9	39.00	150.50
8	35.00	134.00
7	31.00	117.50
6	27.00	101.00
5	23.00	84.50
4	19.00	68.00
3 (or less)	15.00	51.50

**Summer Session (each term)**

Semester Hours	Resident	Non-resident
6 (or more)	\$25.00	\$101.00
5	23.00	84.50
4	19.00	68.00
3 (or less)	15.00	51.50

**Penalties for Payment of Wrong Fee**

The responsibility of registering under the proper residence is placed upon the student, and it is his duty, at or before registration, if there is any possible question of his right to legal residence in Texas under the State law and University rules, to raise the question with the Registrar and have such question settled prior to registration. There can be no change of residence except upon express authorization by the Registrar. Attempt on the part of a non-resident to evade the non-resident tuition fee will be taken seriously and may lead to expulsion.

Any student who wrongfully pays the Texas rather than the non-resident tuition fee is subject to a fine of ten (\$10.00) dollars for each such violation.

All questions relative to residency must be submitted to the Office of the Registrar.

**REFUND OF TUITION**

A refund of the tuition is made only to students withdrawing from school. In no case shall a refund of the tuition fee be made for dropped courses or for transfers to courses carrying a lesser number of credit hours, i.e., there shall be no refund of the tuition if the student remains enrolled in school. If the withdrawal is official and falls within the following time limit, a student will, upon presentation of his registration receipt at the Business Office showing payment of fees, receive a percentage refund as follows:

Before or during first week of class work .....	70%
During second week of class work ...	60%
During third week of class work .....	40%
During fourth week of class work .....	20%
During 5th week & thereafter	No Refund

In no case shall the total refund exceed 70% of the tuition.

There will be no refund made of course and/or laboratory fees after the student has met the course or laboratory session.

A refund will not be made to a student within 15 days after the beginning of

STUDENT EXPENSES

classes but, upon written request, a check covering all refunds due will be mailed to the address left with the Business Manager. The registration receipt must be presented when making a claim for a cash refund.

A student who enters the second semester, not knowing his first semester grades, and is required to withdraw because of failure in the work of the first semester will have all of his tuition for the second semester refunded.

No refund provided for above will be granted unless applied for within one year after official withdrawal.

**Exemption of Ex-Service Men**

Men and women who are classified as residents of Texas for educational purposes and who were so classifiable at time of entry into military service, and who served in the Armed Forces or in certain of the auxiliary services in World War I, World War II, the Korean conflict, and were honorably discharged therefrom (except those who were discharged because of being over the age of 38 or because of a personal request), and who are not eligible to receive educational benefits provided for veterans by the United States Government, are exempted from the payment of tuition and certain required academic fees but not from the payment of deposits. To obtain this exemption, the student must make application on the form prescribed by and obtained from the Business Manager. Certified or photostatic copies of the discharge certificate and service record must be attached to the application. Exemption from fees described above also extends to children of members of the Armed Forces who were killed in action or died while in the service during World War II or the Korean conflict.

Any student registering in an undergraduate division who, in the fall or spring semester, with proper permission, registers after the appointed days for registering in that semester, will be required to pay a special charge of five dollars (\$5.00) to defray the cost of the extra services required to effect his late registration.

Laboratory Fees	<i>per semester</i>
Art 3201, 3301, 3205, 3305, 3311, 3312, 3321, 3322 . . . . .	\$4.00
3202, 3302, 3203, 3303, 3204, 3304 . . . . .	8.00
3401 . . . . .	10.00
Biology 4101, 4102, 4110, 4202, 4203, 4301, 4327, 3401, 1415 . . . . .	2.00
2498, 6498 . . . . .	4.00

LAB FEES (continued)	<i>per semester</i>
Botany 4103, 3210, 3223, 3301, 3320, 4313 . . . . .	2.00
Microbiology 4201, 4202, 3223, 4302, 3334, 3424 . . . . .	2.00
4460 . . . . .	4.00
Zoology 4103, 3204, 3301, 3302, 3303, 3305, 4306, 3307, 4463 . . . . .	2.00
4304 . . . . .	4.00
5201 . . . . .	7.00
<b>Business Administration:</b>	
Accounting 3101, 3102 . . . . .	2.00
Business Area 3102, 3203 . . . . .	2.00
<b>Office Management &amp; Business Education</b>	
3101, 3102, 3103, 3104, 3301, 3302 . . . . .	2.00
Production Management 3304 . . . . .	2.00
<b>Statistics &amp; Quantitative Analysis</b>	
3201, 3301 . . . . .	2.00
<b>Chemistry</b>	
3101, 3102, 4106, 3330, 4450 . . . . .	2.00
3221, 3222, 4361, 2476, 6476, 4261 . . . . .	4.00
4260, 4322, 4360 . . . . .	5.00
4103, 4104, 4221, 2468 . . . . .	6.00
5213, 4470 . . . . .	8.00
<b>Engineering:</b>	
<b>Civil Engineering</b>	
4442, 4448, 4456 . . . . .	2.00
4470 . . . . .	6.00
<b>Electrical Engineering</b>	
4251, 4339, 4340, 4352, 4447, 4464, 4467, 4468, 4513 . . . . .	2.00
<b>Mechanical Engineering</b>	
3103, 3236, 4354, 4363, 3364, 4466, 4477, 3481, 3482, 3501, 4508 . . . . .	2.00
<b>Metallurgical Engineering</b>	
3101, 3102, 4302, 4403 . . . . .	2.00
4203, 3404, 4407, 4411, 4412, 4415 . . . . .	3.00
4501, 3502, 4503, 4506, 4507, 4509 . . . . .	6.00
<b>Geology</b>	
3210, 2215, 3305, 3320, 3323, 3324, 3325, 3330, 3450, 3455, 3460, 3461, 3463 . . . . .	2.00
4216, 4217, 4218, 4219, 3322, 3327, 3440 . . . . .	4.00
3103, 3104, 4101, 4102, 3205, 3405, 3410, 3575 . . . . .	5.00
<b>Physical Geography</b>	
3106, 4206, 4306, 4410 . . . . .	2.00
<b>Physical Education</b>	
1101, 1102 . . . . .	2.00
<b>Mass Communication</b>	
4207, 3308 . . . . .	5.00
<b>Mathematics</b>	
3324, 3429 . . . . .	8.00

STUDENT EXPENSES

LAB FEES (continued)	per semester
Music 2171, 2172, 2271, 2272, 2371, 2372 . . . . .	4.00
Piano Sight Reading 2373, 2374 . . . . .	2.00
Applied 2181, 2182, 2281, 2282, 2381, 2382, 2481, 2482, 2191, 2192, 2291, 2292, 2391, 2392, 2491, 2492 . . . . .	25.00
Applied 3181, 3182, 3281, 3282, 3191, 3192, 3291, 3292, 4191, 4192, 4291, 4292 . . . . .	45.00
3491, 3492, 3381, 3382, 3391, 3392, 3491, 3492, 4391, 4392, 4491, 4492, 3481, 3482 . . . . .	50.00
Physics 3101, 3102, 4103, 4104, 4107, 4108, 4115, 1216, 4217, 4320, 4321, 4324, 3330, 4339, 4340, 2343, 2344, 2446, 2447 . . . . .	2.00
Psychology 3103 . . . . .	2.00
3221, 3222, 3401 . . . . .	3.00
3523 . . . . .	5.00

**Transportation Fees**

Geology 6465 . . . Amount Determined  
by Location

**Miscellaneous Required Fees**

*The Union Fee* - Under the authority of Senate Bill No. 359, enacted into law by the 54th Legislature, the Board of Regents has authorized a Union Fee in the amount of \$7.00 for each semester of the Long Session and \$3.50 for each term of the Summer Session for the purpose of constructing, equipping and maintaining The Union. This fee is required of all students registering for course work on campus.

Refund of the fee will be made only under the same conditions as the Tuition.

*Special Examination* - A fee of \$1.00 is required of persons who wish to take an advanced standing examination, an examination to remove a condition, or an examination to be given at a time other than that for which it is regularly scheduled. Permission of the Dean must be secured before payment is made.

*Graduation* - A graduation fee of \$5.00 is required of candidates for graduation. A receipt showing payment of or exemption from this fee must be presented to the respective Dean at the time the degree application is filed. This fee must be paid each time an application for degree is filed and under no circumstances is subject to refund.

Veterans attending the University under an exemption as mentioned on page 217 are not exempt from payment of this fee.

*Student Services Fee* - Under the authority of legislation enacted by the 56th Legislature, the Board of Regents has authorized a Student Services Fee in the amount of \$26.00 for each semester of the Long Session and \$7.50 for each term of the Summer Session. This fee is required of every undergraduate student registering for twelve (12) or more semester hours during a long session semester or four (4) or more semester hours during a term of the Summer Session.

This fee is optional for graduate and part-time students. Activities to be supported from this source of income are the Health Service, Student Association, Intramurals, Intercollegiate Athletics, Student Publications, Swimming Pool, Band, Choir, Orchestra, Co-ed Association, Forensics, Associated Women Students, University Players, Marching Cavalcade, and Opera and Ballet.

Refund of the fee will be made only under the same conditions as the Tuition upon surrender to the Business Office of the Student Identification card, the Student Association Card, the Athletic Ticket Book, and such other activity tickets as might be issued.

*Parking Fee* - Action of the 58th Legislature prohibits the use of appropriated monies for the construction, maintenance or operation of any parking facilities and directs that such facilities are to be provided for from fees charged to those using such facilities. The Board of Regents has, therefore, approved a parking fee as follows for those students desiring to park cars on campus:

Fall Semester . . . . .	\$3.00
Spring Semester . . . . .	2.00
Summer Session . . . . .	1.00

*Note:* The fee is payable only once during the school year and is in effect from the date paid to the end of the school year in which paid. There will be no refund made of the Parking Fee.

**DEPOSITS**

General Property Deposit . . . . .	\$10.00
Military Property Deposit . . . . .	20.00
Dormitory Deposit . . . . .	25.00
Student Family Housing Deposit . . . . .	25.00

*General Property Deposit* - Every student must make a General Property Deposit of \$10.00. This deposit is subject to charges for violation of Library rules and for loss of or damage to University property. The student, upon notice from the Busi-

ness Manager, will be required to restore the deposit to the original amount any time it is reduced by fines or other charges. The payment must be made immediately upon request. Pending receipt of payment, no credit will be allowed on the work of that semester or term, and the student will be ineligible to re-enter the University.

General Property Deposits will be refunded only when a student ends his career at the University; Military Property Deposits will be refunded only when a student ends his military career at the University. No refund will be made to a student who plans to continue his education here, either at the close of the long session or summer term.

A property deposit which remains without call for refund for a period of four years from the date of last attendance at the University shall be forfeited and shall become operative to the permanent use and purpose of the Student Property Deposit account. Such funds will be invested and the income therefrom will be used for scholarship purposes and for the support of a general Student Union program. This policy applies to deposits heretofore paid as well as to those paid in the future.

*Military Property Deposit* — Students enrolling in Military Science courses are required to make a deposit of \$20.00. This deposit is subject to charges for military property lost, damaged, or destroyed, and is required to be restored to \$20.00 at the beginning of each year. If at the end of any semester the deposit is reduced because of charges to \$10.00 or less, it must be restored at that time to \$20.00. This deposit will be refunded upon successful completion of the R.O.T.C. course unless the student is released from his obligation under pertinent regulations prior to such successful completion.

*Warning:* Property issued to students enrolled in Military Science courses belongs to the United States Government. Every precaution must be taken to prevent loss or damage. All items must be accounted for at time of withdrawal or end of course.

Upon request of the Professor of Military Science, the University will withhold transcripts of grades and certificates of graduation from those students who, in the opinion of the Professor of Military Science, are improperly holding Government property.

## HOUSING

The University considers it a distinct advantage for all boarding students to live in the dormitories on the campus. Every

attention will be given for the improvement of the social and educational life of boarding students.

The University of Texas at El Paso considers student housing as an integral part of the total educational process. Every dormitory is supervised by a dormitory director, student counselors, and an elective council, each of which endeavors to provide opportunities for social, cultural and academic development of all residents. All housing (except financial and physical plant, matters) at The University of Texas at El Paso is administered by the Dean of Students who delegates supervision to his Assistant Deans of Students.

All single undergraduate students not living with their parents are required to live in the dormitories on the campus to the full capacity of the facilities. The University administers six dormitories. There is a centrally located cafeteria fully equipped with modern facilities for furnishing meals. This cafeteria is available to all students, both boarding students and students who live off campus.

### RESIDENCE HALLS

There are four men's residence halls on the campus. Miner's Hall houses 72 athletes. Worrell is a single room honor dormitory housing 30 men. Honor graduates of high schools and academic scholarship recipients are eligible to apply for residence in Worrell Hall (Honor Dorm). Hudspeth Hall houses 100 men, two to a room. Conveniences include a washbasin in each room, evaporative cooling, television and study lounges. Each room in each dormitory is equipped with a private telephone. Although no extra charge is made by the University for the telephone, students must pay the telephone company for all long distance calls made. Burges Hall was completed in 1963 and houses 180 men in double rooms. It has refrigerated air conditioning throughout.

There are two University owned and operated women's residence halls. Bell Hall houses 98 women in double rooms; Benedict Hall houses 17 women in single rooms. These are modern structures designed with consideration for the comfort and convenience of women residents.

### Reservations

As soon as a decision to attend The University of Texas at El Paso has been made, room reservations should be made by sending a deposit of \$25.00 to the Housing Office. Remittances must be in the form of a check, draft or money order and made payable to The University of

## STUDENT EXPENSES

Texas at El Paso. The \$25.00 deposit places the applicant's name on the waiting list for the session indicated, but does not assure a room reservation. It is further required that a student complete an Application and Contract Form for The University of Texas at El Paso residence halls.

The Dormitory Deposit will be refunded, upon written request, at the close of the semester provided the student does not withdraw from the dormitory before that time and provided there is not a deduction for breakage, lost keys or other lost or damaged items. The Dormitory Deposit will be refunded to those students who cannot be accommodated or to those who cancel their reservations prior to August 15 for the Fall Semester or December 15 for the Spring Semester. Students are advised of their room assignments after June 1 for the Fall Semester and after December 1 for the Spring Semester.

### Charges

Charges for room and board per person are \$375.00 per semester in Bell Hall (women) and Hudspeth Hall (men). Room and board charges per person in Benedict Hall (women), Worrell Hall (men), which provide single rooms for

students, and Burges Hall (air-conditioned men's dormitory), are \$407.00 per semester. The entire amount of room and board charges may be paid upon entering the dormitory or the student may pay four installments upon entering the dormitory and the balance in three payments which shall be due on or before such dates as will be announced.

### STUDENT FAMILY HOUSING

U.T. El Paso Village located on Oregon and Robinson Sts. on The University of Texas at El Paso Campus is a project of 60 family apartments. Each unit has upstairs and downstairs apartments and each apartment has two bedrooms, a living-dining room and a kitchen. The project was completed in 1963 and each apartment is air-conditioned. The apartments are unfurnished except that a stove and refrigerator are provided.

To be eligible for Student Family Housing, the husband must be a full-time student. To apply for Student Family Housing, send a \$25.00 Housing Deposit to the Housing Office and complete a Student Family Housing Application Form. Units rent for \$85.00 per month.



# REGULATIONS AFFECTING STUDENT LIFE

## CONDUCT

The University of Texas at El Paso is a community of scholars whose members include faculty, students, and administrators. The University is dedicated to the development of ethically sensitive and morally responsible persons as well as the enlargement, dissemination, and application of knowledge. It seeks to achieve these goals by both formal and informal teaching, through research, and by creating an environment conducive to learning.

In establishing policies to govern student conduct, the University strives to achieve a balance between individual independence and the essential social control. In the matter of regulating student conduct, the aim is to encourage independence, self-direction, and maturity.

### General Regulations

1. University students are expected to maintain a high standard of individual honor in their scholastic work. The attempt of any student to present as his own the work of another, or any work which he has not honestly performed, or to pass any examination by improper means, is a most serious offense and renders the offender liable to immediate suspension. The aiding and abetting of a student in any dishonesty is held to be an equally serious offense.
2. Through matriculation at the University, a student neither loses the rights nor escapes the responsibility of citizenship. All students are expected and required to obey the law, to show respect for properly constituted authority, and to observe correct standards of conduct.
3. Illegal conduct (including the illegal possession or use of drugs or narcotics), improper use of alcoholic beverages, dishonesty, gambling, and failure to respond promptly to official notices may subject the student to disciplinary action.
4. The use of intoxicants by minors in a public place is a violation of state law. The possession and/or consumption of intoxicating beverages on University property, in residence halls, or chapter houses is prohibited. The possession or consumption of any intoxicating beverage by a student at an off-campus function of a University-approved organization is discouraged, and improper conduct resulting from such indulgence makes the student subject to disciplinary action by the University.

5. The unauthorized possession or use on University property of chemicals dangerous or destructive to self, to others, or to University property is prohibited and may subject the student to disciplinary action.

6. Hazing in state educational institutions is prohibited by state law.

7. Any student who advocates or recommends, either orally or in writing, the conscious and deliberate violation of any federal, state or local law is subject to discipline.

### Penalties

The following penalties may be imposed: admonition, warning, conduct probation, disciplinary probation, suspension, or expulsion. In addition, certain privileges may be withdrawn consistent with the severity of the offense and the rehabilitation of the student.

### Suspension from the University

A student suspended from the University shall remain off the campus of the University during the entire period of his suspension, except when summoned by an administrative official of the University, or when an appointment with an official has been previously arranged. A student while under suspension may not room or board in a University dormitory nor frequent a fraternity or sorority lodge. He may not be initiated into an honorary or social organization. A student under suspension may not receive credit at The University of Texas at El Paso for college work done, by correspondence or in residence, at either this or any other institution during the period of suspension, except when allowed by the Discipline Committee.

### Expulsion from the University

A sentence of expulsion means permanent severance from the University. A sentence of expulsion shall be reviewed by the administrative officers, who, when in doubt about its propriety, shall return the case to the Committee with the reason for so doing.

These penalties may be imposed singly or in any combination upon individuals, or groups, or organizations.

### Debts

The University is not responsible for debts contracted by individual students or by student organizations.

The University expects all students and student organizations to conduct themselves honorably in all commercial transactions. The University will not assume the role of a collection agency for organizations, firms and individuals to whom students may owe bills, nor will the University adjudicate disputes between students and creditors over the existence or the amounts of debts.

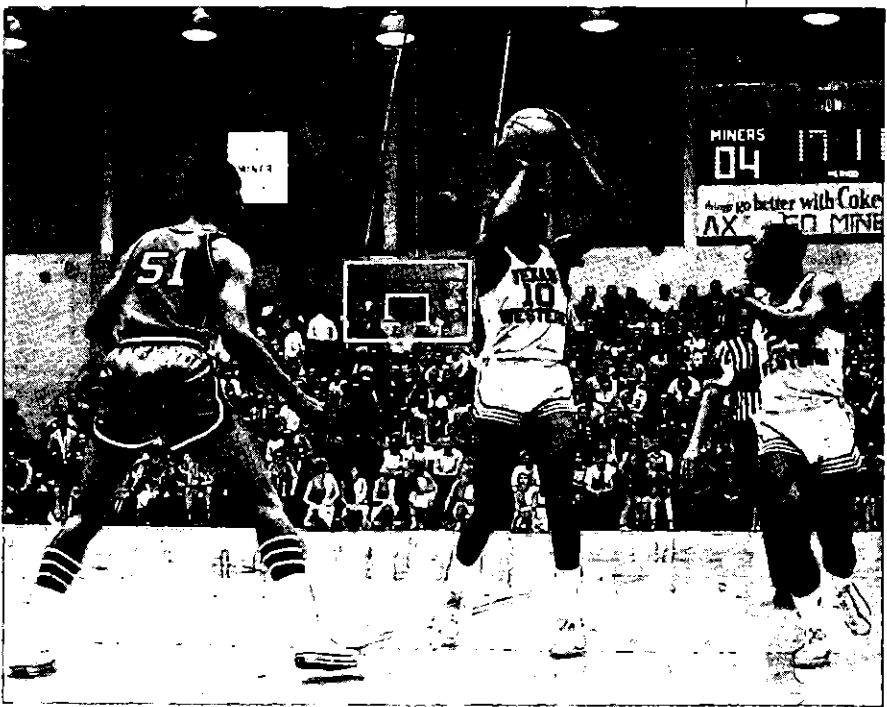
A student, however, is expected to perform his contractual obligations, and in the event of conduct on the part of the student clearly demonstrating a flagrant disregard of his commercial obligations, disciplinary action may be taken against the student that is appropriate to the circumstances.

### Debts Owed the University

In the event of nonpayment of debts owed to the University, one or more of the following actions may be taken: (a) a bar against readmission for the student, (b) withholding of the student's grades and official transcript, (c) withholding of a degree to which the student otherwise would be entitled.

### Bad Checks

A student who gives the University a bad check, the fault not being that of the bank, or who does not make it good within five days will be dropped.







## Selecting Courses

Although every effort is made to advise students, the final selection of courses is the responsibility of the individual student. All required freshman numbered courses in the student's curriculum must be completed by the time the student reaches senior classification; otherwise, no credit will be granted toward fulfilling degree requirements for the courses even though the courses must be completed. This loss of credit penalty may be waived by the appropriate academic dean upon the affirmative recommendation of the head of the student's major department. Inter-collegiate as well as intra-collegiate transfer students who lack required freshman numbered courses must register for one or more such courses each semester until all requirements have been completed. Transfer students with senior classification will receive credit for required freshman numbered courses provided the conditions as stated above are fulfilled.

## Adding Courses

A course may be added within the stipulated time limit by (a) authorization of the Academic Dean, (b) validation by the Business Office, and (c) filing with the Registrar.

## Change of Major

A student who wishes to change his major must obtain the signatures of the Department Heads losing and gaining him and the change form must be filed with the appropriate Academic Dean.

## Changing Courses

A course may be changed within the stipulated time limit by (a) authorization of the Dean, (b) validation by the Business Office, and (c) filing with the Registrar.

## Changing Sections

Once a student has registered for a given section of a course, the section may not be changed at the request of the student until after the close of the regular registration period. Instructors may change students from one section to another at any time for the purpose of balancing enrollments in sections, correcting scheduling errors, and for any other necessary purpose. Changing the section of a course requires (a) authorization by the head of the department concerned, (b) permission of the Academic Dean, (c) validation by

the Business Office, and (d) filing the change with the Registrar.

## Dropping Courses

A course may be dropped by (a) authorization of the Dean and (b) filing with the Registrar. The grade to be given by the instructor will be *W* or *F* depending upon the student's standing in the course at the time.

A student may withdraw from a course until two weeks after mid-semester of a regular session or at the end of the fourth week of a summer term. After these dates, withdrawal is not normally permitted. Under unusual circumstances permission to withdraw may be granted by the student's Academic Dean. The permission to withdraw will be transmitted to the instructor who will assign a grade of *W* or *F*.

On the recommendation of the instructor concerned, approved by his Dean, a student may at any time be required to drop a course because of neglect, excessive absence, or lack of effort. In such case the grade is entered on the student's record as *F*.

## Late Registration

Any student registering in an undergraduate division who, in the fall or spring semester, with proper permission, registers after the appointed days for registering in that semester, will be required to pay a special charge of five dollars (\$5.00) to defray the cost of the extra services required to effect his late registration.

Each class missed because of late registration will be counted as an absence, and classroom and laboratory work missed will be counted as zero unless the individual instructor grants the student permission to make up the work.

## Absences from Classes

(a) Uniform and punctual attendance upon all exercises at which the student is due is strictly required. Absences will be considered as non-performance of work.

(b) A student has no right to be absent from any exercise in a course in which he is registered, except (1) for serious illness, or (2) by action of University rule, or (3) for other unavoidable circumstances. Absences caused by serious sickness or other unavoidable circumstances, in case the work missed has been done to the satisfaction of the instructor, shall not count toward dropping a student from a course.

(c) When, in the judgment of the instructor, a student has been absent to such a degree as to impair his status relative to credit for the course, the instructor shall report the absences and the student to his Dean; and, upon recommendation from the instructor, the Dean may drop the student from the course.

(d) Absences incurred by a student prior to his registration are not to be charged against said student, provided the work missed because of late registration is made up satisfactorily by the mid-semester report date.

(e) It is the responsibility of the student to inform his Academic Dean and each instructor by telephone or any other means when absent over an extended period of time due to illness or any other valid reason. Otherwise the student may be dropped for non-attendance.

#### **Absence from Tests**

A student absent from a test during the semester is graded zero on that test, unless for urgent reason he is given by the instructor the privilege of taking a postponed test at a time to be set by the instructor.

#### **Tardiness**

Repeated tardiness will be considered as equivalent to absence from class, and reported as such.

#### **Amount of Work**

In no case may a student register for more than twenty-one semester hours in a fall or spring semester.

Seven semester hours is the maximum load for which a student may register in a summer term without written permission from his Dean.

A student may not register for more than seven semester hours in classes scheduled during the evening hours without the written permission of his Dean.

*Engineering Students*—Beginning freshmen may not register for more than seventeen semester hours except with permission of the Dean. Sophomores, juniors and seniors may not register for more than nineteen semester credit hours except with permission of the Dean of Engineering.

*Other Undergraduate Students* — Beginning freshmen may not register for more than sixteen semester hours except with permission of the Dean.

Other students, with permission of the Dean, may register for more than nine-

teen semester hours if the grade point average is at least 3.0 in a minimum of twelve semester credit hours for the preceding semester. A full summer session may be counted as a semester.

In no case may a student register for a total of more than 15 semester credit hours in a full summer session. With the written permission of the Dean, a student may register for 9 semester credit hours in a single summer term if he has completed or agrees to register for six hours in the other term of the summer session of the same year and if he presents his official degree plan showing that he would thereby be able to complete all courses required for graduation at the end of the summer session. The Dean may at his discretion waive this rule in the case of a student who has completed 60 semester hours or more with a cumulative grade point average of 3.5 or higher.

#### **Official Notices**

Official notices are posted on bulletin boards, published in the Prospector, read to classes and sent to students individually. Students are held responsible for knowledge of and compliance with such notices.

## *Classification*

*Regular Students* — Those who are registered for twelve or more credit hours.

*Irregular Students* — Those who are registered for less than twelve credit hours.

*Freshman Students* — Those having less than thirty hours of credit.

*Sophomore Students*—Those having thirty or more, but less than sixty semester hours.

*Junior Students* — Those having sixty or more, but less than ninety semester hours.

*Senior Students* — Those having ninety or more semester hours and until graduation.

## *Examinations*

*General Regulations* — All of the written work handed in by students is considered to be their own product, prepared without unauthorized assistance. Students are invited to co-operate with their instructors in maintaining the integrity of examinations and are strongly urged to inform

them, without specifying the offenders, if cheating goes on in their classes.

Students are expected (a) to remain in the examination room during the examination or quiz period; (b) to refrain from talking or smoking; and (c) to leave all notes and books where they will not be accessible during the examination or quiz, unless otherwise directed by the instructor.

### Final Examinations

The Faculty has ruled that exemption from examinations may not be given.

In all examinations, account is taken of the student's use of English and of the form of the paper in general, the grade being lowered because of deficiencies in these regards as well as in the subject-matter proper.

Examinations are three hours in length and at the end of three hours all papers are taken up. It is not the policy of the University to administer a second final examination in a course.

A student absent from a final examination without an excuse from the Dean is graded *F* and required to repeat the semester's work if credit is desired for the course. However, if compelled to be absent from the final examination on account of illness or other imperative cause, the student is entitled to take a postponed examination. (See Postponed Final Examinations.)

### Postponed Final Examinations

Postponement of the final examination is subject to the following conditions:

1. Only in case of absence due to illness or other imperative and unavoidable cause.
2. Permission to be obtained from the Dean, validated by the Business Office for a fee of one dollar, and filed with the Registrar at least four days before the date of the examination.
3. Must be taken within a year from the date from which the examination was postponed.
4. Must be taken at a date fixed by the Calendar or at a regular final examination in the course, such time to be determined by the Dean.
5. The grade during the period of postponement to be *X*.
6. Absence from a postponed examination, after a permit has been granted, gives a grade of *F* in the course.
7. The Registrar supervises the examination.

### Proficiency Examinations

These are examinations for credit and are subject to the following conditions:

1. Permission to be obtained from the head of the department and the Academic Dean and validated by the Business Office for a fee of one dollar, and filed with the Registrar at least four days before the date of the examination.
2. Must be taken at a date fixed by the Calendar.
3. May not be taken to satisfy any part of the last 30 semester credit hours required for graduation.
4. Will be searching in character, strictly graded, and four hours in length.
5. The passing grade is "B".
6. Absence from the examination, after a permit has been granted, gives a grade of *F*.
7. No student is eligible who has registered for or has been given a grade in the course.
8. The Registrar supervises the examination.
9. Student must currently or previously be registered in the University.
10. Credit thus earned is applicable toward a degree from this University only.
11. In some instances, credit is granted on the basis of Advanced Placement Tests given by the College Entrance Examination Board. Further information may be obtained from the appropriate Academic Department Head.

## Scholarship

### Grades and Grade Points

The grades used are: *A* (excellent), *B* (good), *C* (average), *D* (inferior but passing), *F* (failure), *W* (withdrawal from the course with a passing grade), *P* (in Progress), *I* (incomplete), and *X* (postponed final examination).

Students who officially withdraw from the University during the semester will receive, grades of *W* in courses which they are passing and *F* in courses which they are failing.

A grade of *A* will be rated as four points per semester hour, a grade of *B* as three points per semester hour, a grade of *C* as two points per semester hour, and *D* as one point per semester hour.

The grade point average is determined

by multiplying the number of semester hours of *A* grades by four, the hours of *B* by three, the hours of *C* by two, and the hours of *D* by one. The total of these values is then divided by the sum of the semester hours of *A*, *B*, *C*, *D*, *F*.

#### Higher Work after Failure

If a student makes an *F* in a course, he may not take up a more advanced course in the same subject until the course is taken again and satisfactorily completed.

#### Incomplete Work

Grades for work not completed may be obtained by two distinct and separate methods:

1. At the end of any semester a student may be given a grade of *X* if he unavoidably is absent from the final examination in a course, and such absence is approved by the respective Dean. This procedure obligates the student to take a Postponed Examination in the course as a part of the removal-of-*X* grade.

2. At the end of the semester a grade of *Incomplete* may be given in exceptional circumstances and with the permission of the instructor and the proper Dean. When the grade of *Incomplete* is given at the end of the first semester, the work missed must be completed before grades are reported at the end of the second semester. If the *Incomplete* is given at the end of the second semester or at the end of either term of the Summer Session, it must be removed before grades are recorded for the fall semester following.

Unless the Postponed Examination is completed within one calendar year the *X* grade will become an *F*.

#### Repetition of Course

If a student repeats a course, the official grade is the last one made; however, the student's cumulative grade point average is determined, for any official purpose, by dividing the total grade points earned by the total number of hours attempted in this University.

#### Honor List

At the close of each semester the Registrar's Office will issue an honor list which will include the names of all students who, during the semester, have been registered for not less than fifteen hours of work and who have a grade point average of at least 3.2 without any grades of *X*, *I*, or *F*.

(If a *X* or *I* is removed within two weeks after the end of the semester the last grade earned will be considered.)

In publishing the honor list the Schools of Business, Education, Engineering, Liberal Arts, and Sciences will be listed separately.

Students whose grades are all *A* will be given special mention.

#### Semester Reports

Grade reports are mailed to parents and guardians at the end of each semester. Grade reports are also made on freshmen and all students on scholastic probation in November and March. The latter do not become an official part of the student's record, but merely serve to inform the student and the parents of student's progress during the course of the semester. Students may receive copies of all grade reports at the Office of the Registrar.

Self-supporting students over 21 years of age, if they request it of the Registrar in writing, may have their grade reports sent to them instead of their parents.

#### Required Minimum

### Academic Performance

#### Students' Responsibility

Each student is held responsible for knowing his academic status and for knowing whether he is eligible to re-enroll in the University. If it is determined that an ineligible student has enrolled, he will be dropped immediately.

#### Minimum Requirements

For students who have registered for less than 25 hours in any college or university, the minimum grade point average requirement is 1.50 in each semester or summer session. A student who receives any grade other than *W* in a course is deemed to have registered for the course. Beginning with the semester in which the student has attempted 24 or more semester hours and for each semester or summer session thereafter, the minimum grade point average requirement is 2.00 for work attempted. A student is on Scholastic Probation at the end of the semester or summer session in which his grade point average falls below the applicable minimum.

#### Scholastic Probation

A student on Scholastic Probation who withdraws with grades of "*W*" in all

courses will be continued on Scholastic Probation for the next semester or summer session of attendance.

*Scholastic Probation shall mean that a student may not:*

- a. Register for more than sixteen hours except by written permission of his Academic Dean.
- b. Be absent from classes, except under extenuating circumstances, without being dropped from the rolls of the University by the Registrar at the request of his Academic Dean.

#### Removal of Scholastic Probation

A full-time student must take 12 or more hours to remove Scholastic Probation with all hours attempted counting in the average. A part-time student must accumulate at least the same number of hours as he was taking when he incurred Scholastic Probation. In either case, the requirements outlined under Minimum Academic Performance must be met or the student will be dropped under Enforced Academic Withdrawal.

#### Enforced Academic Withdrawal

A student shall be dropped:

1. When he fails to meet minimum requirements in his next period of attendance after being on scholastic probation or suspension.
2. When he does not pass any of his work in a semester or summer session.
3. A student enrolled for only one course will not be dropped when his grade is below the *minimum* requirement. However, the student must have his Academic Dean's approval to enroll in a subsequent semester or summer term.

A student ineligible for registration because of academic failure may submit a petition to his Dean for re-instatement. The petition must be in the form of a letter and must be accompanied by a

transcript of the students' academic record. Each such application will be considered on its merits. A student so re-instated will be on such terms of Scholastic Probation as the Dean may require.

#### Readmission of Students Dropped for Scholastic Reasons

A student who has been dropped for reasons stated under Enforced Academic Withdrawal is eligible for readmission on Scholastic Probation after the following *time intervals* have elapsed:

1. Dropped for the 1st time: (a) Failure at end of the fall semester—the succeeding spring semester. (b) Failure at the end of the spring semester — the succeeding summer session and the fall semester. (c) Failure at the end of the summer session — the succeeding fall semester.
2. Dropped for the 2nd time: One calendar year.
3. Dropped for the 3rd time: Ineligible for readmission. Exceptions may be made after two calendar years when the President's Academic Council considers the circumstances to be extenuating. Petition for consideration on this basis must be filed with the Registrar one calendar month before the first day of registration of the semester or term in which readmission is sought.

#### Official Withdrawal

A student may withdraw from the University with the consent of his Dean and clearance of all financial obligations with the Business Office.

#### Unofficial Withdrawal

Withdrawal from the University without consent of the student's Dean constitutes an unofficial withdrawal. In such cases the student will receive a grade of *F* in each course for which he was registered. Students who withdraw unofficially must comply with the regulations listed under Readmission.

## Statistical Summaries

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### S T U D E N T S

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ENGINEERING:	LONG SESSION, 1966-67		
	Men	Women	Total
Seniors . . . . .	136	1	137
Juniors . . . . .	109	2	111
Sophomores . . . . .	162	2	164
Freshmen . . . . .	464	5	469
TOTAL . . . . .	871	10	881

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#### BUSINESS, EDUCATION, LIBERAL ARTS, SCIENCES, AND GRADUATE STUDY

Postgraduates . . . . .	851	580	1431
Seniors . . . . .	600	462	1062
Juniors . . . . .	740	574	1314
Sophomores . . . . .	906	763	1669
Freshmen . . . . .	2115	1674	3789
TOTAL . . . . .	5212	4053	9265

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<i>Total Individual Students</i> . . . . .	6083	4063	10146
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	SUMMER SESSION, 1967		
	Men	Women	Total
Students registered in the first term . . . . .	2412	2133	4545
Students registered in the second term . . . . .	2292	1922	4214
TOTAL . . . . .	4704	4055	8759
<i>Total Individual Students in Summer Session</i> . . . . .	3152	2858	6010

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## DEGREES CONFERRED

	CONFERRED IN 1966			CONFERRED IN 1967			TOTAL
	Men	Women	Both	Men	Women	Both	CONFERRED 1916 - 1967
<b>ENGINEERING:</b>							
Engineer of Mines . . . . .	---	---	---	---	---	---	49
Bachelor of Science in Mining Engineering . . . . .	4	---	4	---	---	---	396
Bachelor of Science in Engineering:							
Civil . . . . .	---	---	---	---	---	---	120
Electrical . . . . .	---	---	---	---	---	---	147
Bachelor of Science in Civil Engineering . . . . .	11	---	11	15	---	15	122
Bachelor of Science in Electrical Engineering . . . . .	33	---	33	21	---	21	239
Bachelor of Science in Mechanical Engineering . . . . .	17	---	17	16	---	16	72
Bachelor of Science in Metallurgical Engineering . . . . .	15	---	15	20	---	20	105
	80	---	80	72	---	72	1250
<b>ARTS and SCIENCE:</b>							
Bachelor of Arts . . . . .	143	129	272	140	121	261	4849
Bachelor of Science in the Sciences . . . . .	71	16	87	77	14	91	1113
Bachelor of Business Administration . . . . .	101	24	125	72	11	83	1438
Bachelor of Music . . . . .	5	3	8	6	9	15	198
Bachelor of Science in Education . . . . .	45	163	208	41	158	199	1153
	365	335	700	336	313	649	8751
<b>GRADUATES:</b>							
Master of Arts . . . . .	12	12	24	19	16	35	899
Master of Education . . . . .	34	22	56	63	52	115	384
Master of Science . . . . .	9	---	9	8	---	8	21
	55	34	89	90	65	158	1304
<b>TOTAL DEGREES CONFERRED . . . . .</b>							<b>11,305</b>



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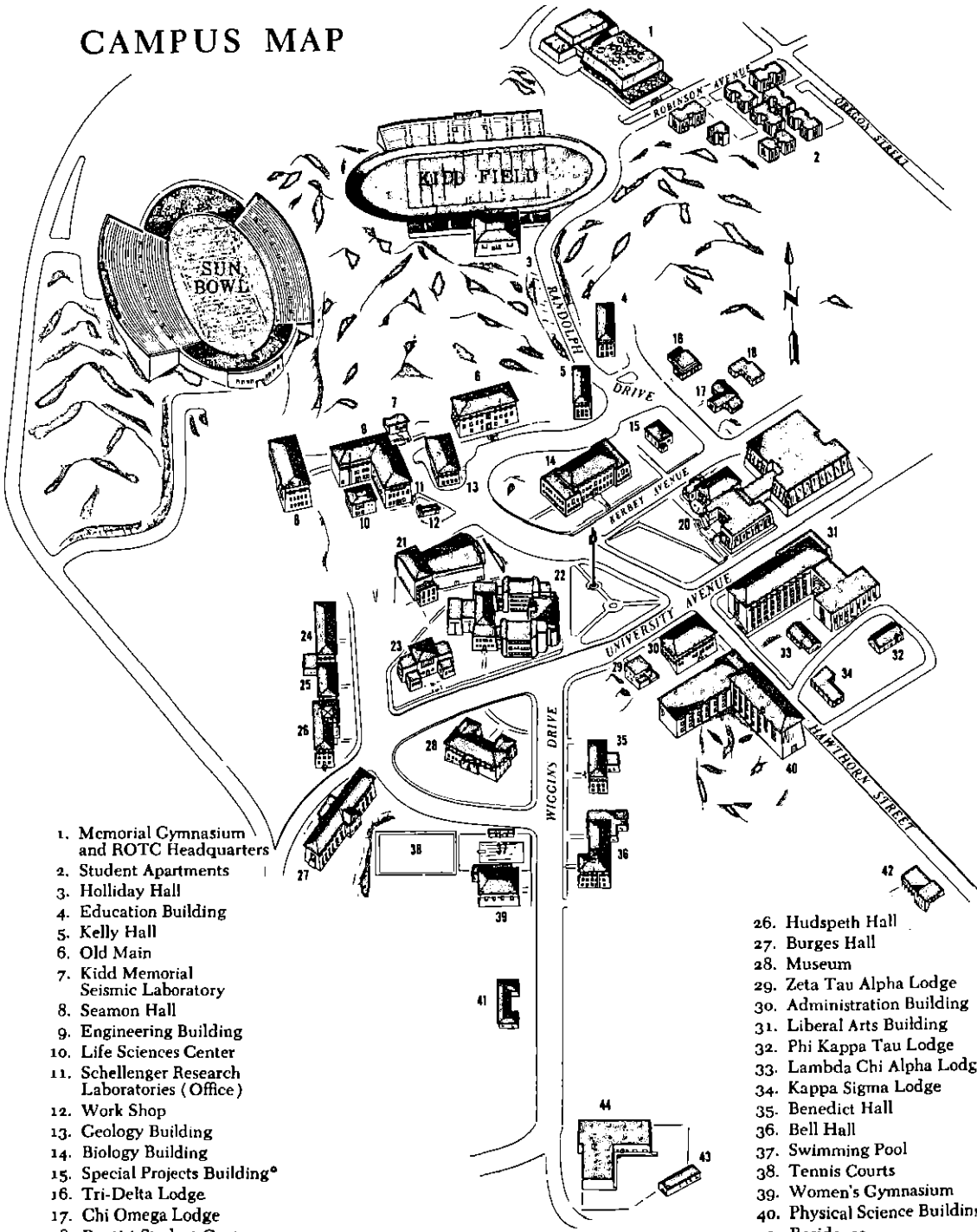


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1. Memorial Gymnasium and ROTC Headquarters
2. Student Apartments
3. Holiday Hall
4. Education Building
5. Kelly Hall
6. Old Main
7. Kidd Memorial Seismic Laboratory
8. Seamon Hall
9. Engineering Building
10. Life Sciences Center
11. Schellenger Research Laboratories (Office)
12. Work Shop
13. Geology Building
14. Biology Building
15. Special Projects Building\*
16. Tri-Delta Lodge
17. Chi Omega Lodge
18. Baptist Student Center
20. The Union
21. Magoffin Auditorium
22. Library
23. Cotton Memorial
24. Miners Hall
25. Worrell Hall

26. Hudspeth Hall
27. Burges Hall
28. Museum
29. Zeta Tau Alpha Lodge
30. Administration Building
31. Liberal Arts Building
32. Phi Kappa Tau Lodge
33. Lambda Chi Alpha Lodge
34. Kappa Sigma Lodge
35. Benedict Hall
36. Bell Hall
37. Swimming Pool
38. Tennis Courts
39. Women's Gymnasium
40. Physical Science Building
41. Residence
42. Methodist Student Center
43. Optical and Mechanical Test Center\*
44. Warehouse and Shops

\*Schellenger Research Laboratories

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