

BULLETIN

Texas Western College

OF THE UNIVERSITY OF TEXAS

El Paso, Texas

1964-1965

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Campus Map

BULLETIN

Texas Western College

OF THE UNIVERSITY OF TEXAS

El Paso, Texas

MEMBER

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS

TEXAS ASSOCIATION OF COLLEGES

TEXAS ASSOCIATION OF GRADUATE SCHOOLS

ARTS *and* SCIENCES

ENGINEERING

GRADUATE STUDY

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SEPTEMBER - OCTOBER, 1964

Number 6405

Second Class Postage Paid at El Paso, Texas

CALENDAR FOR FALL SEMESTER — 1964

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				1	2	3	1	2	3	4	5	6	7			1	2	3	4	5	
6	7	8	9	10	11	12	4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	16	17	18	19
20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
27	28	29	30				25	26	27	28	29	30	31	29	30						27	28	29	30	31		

SEPTEMBER

- 14—*Monday*. General Faculty meeting — Magoffin Auditorium.
- 14—*Monday*. Freshman Orientation and Guidance Activities.
All entering Freshmen must attend.
- 14-19—*Monday - Saturday*. Registration Activities.
- 15—*Tuesday*. Condition, proficiency and postponed examinations.
- 19—*Saturday*, 8:30-11:30 a.m. Late registration.
Registration closes for the fall semester. After this date a student must have permission of his Academic Dean to register.
- 21—*Monday*. Classes begin.
- 24—*Thursday*. Last day for adding courses and transferring sections.

NOVEMBER

- 7—*Saturday*. Homecoming — Classes dismissed.
- 18—*Wednesday*. Mid-semester reports.
Last day courses can be dropped without grade of WF unless drop is initiated by student's Academic Dean. Senior information forms due in Academic Dean's office.
- 26-28—*Thursday through Saturday inclusive*. Thanksgiving Holidays.

DECEMBER

- 21 - Jan. 2—*Monday through Saturday inclusive* — Christmas Vacation.

JANUARY

— 1965 —

- 4—*Monday*. Classes resume.
- 15-22—*Friday - Friday*. Final examinations for first semester.
- 25—*Monday*. Freshman Orientation and Guidance Activities.
All entering Freshmen must attend.
- 25-30—*Monday through Saturday*. Registration Activities.
- 26—*Tuesday*. Condition, proficiency and postponed examinations.

CALENDAR FOR SPRING SEMESTER — 1965

JANUARY (continued)

30—*Saturday*, 8:30-11:30 a.m. Late registration.

Registration closes for the spring semester. After this date a student must have permission of his Academic Dean to register.

FEBRUARY

1—*Monday*. Classes begin.

4—*Thursday*. Last day for adding courses or transferring sections.

MARCH

30—*Tuesday*. Mid-semester reports.

Last day courses can be dropped without grade of WF unless drop is initiated by student's Academic Dean. Senior information forms due in Academic Dean's office.

APRIL

14-19—*Wednesday through Monday inclusive*. Spring vacation.

MAY

19-26—*Wednesday through Wednesday*. Final examinations.

29—*Saturday*. Commencement.

SUMMER SCHOOL

JUNE 1 - JULY 9 — First Six Weeks.

JULY 12 - AUGUST 20 — Second Six Weeks.

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	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13	4	5	6	7	8	9	10
10	11	12	13	14	15	16	14	15	16	17	18	19	20	14	15	16	17	18	19	20	11	12	13	14	15	16	17
17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27	18	19	20	21	22	23	24
24	25	26	27	28	29	30	28							28	29	30	31				25	26	27	28	29	30	
31																											
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	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10	1	2	3	4	5	6	7
9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17	15	16	17	18	19	20	21
16	17	18	19	20	21	22	20	21	22	23	24	25	26	18	19	20	21	22	23	24	22	23	24	25	26	27	28
23	24	25	26	27	28	29	27	28	29	30				25	26	27	28	29	30	31	29	30	31				
30	31																										

Board of Regents of The University of Texas

W. W. HEATH, *Chairman*
A. G. MCNEESE, JR., *Vice Chairman*
BETTY ANNE THEDFORD, *Secretary*

M E M B E R S

Terms Expire January 1965

W. W. HEATH, Austin
WALES H. MADDEN, JR., Amarillo
A. G. MCNEESE, JR., Houston

Terms Expire January 1967

DR. H. FRANK CONNALLY, JR., Waco
WALTER P. BRENNAN, San Antonio
JOHN S. REDDITT, Lufkin

Terms Expire January 1969

FRANK C. ERWIN, JR., Austin
MRS. J. LEE JOHNSON, III, Fort Worth
RABBI LEVI A. OLAN, Dallas

Chancellor of The University of Texas

HARRY H. RANSOM, PH.D.

T E X A S W E S T E R N C O L L E G E

OFFICERS OF ADMINISTRATION

GENERAL

- JOSEPH MALCHUS RAY, *President*, 1960
B.A., M.A., Ph.D., The University of Texas
- ROBERT MILTON LEECH, *Assistant to the President*, 1949
B.F.A., M.F.A., Ph.D., The University of Texas
- CLYDE EASTMAN KELSEY, JR., *Dean of Students*, 1947
B.A., Texas Western College; M.A., University of Tulsa;
Ph.D., University of Denver
- HALBERT GARVICE ST. CLAIR, *Business Manager*, 1960
B.B.A., The University of Texas. Certified Public Accountant
- JOSEPH McSWAIN WHITAKER, *Registrar and Director of Admissions*, 1954
B.A., Agricultural and Mechanical College of Texas;
M.A., Texas Western College
- BAXTER POLK, *Librarian*, 1936
B.A., Hardin-Simmons University; B.S. (Library Science), 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
- BRYAN STEELE JONES, *Director of Development, News and Information*, 1956
B.A., University of Arkansas

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
- RAY SMALL, *Dean of the School of Arts and Sciences*, 1961
B.A., West Texas State College; M.A., Ph.D., The University of Texas
- CHARLES LELAND SONNICHSEN, *Dean of the Graduate Division*, 1931
B.A., University of Minnesota; M.A., Ph.D., Harvard University

Date indicates year of original appointment.

OTHER ADMINISTRATIVE OFFICERS

- MRS. LOUISE FLETCHER RESLEY, *Dean of Woman*, 1940
B.A., Texas Western College; M.A., The University of Texas
- JIMMY REEVES WALKER, *Dean of Men*, 1958
B.A., M.A., Texas Western College
- RICHARD WEBSTER BURNS, *Director of Institutional Research*, 1952
B.A., Iowa State Teachers College; M.S., Ph.D., State University of Iowa
- JAMES ANDREW CAVALLERT, *Director of Placement and Classified Personnel*, 1960
B.A., Southern Methodist University
- REX ERVIN GERALD, *Curator of Museum*, 1958 (on leave)
B.A., University of Arizona; M.A., University of Pennsylvania
- CARL HERTZOG, *Director of the Press*, 1948
- MARVIN R. HOLLENSHEAD, *Director of Physical Plant*, 1960
B.A., Trinity University; M.A., The University of Texas
- EDDIE L. MULLENS, *Sports Information Director*, 1962
- JOHN MARVIN RICHARDS, *Director of Business and Economics Research*, 1962
B.A., University of Kansas; M.S., Emporia State College;
Ph.D., Louisiana State University
- JOE G. STEWART, *Student Activities Director and Director of Intramurals*, 1962
B.S., New Mexico State University
- RANDOLPH HOWARD WHITWORTH, *Director of Counseling Service*, 1960
B.S., Ph.D., The University of Texas
- LUVENIA EVERETT ARNOLD, *Assistant Registrar*, 1940
B.A., Texas Western College
- RICHARD E. CANFIELD, *Auditor*, 1960
B.S., Centenary College
- BILL J. CROSS, *Assistant Athletics Director*, 1962
B.S., West Texas State College
- J. ED DAVIS, JR., *Manager, Printing Department*, 1955
- HARRY E. GERECKE, JR., *Assistant Business Manager*, 1961
Ph.B., St. Edwards University
- LEONARD K. HAMILTON, *Purchasing Agent*, 1961
B.S., Stephen F. Austin College
- JOHN D. JONES, *Manager, Bookstore*, 1961
- JAMES T. LINDOP, *Assistant Director of Admissions*, 1963
B.A., Texas Western College
- MILDRED D. TOROK, *Administrative Secretary to the President*, 1954
- JAMES W. WHITELAW, *Assistant Director, News and Information*, 1962
B.S., University of Illinois

RESIDENCE HALLS

- MRS. OLIVE CARPENTER, *Director, Burges Hall*
- MRS. LYDIA GREULING, *Director, Hudspeth Hall*
- MRS. AVIS M. HILL, *Director, Benedict Hall*
- MR. DEAN O. SLAYTON, *Director, Miners Hall*
- MRS. MAY STUART, *Director, Worrell Hall*
- MRS. CECILE WALLER, *Director, Bell Hall*
- MRS. MARIAN WILLEY, *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
- MRS. PATRICIA GUYNES ADKINS, *Instructor in Drama and Speech*, 1960
B.A., Texas Western College; M.A., Texas Women's University
- SOM PRAKASH AGARWAL, *Associate Professor of Physics*, 1962
B.S., Agra University (India); M.S., Muslim University (India);
Ph.D., Temple University
- MRS. MARY LOUISE ZANDER AHO, *Assistant Professor of Education*, 1963
B.S.E., University of Florida; M.A., Texas Western College
- HAROLD EDWIN ALEXANDER, *Professor of Chemistry*, 1955
B.S., Texas Western College; M.A., Ph.D., The University of Texas
- JAMES KENNETH ALMOND, *Instructor in Health and Physical Education*, 1963
B.S., M.Ed., Stephen F. Austin State College
- MICHAEL EVAN AUSTIN, *Associate Professor of Electrical Engineering*, 1963
B.S.E.E., M.S.E.E., Ph.D., The University of Texas
- FREDERICK WILLIAM BACHMANN, *Professor of Modern Languages*, 1933
B.A., M.A., Stanford University; Ph.D., University of Chicago
- FREDERICK HOMER BAILEY, *Instructor in Mathematics*, 1963
B.S., New Mexico State University; M.A., University of Colorado
- JACK SEARCY BAILEY, *Instructor in Spanish*, 1963
B.A., Texas Western College; M.A., University of Arizona
- KENNETH KYLE BAILEY, *Professor of History*, 1960
B.A., M.A., Ph.D., Vanderbilt University
- JOSIAH LANDIS MERRILL BAIRD, *Professor of Art*, 1962
B.S., Edinboro State College; M.A., Teacher College, Columbia University;
Ph.D., Ohio State University
- THOMAS GROCARD BARNES, *Professor of Physics*, 1938
B.A., Sc.D. (Hon.), Hardin-Simmons University; M.S., Brown University
- GUIDO ALAN BARRIENTOS, *Assistant Professor of Philosophy and Psychology*, 1963
B.A., Universidad de San Carlos (Guatemala); M.A., Ph.D., University of Kansas
- MRS. LENA GALATZAN BEHRMAN, *Instructor in Business Administration*, 1961
B.B.A., The University of Texas
- 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, *Professor of Biological Sciences*, 1927
B.A., M.A., The University of Texas; Ph.D., University of Chicago
- LEONARD BERKMAN, *Instructor in English*, 1963
B.A., Columbia University; M.F.A., Yale University
- CALEB ARUNDEL BEVANS, *Associate Professor of Modern Languages*, 1950
S.B., Northwestern University; M.A., Ph.D., University of Chicago
- SACHINDRANARAYAN BHADURI, *Associate Professor of 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
- PHILIP CLIVE BIRKINSHAW, *Assistant Professor of English*, 1963
B.A., M.A., Oxford University

FACULTY

- LLELAH 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
- GENE THOMAS BOND, *Assistant Professor of Military Science and Tactics*, 1961
B.S., Sam Houston State Teachers College; Captain, U. S. Army
- LANIS LOY BOSWORTH, *Associate Professor of Psychology*, 1950
B.B.A., M.A., Ph.D., The University of Texas
- JACK JULES BOURQUIN, *Assistant Professor of Engineering*, 1958
B.S., Texas Western College; M.S. in E.E., New Mexico State University
- HALDEEN BRADY, *Professor of English*, 1946
B.A., East Texas State Teachers College; M.A., The University of Texas;
Ph.D., New York University
- DONALD VINCENT BRADY, *Instructor in Drama and Speech*, 1962
B.A., Texas Western College; M.A., Tulane 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., Texas Western College
- SAMUEL JOHN BRIENT, JR., *Associate Professor of Mathematics and Physics*, 1962
B.S., Ph.D., The University of Texas
- 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., Texas Western College
- MRS. FLORENCE BUCKNER, *Assistant Professor of Economics and Bus. Adm.*, 1947
B.A., Sul Ross State College; Certified Public Accountant
- 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 MCENTYRE CALHOUN, *Instructor in English*, 1961
A.B., B.S., Jacksonville State College; M.A., George Peabody College
- LEONARD CARDENAS, JR., *Assistant Professor of Government*, 1962
B.S., M.A., St. Louis University; Ph.D., The University of Texas
- HUGH FREDERICK CARDON, *Instructor in Music*, 1963
B.M., M.A., Texas Western College
- CLARENCE JOE CERVENKA, *Associate Professor of Engineering Drawing*, 1952
B.S., M.Ed., Agricultural and Mechanical College of Texas, 1952
- ABRAHAM CHAVEZ, JR., *Assistant Professor of Music*, 1955
B.M., Texas Western College
- PETER STANLEY CHRAPLIWY, *Assistant Professor of Biological Sciences*, 1960
A.B., University of Kansas; A.M., University of Illinois
- CHESTER C. CHRISTIAN, JR., *Instructor in Spanish*, 1963
B.A., M.A., The University of Texas; M.A., Texas Western College
- MARION CLINE, JR., *Assistant Professor of Education*, 1962
B.S., University of New Mexico; M.A., New Mexico Highlands University;
Ed.D., University of Southern California
- RALPH MONROE COLEMAN, *Professor of Engineering Drawing*, 1946
B.S., M.S., North Texas State College

- MRS. MARY LILLIAN COLLINGWOOD, *Assistant Professor of English*, 1947
B.A., Texas Western College; M.A., University of Michigan
- BENNY WESLEY COLLINS, *Associate Professor of Health and Physical Education*, 1950
B.A., Texas Western College; M.S., University of Utah
- J. ROBERT COLTHARP, *Associate Professor of Civil Engineering*, 1961
B.S., M.S., The University of Texas; Registered Professional Engineer
- MRS. LURLINE HUCHES COLTHARP, *Assistant Professor of English*, 1954
B.A., M.A., The University of Texas
- ELLEN WINIFRED COOGLER, *Assistant Professor of Art*, 1944
B.S., Sul Ross State College; M.A., Teachers College, Columbia University
- CLARENCE HENRY COOPER, *Assistant Professor of Mathematics and Physics*, 1959
B.S., Texas Western College; M.S., Vanderbilt University
- LLOYD GAYLE COOPER, *Assistant Professor of Education*, 1962
B.S., M.A., New Mexico State University; Ed.D., University of Oregon
- MRS. KATHLEEN CRAIGO, *Assistant Professor of Physical Education*, 1945
B.A., M.A., North Texas State College
- MRS. MARY BERNICE CRAIK, *Instructor in Education and Research Assistant, Office of Institutional Research*, 1962
B.A., M.Ed., Texas Western College
- CECIL CLEMENT CRAWFORD, *Professor of Philosophy*, 1953
B.A., M.A., Ph.D., Washington University
- KENNETH OSCAR DANZ, *Instructor in English*, 1963
B.S., Southeast Missouri State College; M.A., University of Missouri
- VELMA LOU DAVIS, *Assistant Professor of Education*, 1963
B.S., New Mexico State University; M.Ed., University of the Philippines
- JAMES FRANCIS DAY, *Professor of Education; Coordinator of Teacher Education*, 1955
B.S., M.S., Utah State University; Ed.D., Stanford University
- FLOYD ARCHIE DECKER, *Professor of Electrical Engineering*, 1935
B.S.E.E., Kansas State College; M.S.E.E., University of Michigan;
Registered Professional Engineer
- JOHN WILLIAM DENNY, *Instructor in History*, 1956
B.A., M.A., Texas Western College
- MARVIN GARY DICKSON, *Instructor in History*, 1963
B.A., Stanford University; M.A., Yale University
- DON EUGENE DUKE, *Instructor in Health and Physical Education*, 1963
B.S., Austin College
- MRS. MARY ELEANOR DUKE, *Associate Professor of Biological Sciences*, 1947
B.A., Texas Western College; M.A., The University of Texas
- PHILLIP H. DURAN, *Instructor in Physics*, 1962
B.S., Texas Western College
- PHILIP DURIEZ, *Associate Professor of Economics and Business Administration*, 1962
B.A., New Mexico Western College; M.A., Baylor University;
Ph.D., Louisiana State University
- MRS. HELEN FAITH DURIO, *Instructor in Education*, 1963
B.A., Arizona State University; M.Ed., Texas Western College
- OLAV ELLING EIDBO, *Professor of Music*, 1950
B.A., Concordia College; M.A., Texas Western College;
Ph.D., University of North Dakota
- FRANCIS ALAN EHMANN, *Assistant Professor of English*, 1950
B.A., Texas Western College; M.A., Harvard University
- HENRY PHILIP EHRLINGER, *Associate Professor of Mining and Metallurgy*, 1959
B.S., E.M., University of Wisconsin; Registered Professional Engineer
- ROBERT MORLEY ESCH, *Instructor in English*, 1962
B.A., Southern Methodist University; M.A., University of Wisconsin

FACULTY

- CHARLES LARIMORE ETHERIDGE, SR., *Assistant Professor of Drama and Speech*, 1963
B.S., M.A., Sul Ross State College
- FLOYD EMMETT FARQUEAR, *Professor of Education*, 1942
B.S., Miami University; M.A., University of Chicago; Ed.D., The University of Texas
- WILLIAM HENRY FISHER, *Associate Professor of Education*, 1961
B.A., M.Ed., University of Washington; D.Ed., Columbia University
- 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.
- JON MARQUIS FOULDS, *Instructor in Chemistry*, 1963
B.S., M.A., Southwest Texas State College
- REX ELWYN FOX, *Instructor in Mathematics*, 1961
B.S., Texas Agricultural and Mechanical College; M.Ed., Southwest Texas State;
M.A., Louisiana State University
- DONALD KEITH FREELAND, *Assistant Professor of Economics and Bus. Adm.*, 1949
B.S., Austin College; M.B.A., North Texas State College
- ROSEMARIE FRIEDMAN, *Instructor in Drama and Speech*, 1960
B.A., Texas Western College; M.A., Denver University
- FRANCIS LYLE 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
- MRS. GRETCHEN REINEMUND GABRIEL, *Associate Professor of Spanish*, 1943
B.A., M.A., Stanford University
- REX ERVIN GERALD,* *Assistant Professor of Sociology*, 1958
B.A., University of Arizona; M.A., University of Pennsylvania
- CHARLES HERMAN GLADMAN, *Associate Professor of Mathematics*, 1948
B.S., M.A., Ohio State University
- MRS. LYNETTE GLARDON, *Assistant Professor of Health and Physical Education*, 1951
B.A., M.A., Texas Western College
- PAUL WERSHUB GOODMAN,* *Instructor in Sociology*, 1957
B.A., M.S., Syracuse University
- JOHN HERBERT HADDOX, *Professor of Philosophy*, 1957
B.A., M.A., Ph.D., University of Notre Dame
- CYDA ALMIRA HALLUM, *Assistant Professor of Education*, 1963
B.A., M.A., Trinity University; M.S., Texas College of Arts and Industries;
Ph.D., The University of Texas
- 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, *Assistant Professor of Health and Physical Education*, 1962
B.A., M.A., Iowa State Teachers College
- FRANK RAY HARLAND,* *Assistant Professor of Drama and Speech*, 1958
B.F.A., M.F.A., The University of Texas
- ROBERT WARREN HARPER, *Football Coach*, 1962
B.S., Stephen F. Austin College
- 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., Texas Western College; M.A., University of Denver

*Leave of absence, 1963-1964.

- WADE JAMES HARTRICK, *Professor of Business Administration*, 1944
B.A., Texas Technological College; M.B.A., Ph.D., The University of Texas
- JAMES CARDWELL HARVEY, *Assistant Professor of History*, 1957
B.A., Southern Methodist University; M.A., Ph.D., The University of Texas
- 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
- LINDA ELIZABETH HAUGHTON,^o *Instructor in Modern Languages*, 1962
B.A., Texas Western College; M.A., University of Arizona
- WILLIAM GOODWYN NIXON HEER, *Professor of Mining and Metallurgy*, 1961
Met.E., University of Alabama; M.S., Ph.D., Ohio State University.
Registered Professional Engineer
- MRS. LOZIER CONDON HENDERSON, *Professor of Education*, 1949
B.A., University of Alabama; M.S., University of South Carolina;
Ed.D., The University of Texas
- RICHARD EUGENE HENDERSON, *Associate Professor of Music*, 1952
B.A., College of Puget Sound; M.M., Florida State University
- CARL HERTZOG, *Special Lecturer and Director of Press*, 1948
- VIRGIL HICKS, *Professor of Radio and Television*, 1945
B.A., Texas Western College; M.A., University of Southern California
- HAROLD L. HILLYER, *Assistant Professor of Music*, 1962
B.M.E., University of Wichita; M.M., University of Southern California
- BRUCE RICHARD HOLLINGSWORTH, *Instructor in Sociology*, 1963
A.B., Dakota Wesleyan University; Th.M., Iliff School of Theology
- DONALD RAY HORNER, *Instructor in Mathematics*, 1962
B.S., Arlington State College; M.S., North Texas State University
- JOHN ANTHONY HOVEL, JR., *Instructor in Government*, 1958
B.A., M.A., University of Wisconsin
- SUK RIN HWANG, *Instructor in Mathematics*, 1961
B.S., Central Missouri State College; M.S., Arizona State University
- HENRY WILLIAMS IBA, *Instructor in Health and Physical Education*, 1962
B.S., Oklahoma State University
- CARL THOMAS JACKSON, *Instructor in History*, 1962
A.B., University of New Mexico
- DILMUS DELANO JAMES,^o *Assistant Professor of Economics*, 1958
B.A., M.A., The University of Texas
- JOSEPH HOPKINS JAMES, *Associate Professor of English*, 1938
B.A., M.A., University of Alabama
- HAROLD STAHL JENSEN, *Assistant Professor of Economics and Business Admn.*, 1962
B.S., University of Utah; M.S., Brigham Young University; C.P.A.
- JONES EUGENE JOHNSON, *Assistant Professor of Business Administration*, 1958
B.B.A., M.B.A., Texas Agricultural and Mechanical College; C.P.A.
- MRS. CLARICE MATTHEWS JONES, *Assistant Professor of Speech*, 1946
B.S., West Texas State College; M.A., Texas State College for Women
- STEPHEN JUSTICE, *Instructor in English*, 1962
B.A., M.A., North Texas State College
- CLYDE EASTMAN KELSEY, JR., *Professor of Psychology*, 1947
B.A., Texas Western College; M.A., University of Tulsa;
Ph.D., University of Denver

FACULTY

- CHARLES A. KIEFER, *Assistant Professor of Military Science and Tactics*, 1962
 B.S., City College of New York; B.S., Missouri School of Mines;
 Major, United States Army
- LONNIE DEAN KLIEVER, *Associate Professor of Philosophy and Psychology*, 1962
 B.A., Hardin-Simmons University; B.D., Union Theological Seminary;
 Ph.D., Duke University
- EDWIN JOHN KNAPP, *Professor of Mathematics and Physics*, 1931
 Ph.B., Ph.D., University of Wisconsin
- CLARK SHUMWAY KNOWLTON, *Professor of Sociology*, 1962
 B.A., M.A., Brigham Young University; Ph.D., Vanderbilt University
- OHVILLE CLEON KRUSCHWITZ, *Assistant Professor of Mathematics*, 1956
 A.B., Ohio Wesleyan University; M.A., George Peabody College
- CAESAR RAYMOND LAFONTAINE, *Instructor in English*, 1963
 B.A., University of Florida; M.A., Purdue University
- WILLIAM WALTER LAKE, *Professor Emeritus of Chemistry*, 1927
 B.S., M.S., Ohio State University; Ph.D., University of Chicago
- CASPER DALE LANDOLT, JR., *Instructor in Biological Sciences*, 1962
 A.B., Austin College; M.A., The University of Texas
- JOSEPH LEE LEACH, *Professor of English*, 1947
 B.A., Southern Methodist University; Ph.D., Yale University
- ROBERT MILTON LEECH, *Professor of Drama and Speech*, 1949
 B.F.A., M.F.A., Ph.D., The University of Texas
- RALPH A. LICUORI, *Instructor in 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
- RALPH LYNN LOWENSTEIN, *Associate Professor of Journalism and Business Admn.*, 1956
 B.A., M.S., Columbia University
- MRS. FRANCES E. LOWRANCE, *Assistant Professor of Education*, 1963
 A.B., Indiana University; M.Ed., Texas Technological College
- MARTIN LOUIS LUSCHEI, *Instructor in English*, 1961
 B.A., Nebraska Wesleyan University; M.F.A., State University of Iowa
- MRS. ELIZABETH CRYMES MANNING, *Instructor in Biological Sciences*, 1960
 B.S., M.A., The University of Texas
- ROBERT JOSEPH MASSEY, *Associate Professor of Art*, 1953
 B.A., Oklahoma Agricultural & Mechanical College; M.F.A., Syracuse University;
 Ph.D., The University of Texas
- GEORGE COURTNEY MCCARTY, *Assoc. 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
- OSCAR HARRY MCMAHAN, *Professor of Physics*, 1943
 B.S., Oklahoma Agricultural and Mechanical College; M.S., University of Arizona
- JOHN HAMILTON MCNEELY, *Associate Professor of History*, 1946
 B.A., American University; M.A., George Washington University;
 Ph.D., The University of Texas
- JACK HOUSTON MEADOWS, *Professor of Education*, 1954
 B.S., M.A., Sam Houston State College; Ed.D., Texas Technological College
- ROY LEE MEEK, *Instructor in Government*, 1962
 B.A., M.A., University of Oklahoma

- ARTIE LOU METCALF, *Assistant Professor of Biological Sciences*, 1962
B.S., Kansas State University; M.A., University of Kansas
- MARTIN-BEAT MEYER, *Assistant Professor of Music*, 1963
B.A., Staedt. Gymnasium (Bern, Switzerland); M.A., University of Bern
(Switzerland); M.M., Internationale Akademie Mozarteum (Salzburg, Austria);
D.M., Indiana University
- MRS. JEAN HEININGER MICULKA, *Instructor in Drama and Speech*, 1961
B.A., Texas Western College; 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., Texas Western College
- NACIM MILEDI, *Instructor in Chemistry*, 1957
B.S., Texas Western College
- RICHARD LLOYD MILLER, *Assistant Professor of Chemistry*, 1961
B.A., M.S., Arizona State University
- FRANK FREEMAN MITER, *Instructor in Mathematics*, 1957
B.S., United States Military Academy
- ROSS MOORE, *Instructor in Physical Education*, 1940
B.A., Texas Western College
- RICHARD R. MOORMAN, *Professor of Military Science and Tactics*, 1962
B.S., United States Military Academy; M.S., University of Illinois;
Colonel, United States Army
- LEON DENNY MOSES, *Associate Professor of English*, 1927
B.A., M.A., Columbia University
- SAMUEL DALE MYRES, *Professor of Government*, 1955
B.A., M.A., Southern Methodist University;
Ph.D., The University of Texas; LL.D., Trinity University
- JOHN B. NEELY, *Assistant Professor of Military Science and Tactics*, 1961
B.S., Agricultural and Mechanical College of Texas; Major, United States Army
- LLOYD ALVENO NELSON, *Professor of Geology*, 1920
E.M., Texas College of Mines; M.S., Ph.D., University of Colorado.
Registered Engineer
- CLYDE RUSSELL NICHOLS, *Professor of Electrical Engineering*, 1961
B.S.E.E., M.S.E.E., Texas Agricultural and Mechanical College.
Registered Professional Engineer
- MRS. CATHERINE BURNSIDE O'MALLEY, *Assistant Professor of Education*, 1955
B.A., Texas Western College; M.A., University of Southern California
- ROBERT GLENN OMUNDSON, *Instructor in Mathematics*, 1957
B.A., M.A., Texas Western College
- FLOYD BRELAND O'NEAL, *Professor of Chemistry*, 1954
B.S., The Citadel; M.S., Tulane University;
Ph.D., Georgia Institute of Technology
- ALICE MARIE PARRA, *Instructor in Mathematics*, 1961
B.S., Texas Western College
- RAYMOND EDGAR PAST, *Professor of English*, 1952
A.B., University of Pennsylvania; M.A., Ph.D., The University of Texas
- MRS. BULAH LILES PATTERSON, *Assistant Professor of Mathematics*, 1927
B.A., The University of Texas; M.A., University of Chicago
- THORNTON BANCROFT PENFIELD, III, *Instructor in English*, 1963
B.A., Colgate University; M.A., Duke University
- EUGENE OLIVER PORTER, *Professor of History*, 1940
B.A., Ohio Wesleyan College; M.A., Ph.D., Ohio State University

FACULTY

- RALPH HARPER PRYOR, *Instructor in Mathematics and Physics*, 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; M.A., Harvard University
- MRS. JOAN PHELAN QUAHM, *Instructor in English*, 1957
 B.A., Reading University (England)
- HOWARD EDMUND QUINN, *Professor of Geology*, 1924
 E.M., M.S., University of Minnesota; Ph.D., Harvard University
- MRS. MARY KELLY QUINN, *Associate Professor of Sociology*, 1925
 B.A., Wellesley College; M.A., Boston University
- JOSEPH MALCHUS RAY, *Professor of Government*, 1960
 B.A., M.A., Ph.D., The University of Texas
- JAMES BLANCHETTE REEVES, *Professor of Biological Sciences*, 1955
 B.S., M.S., Louisiana State University
- MRS. LOUISE FLETCHER RESLEY, *Assistant Professor of Mathematics*, 1940
 B.A., Texas Western College; M.A., The University of Texas
- EUGENE CHARLES REYNOLDS, *Associate Professor of Speech*, 1958
 B.A., Otterbein College; M.A., Bowling Green State
- GEORGE HOLLIS REYNOLDS, *Instructor in Drama and Speech*, 1962
 B.A., Texas Western College; M.F.A., The University of Texas
- JACOB GEORGE REYNOLDS, *Instructor in Economics and Business Administration*, 1962
 B.S., United States Military Academy; M.B.A., University of North Carolina
- JOHN MARVIN RICHARDS, *Associate Professor of Economics and Business Admn.*, 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 Mining and Metallurgy*, 1949
 B.S., Brooklyn Polytechnic Institute; M.S., Cornell University;
 Ph.D., Duke University
- WILLIAM HENRY RIVERA, *Assistant Professor of Chemistry*, 1962
 B.S., Ph.D., University of Louisville
- MANUEL ANTHONY RODRIGUEZ, *Instructor in Modern Languages*, 1963
 B.A., Union College
- DAVID BERNARD ROZENDAL, *Assistant Professor of 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
- MRS. NASEEM MALIK SAFDAHI, *Assistant Professor of English*, 1962
 B.A., St. Francis Xavier's (Pakistan); M.A., University of Peshawar (Pakistan);
 M.A., Ph.D., University of Washington
- EDWARD JOHN SANDERS, *Asst. Professor of Economics and Business Administration*, 1963
 B.C.S., Drake University; M.S., Texas College of Arts and Industries
- ROBERT LOUIS SCHUMAKER, *Associate Professor of Physics*, 1946
 B.S., Texas Western College; M.S., University of Arizona
- MRS. EMMA GUERRA SCRUGGS, *Instructor in 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 College; M.A., Texas Western College
- JOHN McCARTY SHARP, *Professor of Modern Languages*, 1949
 B.A., Westminster College; M.A., Ph.D., University of Chicago

- FRANK YUKIMASA SHIOJI, *Instructor in Chemistry*, 1956
B.S., Texas Western College
- KENNETH BRUCE SHOVER, *Assistant Professor of History*, 1962
B.A., M.A., University of Kansas City; Ph.D., University of California
- LEONARD PAUL SIFIORA, *Instructor in English*, 1961
A.B., M.A., University of Michigan
- DEAN OLIVER SLAYTON, *Assistant Football Coach*, 1963
B.A., University of Tulsa
- HAROLD SCHULTZ SLUSHER, *Assistant Professor of Mathematics*, 1957
B.A., University of Tennessee; M.S., University of Oklahoma
- RAY SMALL, *Professor of English*, 1961
B.A., West Texas State College; M.A., Ph.D., The University of Texas
- DONALD EMMETT SMITH, *Assistant Football Coach*, 1963
B.S., Lamar State College of Technology
- MRS. GRACE KNOX SMITH, *Assistant Professor of English*, 1953
B.A., M.A., Texas Western College
- CHARLES LELAND SONNICHSEN, *Professor of English*, 1931
B.A., University of Minnesota; M.A., Ph.D., Harvard University
- RICHARD DALE SPIESE, *Assistant Professor of English*, 1958
B.A., M.A., Pennsylvania State University
- ALLAN DAVID STONE, *Asst. Professor of Economics and Business Administration*, 1963
B.A., Beloit College
- WILLIAM SAMUEL STRAIN, *Associate Professor of Geology*, 1937
B.S., West Texas State College; M.S., University of Oklahoma
- MELVIN POTTER STRAUS, *Associate Professor of Government*, 1961
B.S., M.A., Ph.D., University of Illinois
- REX WALLACE STRICKLAND, *Professor of History*, 1936
B.A., Austin College; M.A., Southern Methodist University;
Ph.D., The University of Texas
- PARRY E. STROUD, *Associate Professor of English*, 1963
B.A., Northwestern University; M.A., University of Chicago;
Ph.D., Northwestern University
- ROBERT LEWIS TAPPAN, *Associate Professor of Modern Languages*, 1954
B.A., M.A., Texas Western College; Ph.D., Tulane University
- EUGENE MCRAE THOMAS, *Professor of Mining and Metallurgy*, 1930
B.S., Texas College of Mines; M.S., Massachusetts Institute of Technology;
E.M., Texas College of Mines. Registered Professional Engineer
- ENGEBERT 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., Texas Western College
- WILBERT HELDE TIMMONS, *Professor of History*, 1949
B.A., Park College; M.A., University of Chicago; Ph.D., The University of Texas
- 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
- MRS. ELEANORE HERNDON TULLEY, *Assistant Professor of Biological Sciences*, 1958
B.S., New Mexico State College; M.S., Iowa State College
- MRS. EMILY HOLMES VOWELL, *Instructor in Geology*, 1955
B.S., Texas Western College; M.S., University of Oklahoma
- MRS. MARIE LANDAU WADDELL, *Assistant Professor of English*, 1954
B.A., Howard Payne College; M.A., Scarritt College

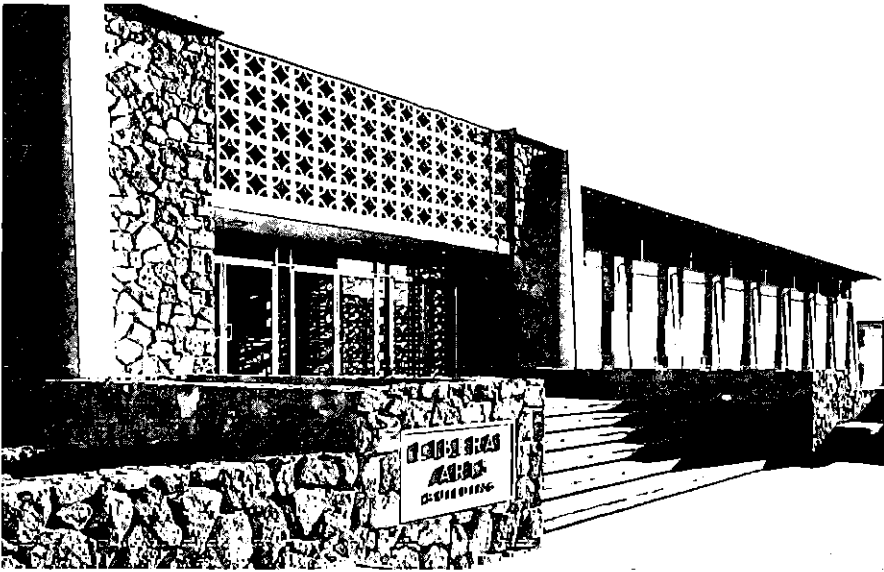
FACULTY

- JIMMY REEVES WALKER, *Assistant Professor of Health and Physical Education*, 1958
B.A., M.A., Texas Western College
- MRS. ROBERTA RUTH WALKER, *Instructor in English*, 1948
B.A., M.A., Texas Western College
- JOHN LEROY WALLER, *Professor Emeritus of History*, 1931
B.S., University of Oklahoma; M.A., University of Colorado;
Ph.D., The University of Texas
- A. CYRUS WARNER, *Assistant Professor of History*, 1963
A.B., Princeton University; LL.B., A.M., Ph.D., Harvard University
- ROBERT GRAVEM WEBB, *Assistant Professor of Biological Sciences*, 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
- JOHN OLIVER WEST, *Associate Professor of English*, 1963
B.A., Mississippi College; M.A., Texas Technological College;
Ph.D., The University of Texas
- JOHN AUBREY WHITACRE, JR., *Associate Professor of Engineering*, 1959
B.S., M.S., Texas Agricultural and Mechanical College.
Registered Professional Engineer
- DAVID GLEN WHITE, *Assistant Professor of Philosophy and Psychology*, 1963
Ph.D., University of Berlin; Ph.D., University of Maryland
- RANDOLPH HOWARD WHITWORTH, *Associate Professor of Psychology*, 1960
B.S., Ph.D., The University of Texas
- RICHARD ALLEN WIDMAYER, *Instructor in English*, 1963
B.A., M.A., University of Michigan
- JOHN SIMEON WILLIAMS, *Associate Professor of Biological Sciences*, 1961
B.S., Texas Agricultural and Mechanical College;
M.A., University of Missouri; Ph.D., University of Nebraska
- JOHN H. WOODYARD, *Assistant Professor of Military Science and Tactics*, 1963
B.S., United States Military Academy; Captain, United States Army
- JOHN PAUL YOUNG, *Assistant Football Coach*, 1963
B.A., Texas Western College
- PHILIP WAYNE YOUNG, *Associate Professor of Engineering*, 1957
B.S. in C.E., Texas Western College; M.E. in S.E., Texas Agricultural and
Mechanical College. Registered Professional Engineer
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PART-TIME INSTRUCTORS AND LECTURERS

- JOHN S. ALEXANDER, *Department of Art*, 1963
B.A., The University of Texas
- JOHN C. AKARD, *Department of Economics and Business Administration*, 1961
B.B.A., Texas A. & M. College; LL.B., The University of Texas
- CHARLES B. BROWN, *Department of Mathematics and Physics*, 1963
B.S., M.S., Oklahoma State University
- ROBERT C. BROWN, *Department of Economics and Business Administration*, 1957
B.B.A., M.B.A., Texas Technological College
- EUGENE ALAN DEAN, *Department of Mathematics and Physics*, 1958
B.S., Texas Western College
- EUGENE C. EICHER, *Department of Music*, 1963
Curits Institute

- FLOYD S. FIERMAN, *Special Lecturer in Philosophy*, 1957
Ph.B., John Carroll University; B.H.L., M.H.L., Hebrew Union College;
Ph.D., University of Pittsburgh
- CHARLES M. FRUITHANDLER, *Department of Economics and Business Admn.*, 1962
B.S., University of Pennsylvania; LL.B., Brooklyn Law School
- MRS. SHIRLEY L. GONZALEZ, *Department of Drama and Speech*, 1963
B.A., Texas Western College
- GILBERT RODOLFO GRADO, *Department of Engineering*, 1960
B.S., Texas Western College
- CLARENCE GORDON HACKETT, *Department of Philosophy and Psychology*, 1955
B.E., Milwaukee State Teachers College; M.A., State University of Iowa;
Ph.D., Purdue University
- MRS. ELEANOR GREET HALL, *Department of English*, 1960
B.A., M.A., Texas Western College
- ROGER NEIL HAVEKOST, *Department of Economics and Business Administration*, 1962
B.A., The University of Texas; LL.B., The University of Texas School of Law
- MRS. INCEBORG HEUSER, *Department of Music*, 1960
- GUENTHER HINTZE, *Department of Engineering*, 1958
B.S.E.E., M.S.E.E., Technical University, Breslau, Germany
- JULIAN VICTOR HORWITZ, *Department of Government*, 1962
B.A., LL.B., The University of Texas
- HENRY H. LAUNSPACH, JR., *Department of Mathematics and Physics*, 1961
B.S., Texas Western College
- CARLOS McDONALD, *Department of Engineering*, 1958
B.S., Texas Western College
- REYNALDO SALAZAR, *Department of Economics and Business Administration*, 1962
B.B.A., Texas Western College; C.P.A.
- KIMBALL CLAY SMITH, *Department of Economics and Business Administration*, 1962
B.B.A., Texas Western College
- MRS. LOUISE SPRINGER, *Department of Chemistry*, 1963
B.A., Northwestern University; M.Ed., Texas Western College
- MAURICE SHEARER TAYLOR, *Department of Economics and Business Admn.*, 1962
B.A., University of Iowa; LL.B., Denver University
- ROBERT E. TAYLOR, *Department of Economics and Business Administration*, 1961
B.S., Brigham Young University
- LYNN M. THAYER, *Department of Music*, 1959
B.M., University of Michigan; M.Ed., University of Pittsburgh
- WILLIAM V. UNDERHILL, *Department of Mathematics and Physics*, 1963
B.A., Rice University; M.A., The University of Texas
- WILLIS L. WEBB, *Department of Mathematics and Physics*, 1963
B.S., Southern Methodist University
- CLAUDE B. WIVEL, *Lecturer in Education*, 1960
B.A., University of Denver; M.A., Ph.D., University of Arizona
- BERTHAM C. WRIGHT, *Department of English*, 1962
B.S., University of Connecticut; M.A., Texas Western College
- HOWELL V. ZINN, JR., *Department of Art*, 1963
B.F.A., University of Oklahoma



WHY CHOOSE TEXAS WESTERN?

AS YOU TURN THE PAGES of this college bulletin, you are more than likely wondering what Texas Western has to offer — what makes it a specially interesting place to live and learn; what has brought 6,000 students and 200 faculty members to its classrooms and laboratories to share in the great experience of American education.

They have come because Texas Western is a good college in an interesting location with some very special advantages. It is big enough to provide excellent buildings, courses, degrees, faculty; it is small enough to give the student a chance to find himself as an individual and to enjoy friendly personal contacts with his teachers. Any one who is serious about his education but does not want to lose his identity in the swirling anonymity of a big university will be at home on our campus.

He will find El Paso a fascinating town to live in. Once a wide-open frontier village, it has become the largest city on the Mexican Border and a gateway to the Latin-American countries. El Paso is truly a bi-cultural community, and the courtesy and charm of Spanish-America combine with the informality and friendliness of the American West to make a distinctive community atmosphere. El Paso and Juárez number together over half a million people who live and work in a truly international setting. More and more the college looks southward, and its influence extends not merely into Mexico, but into South America as well. No other college in the United States has a greater opportunity to play a part in inter-American affairs.

The administration, the faculty, and the community are fully aware of this opportunity and are doing their best to meet the challenge. They realize that the purpose of this unique educational institution is not merely to equip its students for service to society and to build a respect for scholarship, but to develop the breadth and tolerance which can come only from close contact between men of different races, creeds, and ways of life.

Year-round living is pleasant in the green and fertile Rio Grande valley. The sun shines almost every day; temperatures seldom go too high or too low; people play golf and tennis all year round.

Culturally there are many advantages also. There is rich material for the historian, the anthropologist and the folklorist in the Indian and Spanish cultures which have flourished through the centuries in the region. Juárez attracts important Mexican talent in the performing arts. El Paso supports a symphony orchestra directed by an internationally known conductor. A beautiful art museum has been opened with a nucleus of great paintings from the Kress Collection. There are theatre groups, musical societies, and frequent performances by visiting artists, both American and foreign.

The College itself sponsors three organizations: a College-Community Opera group which presents two or more productions annually of light or grand opera; the Texas Western Civic Ballet organization which offers two major productions each year in addition to its work with the operas; and the College-Community Chamber Music society, organized in 1963, which will present two major recitals annually.



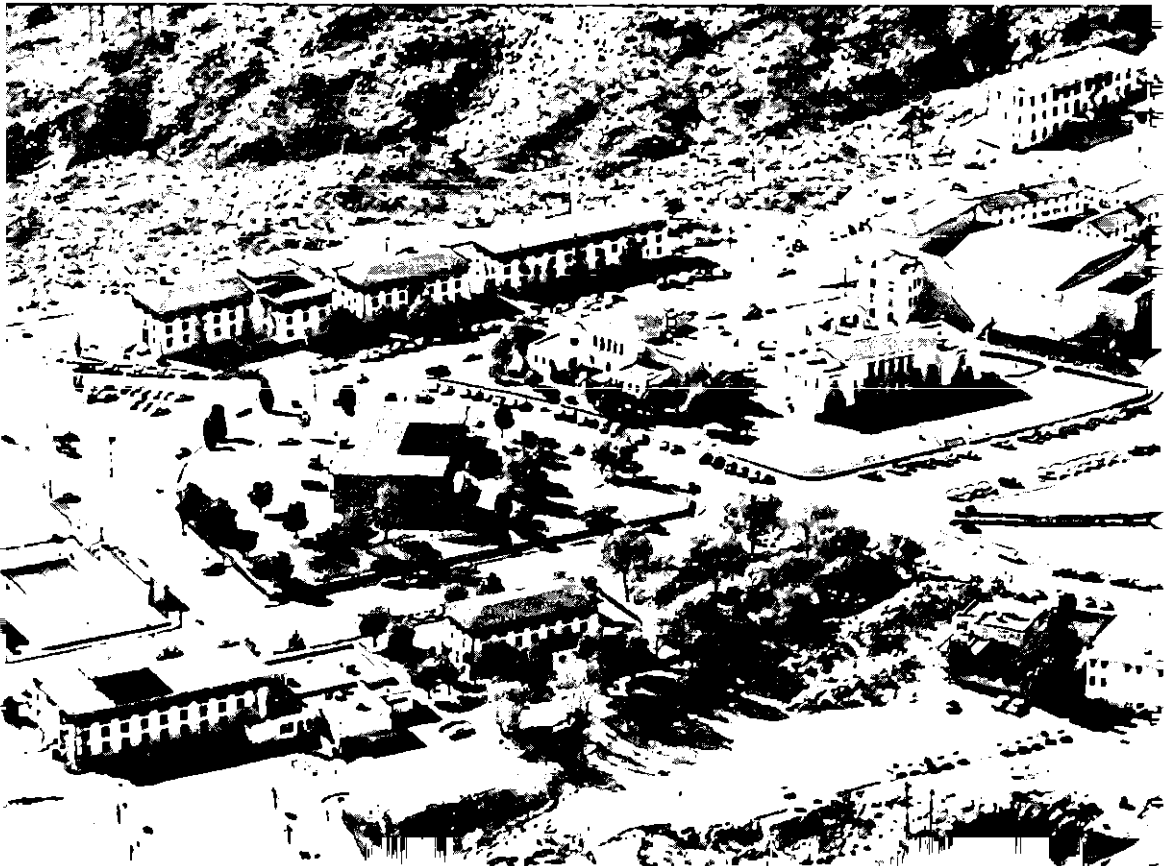
BELL HALL — WOMEN'S DORMITORY

Other residence halls on the campus are Benedict Hall for women; and, for men, Worrell Hall, Hudspeth Hall, Burges Hall and Miners Hall. Sixty new apartments for married students will be ready for occupancy at the beginning of the fall semester, 1963.

These three organizations are part of the College-Community Musical Arts Association, which was founded in the Golden Jubilee year. *The College Community Musicale*, issued about once a month, is the voice of the Association.

Industrially and technically El Paso has much to offer. Fort Bliss is now the world's largest guided-missile school, and the vast complex of training facilities and integrated ranges stretching for 200 miles northward brings some of the world's finest scientific minds to the region and to the college. A cooperative Student Trainee Program is actually in operation at White Sands Missile Range. Students in Engineering, Physics and Mathematics spend six-month periods alternately on the campus and at the Range. The Schellenger Research Laboratories handle important government research contracts involving many millions of dollars.

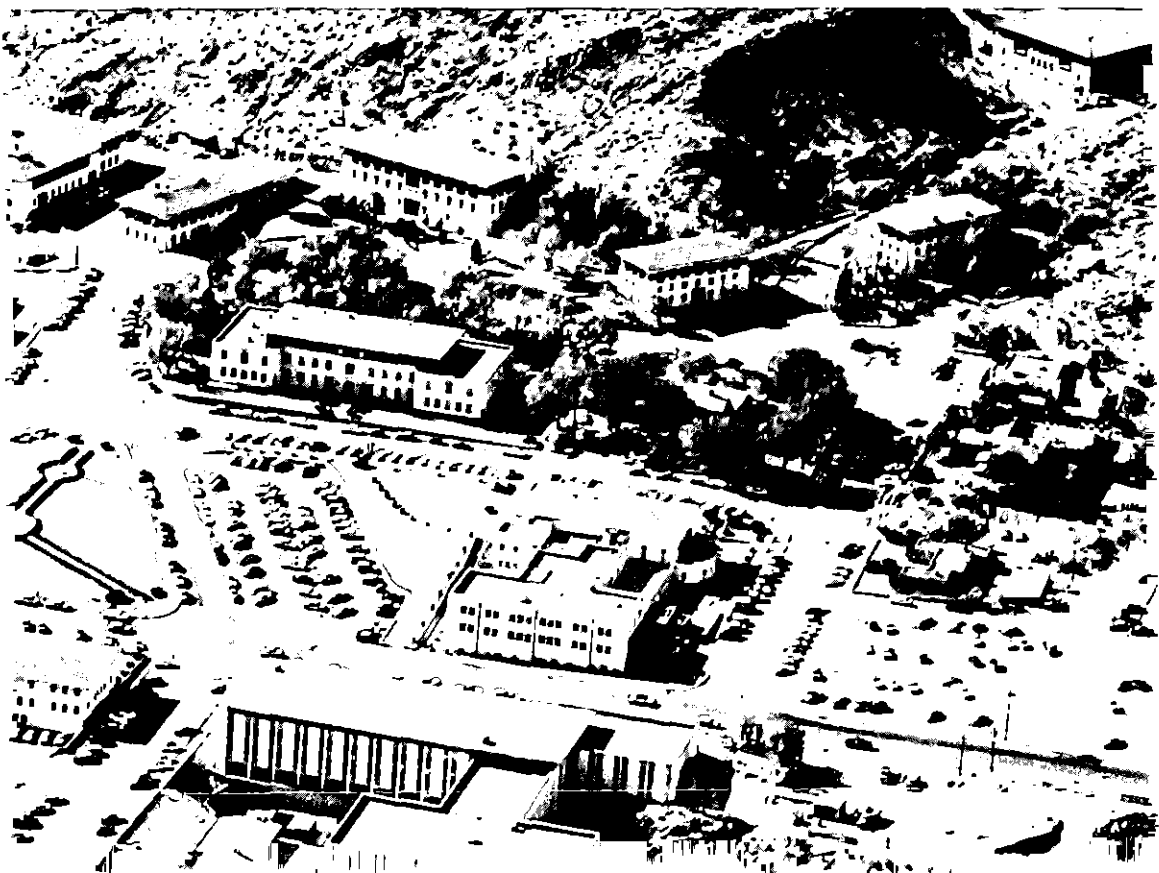
The College offers unusual opportunities for training in business and industry. No school in the country is more fortunately located for geological study. A large custom smelter, a modern electrolytic copper refinery, a cement plant, three oil refineries, and several brick plants are in operation near the college, along with manufactories of lime, tile, and other non-metallics, and plants for cotton processing, textile manufacturing, and the packing of meat and vegetables.



WHAT IS TEXAS WESTERN?

These extraordinary opportunities for technically minded students were responsible for the founding of Texas Western. 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 the style of Bhutanes architecture, was laid out in the present picturesque location on the western slope of Mount Franklin when the Legislature appropriated \$100,000.00 for buildings. In 1919 the school became a branch of the University of Texas. In 1927 it added Liberal Arts courses. In 1931 it became a four-year Liberal Arts college operating under its own president. In 1940 the Master of Arts degree was approved. And in 1949 Texas College of Mines and Metallurgy became Texas Western College in recognition of the steady broadening and deepening of its offerings and interests.

It now offers thirteen degrees, a range of courses from Art to Zoology,

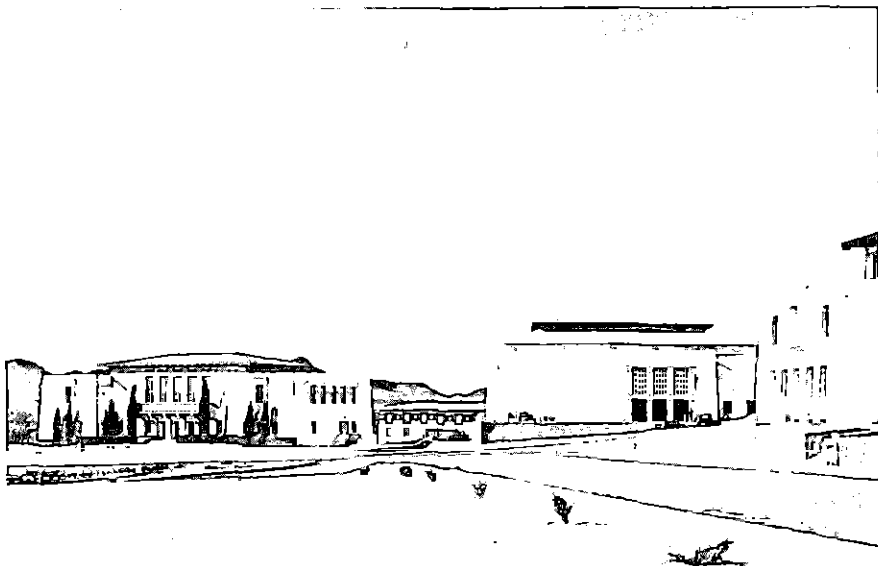


a full program of intramural and intercollegiate athletics, a wide assortment of student activities, plus library, laboratory, classroom, and recreational facilities to go with them.

The school year of 1963-1964 is the Golden Jubilee Year of Texas Western College, its fiftieth anniversary of service to its community and state. It looks backward with pride to its small beginnings, reviews its phenomenal growth with satisfaction, and anticipates increasing usefulness as students from many foreign countries, as well as from all parts of the United States, bring the enrichment of their special experience and take away the competence and comradeship which the college has to give.

HOW TO COME TO TEXAS WESTERN?

You may enter Texas Western College 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 twenty-one years old, or older, you may be admitted without a high-school diploma under the Individual Approval program. You may also enter as a transfer from another college. Admission



THE LIBRARY and MAGOFFIN AUDITORIUM

The Open-stack collection of over 100,000 volumes is amplified by periodical and microfilm files. Several special collections are maintained. Especially notable are the geological, mining, Spanish Literature and historical collections.



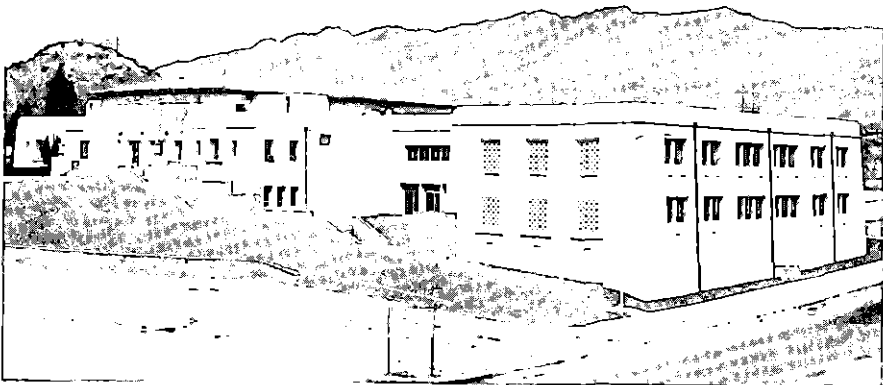
THE MUSEUM

requirements are explained in greater detail later in this bulletin, including special procedures for veterans and for foreign students.

If you are a freshman, write the Registrar, Texas Western College, 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. Every student who competes in intercollegiate athletics, who takes courses in physical education or R.O.T.C. or resides in a dormitory must have a physical examination. The Registrar will provide physical-examination blanks for you to take to your doctor.

When you receive your application form, fill it out and mail it to the



STUDENT UNION BUILDING

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 ten-dollar deposit to the Housing Office at the college.

Your teachers and the staff of the College 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. Whoever you are, and whatever your background, you can be sure of finding good friends and competent advisers at Texas Western College.



Endowments, Services, Activities



THE LIBRARY is the heart of the College. It contains a rapidly expanding collection of books, periodicals, microfilms, records, and documents. Over 150,000 volumes are housed in its stacks. It regularly receives over 1,350 periodicals and about twelve newspapers. Microfilm files include a complete run of the *El Paso Times*, the recently discovered Juárez 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 College. The Howard E. Quinn Fund, contributed by an anonymous donor, buys Geology books. The Commonwealth Foundation has made contributions for the purchase of research materials in the Liberal Arts, and further acquisitions have come from the College Excellence Fund.

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

THE SCHELLENGER RESEARCH LABORATORIES were created in 1953 under the will of Mrs. Emma L. Schellenger as a memorial to her husband, Newton C. Schellenger, for promoting and encouraging research. The Schellenger Foundation in Electricity, under the leadership of Professor Thomas G. Barnes, consists of seven installations on the campus: The Electronic Research Center, the Data Analysis Center, the Environmental Chambers, the Acoustic Research Chambers, the Optical and Mechanical Test Center, and the Electronics Development Laboratory.

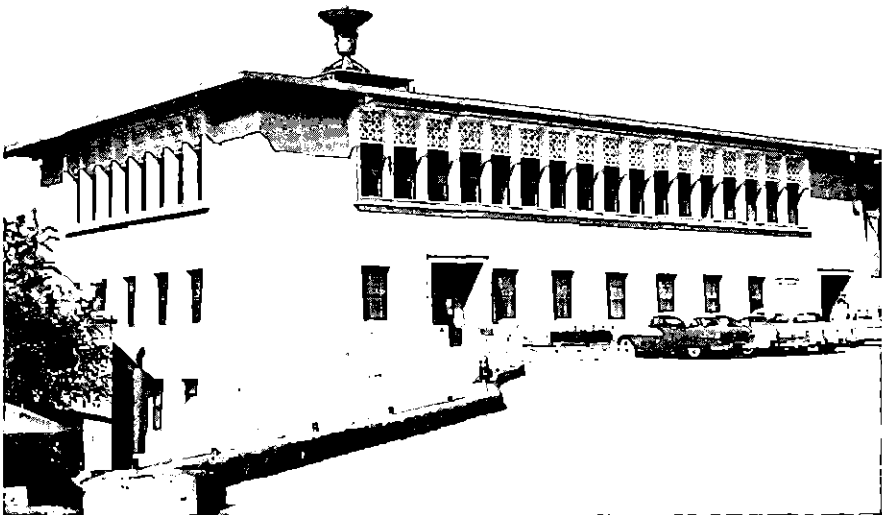
More than fifty faculty members and students work part or full time in these laboratories on contracts which up to now have totaled over \$3,000,000.00. Members of the staff, under a grant from the National Science Foundation, have carried on upper-air research for two years on the Antarctic Continent, and another team under Government auspices is being sent to Alaska in 1964-65.

The latest and finest scientific equipment is available for recording, testing and measuring physical phenomena.

The Laboratories are open to proposals for contracts and grants for basic and applied research in various fields of Physics and Mathematics, the life sciences, and allied areas.

THE GORDON PONDER MEMORIAL HEART FUND was established by Mr. and Mrs. Jack Ponder in memory of their son, who died while a student at Texas Western College. Individuals interested in furthering heart research may contribute, and many gifts have been received in memory of relatives and friends. The fund is used in connection with heart research carried on in the Schellenger Research Laboratories.

THE EL PASO CENTENNIAL MUSEUM was erected in 1936 with funds allocated by the Commission of Control for the Texas Centennial Celebration. It houses Indian artifacts from sites in Mexico and the Southwest, notably a collection of Casas Grandes pottery, along with relics of pioneer times, a good cross-section of Southwestern minerals, and the Peak collection of animal pelts and heads.



ENGINEERING BUILDING — SCHELLENGER LABORATORY

In 1959 the first Mexican Archaeological Research Project was initiated by the College, and since that time the Museum staff, under the supervision of Curator Rex Gerald, has been active in investigating the pre-Conquest and early Spanish remains in the region.

A small planetarium is available to student groups, and lectures and tours of the exhibits are arranged by 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 Dr. Randolph Whitworth and located in the Liberal Arts Building, 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 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 College and the community, and to build up a repository of statistical and analytical information. A quarterly report will be issued and special papers on the El Paso economic situation will be published from time to time.

THE TEXAS WESTERN COLLEGE 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 Texas Western College 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 also contact the Registrar for information about their special problems. The Foreign Student Advisor will be available for counseling on all phases of college life after the student's arrival on the campus.

STUDENT SERVICES center in the Student Union Building, where a book store, snack bar, meeting rooms, and recreational facilities are available.

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 newly erected private residence hall for women, is adjacent to the campus and under College supervision. Meals are served in the dining hall between the two women's dormitories.

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

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

STATION KVOF-FM (frequency-modulation radio) and KVOF (closed-circuit television) are owned by the College 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 College 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 and a vidicon film chain, students write, direct and produce their own programs as part of their course work.



Regulations Concerning Registration



Admission to the College 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.

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

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

Health: Each new student who is enrolled in a Physical Education Activities Program, a Military Science course, or who resides in a College Dormitory shall furnish a physical examination certificate before his registration can be completed. The form may be obtained from the Admissions Office.

Loyalty Oath: By Act of the Texas Legislature, each applicant who is a citizen of the United States must take an oath of loyalty to the Government of the U. S.

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: Eligible students whose transcripts have been received by the Registrar will be allowed to register for a limited time after the regular registration date listed in the Calendar. 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 VETERANS

As early as possible before registration, apply at the nearest Veterans Administration Office for a Certificate of Eligibility. (In case of previous attendance at another school under the Veteran's Bill, or change of educational objective, a Supplementary Certificate is required.) —With the exception of the above requirements, veterans register in the same manner as other students, as set forth above.

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. 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 lowerhalf of his graduating class.

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

- (a) earn not less than six 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.

or

- (b) earn not less than nine 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.

School of 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

change will be made to increase the unit requirements in English and mathematics. The official bulletin will list any changes in required units at an appropriate time before the effective date.

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 School of 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 College. 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.

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

A study is being made of high school units required for admission to the College. It is possible that a substantial

2. INDIVIDUAL APPROVAL METHOD

An applicant over twenty-one years of age may, at the discretion of the Registrar and with concurrence of the appropriate academic dean, be admitted by Individual Approval. The applicant must furnish evidence that he has sufficient ability and seriousness of purpose to do the work desired with profit to himself and to the satisfaction of the College. He will be required to show that he has an adequate

command of English.

A student admitted by Individual Approval may clear his admission condition by (1) making no grade below "C" in his first thirty semester hours of work completed at the College, or (2) making "C" average in his first sixty semester hours completed. Failure to make the required grade average will involve loss of College credit to absolve the admission deficiency.

3. TRANSFER FROM OTHER COLLEGES

Eligibility — Qualified applicants with honorable dismissal from other colleges and universities will be admitted to Texas Western. 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.

Transcript — Each applicant, including the student who seeks re-admission to Texas Western, 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 Texas Western College as soon as possible. Registration cannot be completed until this transcript is received. Transcripts become the property of Texas Western College and may not be returned.

An applicant who has attended another college 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. This 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.

CO-OPERATIVE STUDENT TRAINEE PROGRAM

White Sands Missile Range, New Mexico

Texas Western College 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 Texas Western 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, Texas Western College, El Paso, Texas.

HOW TO PLAN YOUR COLLEGE CURRICULUM

If you are a beginning student, you may not yet be decided as to a career or final goal in college. However, there are certain subjects generally required of ALL students – thus, a student can begin by acquiring credits most applicable to all Majors (in case he has difficulty in choosing a Major and Minor, or later wishes to change his 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 35-42. Each Academic Dean counsels students and approves their degree plans, but it is not usually necessary to file a degree plan until at least 60 semester hours have been completed. Heads of the separate departments will in the meantime give advice and explain special requirements for specific Majors.

DEGREES OFFERED AT TEXAS WESTERN COLLEGE

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 Arts and Sciences

BACHELOR OF ARTS
(Major and Minor Subjects listed on page 44)
BACHELOR OF SCIENCE (IN SCIENCES)
BACHELOR OF BUSINESS ADMINISTRATION
BACHELOR OF MUSIC
BACHELOR OF SCIENCE IN EDUCATION

Graduate Division

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 44-46, and by the Departments at beginning of Course Descriptions.

FRESHMAN YEAR		Semester Hours
<i>(16 hours are recommended for each semester)</i>		
English 3101-02		6
American History 3101-02		6
Foreign Language (completion of 4102)		4 (3)
<i>(Students with two years of High School credit in Language will not take 4101; but those who cannot pass beginner's examination will take 4101 and receive credit for 4 hours)</i>		
Mathematics		6
Laboratory Science		6
Economics 3101		3
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		
English 3211-12 (or 3213-14 or 3215 and 3216)		6
Government 3210-11		6
Foreign Language (completion of 3201-02)		6
Laboratory Science		6
Physical Education or Military Science		1 (4)
Courses in Major or Minor subjects		6 (12)

THIRD AND FOURTH YEARS		
Philosophy 3301 or 3311		3
"Major" subjects — advanced courses	12	
<i>(a total of 24 hours required in the Major subject)</i>		
"Minor" subjects — advanced courses	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 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. 43.

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

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

This plan does not apply to Bachelor of Science in Education, see pages 50-52.

See pages 35-42 for Engineering Degree Plans.

FRESHMAN YEAR	Semester Hours
English 3101-02	6
American History 3101-02	6
Mathematics 3115, 2116, and 4111	9
<i>(Math 3101-02 may be substituted in the Biological Sciences Major, Geology Minor)</i>	
Laboratory Science	8
Economics 3101	3
Health Education or other Elective Course	3
Physical Education Service Course (or Military Science)	2
<i>(16 hours are recommended for each semester)</i>	
SOPHOMORE YEAR	
English 3211-12 (or 3213-14 or 3215 and 3216)	6
Government 3210-11	6
German 4101-02	8
<i>(Required for Chemistry Major)</i>	
Laboratory Science	6
Physical Education or Military Science	1 (4)
Courses in Major or Minor subjects	6 (12)
THIRD AND FOURTH YEARS	
Philosophy 3301 or 3311	3
Laboratory Science (other than Major or Minor)	6
"Major" subjects — advanced courses	15
<i>(a total of 30 hours required in the Major subject)</i>	
"Minor" subjects — advanced courses	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	—
<i>All required freshman numbered courses in the student's curriculum 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.</i>	

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 Degree

Degree Plan—The student should secure from his Dean by the beginning of his third year a plan for the completion of the requirements for the degree.

No honorary degree will be conferred.

Catalog Requirements—A student may obtain a degree according to the catalog in force at the time of his admission to the College, 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.

Students entering Texas Western College 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.

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 College

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.

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 3210-3211 and six semester hours of History 3101-3102 are required by Texas State law for completion of the Bachelor's Degree. Twelve semester hours of Military Science 3301, 3302, 3401, 3402 may be substituted for Government 3211.

By action of the State Legislature all students graduating from the College after July 1, 1956, must complete six hours of American History (three semester hours of which may be Texas History).

Grade Point Average—The student must make an average of at least two grade points per semester hour in all courses taken at the College. In the case of interdivisional or intradivisional transfers grades of *F* or *WF* will not be counted provided they were made prior to the first transfer. Grades of *F* or *WF* made subsequent to the first transfer will be considered unless removed by repetition of the course.

Second Degree—No second bachelor's degree will be conferred until the candidate has completed at least twenty-four semester hours at Texas Western College in addition to those counted toward the bachelor's degree requiring the higher number of semester hours of credit. 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.



SCHOOL of ENGINEERING



Degrees Offered

BACHELOR OF SCIENCE

A candidate for a bachelor's degree in engineering must complete one of the following plans:

- PLAN 1, leading to the degree of Bachelor of Science in Civil Engineering.
- PLAN 2, leading to the degree of Bachelor of Science in Electrical Engineering.
- PLAN 3, leading to the degree of Bachelor of Science in Mechanical Engineering.
- PLAN 4, leading to the degree of Bachelor of Science in Metallurgical Engineering.

SPECIAL REQUIREMENTS FOR BACHELOR'S DEGREE

1. All candidates must take at least twenty-four hours in advanced courses, in class at the College, of the last thirty semester hours offered.
2. Each student must make an average of at least a C in the specified courses taken in the School of Engineering.
3. In order to become a candidate for a degree, a student must (1) have satisfied all admission requirements, (2) have an over-all C average at the beginning of his last semester of attendance.
4. Each student is strongly urged to spend at least one summer in practical work related to the degree desired.

WORK PREPARATORY TO OTHER ENGINEERING DEGREES

Sufficient courses are offered at Texas Western College for a student to complete at least the sophomore year for any engineering degree.

FRESHMAN YEAR*

(Common to Civil, Electrical, and Mechanical Engineering)

1st Semester	Semester Hours	2nd Semester	Semester Hours
Ch. 4103 General Chemistry	4	Ch. 4104 General Chemistry	4
Dr. 2101 Engineering Graphics	2	Dr. 2104 Descriptive Geometry	2
E. 3101 Freshman English	3	E. 3102 Freshman English	3
Ma. 4111 Analytic Geometry & Calculus	4	Ma. 4212 Analytic Geometry & Calculus	4
C.E. 3102 Introduction to Engineering	3	C.E. 3115 Statics	3
Total	16	Total	16

*Beginning in the Fall Semester 1964, Math 3115 and 2116 will no longer be counted for credit toward any Engineering Degree. Students needing these courses are urged to complete them in Summer Session before entrance into regular freshman program.

Abbreviations Used in Degree Plans

Ch.	Chemistry	Ma.	Mathematics
Dr.	Drawing	Ph.	Physics
E.	English	C.E.	Civil Engineering
Ge.	Geology	E.E.	Electrical Engineering
Go.	Government	M.E.	Mechanical Engineering
Hi.	History	Me.	Metallurgical Engineering

**PLAN 1 – Leading to the Degree of
Bachelor of Science in Civil Engineering**

	<i>Semester Hours</i>
Chemistry 4103-04	8
Drawing 2101, 2104	4
Civil Engineering 3102, 3115, 3213, 3214, 4234, 3238, 3326, 3335, 3343, 3348, 3354, 1355, 4356, 3360, 3440, 3441, 3442, 3446, 3461, 3470, 3483	63
Electrical Engineering 4370	4
Mechanical Engineering 3375	3
English 3101-02, 3269	9
Government 3210-11	6
History 3101-02	6
Mathematics 4111, 4212, 4317, plus 3326, 3435, or 3436	15
Metallurgy 4203	4
Physics 4216, 4317	8
Approved Technical Electives*	6
Approved Non Technical Electives*	6
Total	142

ARRANGEMENT OF COURSES

Uniform Freshman Year (see page 35)

	<i>Semester Hours</i>		<i>Semester Hours</i>
Sophomore Year – 1st Semester		Sophomore Year – 2nd Semester	
Hi. 3101 History of the United States	3	Hi. 3102 History of the United States	3
Ph. 4216 Heat, Electricity & Magnetism	4	Ph. 4317 Light, Sound & Modern Physics	4
C.E. 3238 Dynamics	3	C.E. 4234 Mechanics of Materials	4
Co. 3210 American Government	3	Me. 4203 Materials Science	4
Ma. 4317 Analytic Geometry & Calculus	4	Ma. 3326 Differential Equations**	3
Total	17	Total	18

Summer

C.E. 3213 Engineering Measurements	3
C.E. 3214 Field Surveying	3
Total	6

Junior Year – 1st Semester

E.E. 4370 Circuits and Electronics	4
C.E. 3354 Fluid Mechanics	3
C.E. 3335 Reinforced Concrete	3
C.E. 3343 Structural Analysis	3
M.E. 3375 Thermodynamics	3
Total	16

Junior Year – 2nd Semester

Co. 3211 American Government	3
C.E. 4356 Hydraulic Engineering	4
C.E. 3360 Indeterminate Structures	3
C.E. 3348 Soil Engineering	3
C.E. 1355 Fluid Mechanics Laboratory	1
E. 3269 Technical Writing	3
Total	17

Senior Year – 1st Semester

C.E. 3326 Engineering Economics	3
C.E. 3441 Water Treatment & Analysis	3
C.E. 3461 Structural Design	3
C.E. 3483 Foundations	3
Approved Electives*	6
Total	18

Senior Year – 2nd Semester

C.E. 3440 Transportation Engineering	3
C.E. 3442 Waste Treatment & Analysis	3
C.E. 3446 Engineering Law & Ethics	3
C.E. 3470 Advanced Strength of Materials	3
Approved Electives*	6
Total	18

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

**Ma. 3435 or 3436 may be substituted for Ma. 3326.

PLAN 2 – *Leading to the Degree of*

Bachelor of Science in Electrical Engineering

	<i>Semester Hours</i>
Chemistry 4103-04	8
Drawing 2101, 2104	4
Civil Engineering 3102, 3115, 4234, 3238, 3326	16
Electrical Engineering 3251, 4252, 3321, 4339, 4340, 4353, 3441, 1445, 3447, 4464, 4467-68	41
Mechanical Engineering 1350, 3375, 3451	7
English 3101-02, 3269	9
Government 3210, 3211	6
History 3101, 3102	6
Mathematics 4111, 4212, 4317, 3435, 3436	18
Metallurgy 4203	4
Physics 4216, 4317	8
Approved Technical Electives*	6
Approved Non Technical Electives*	6
Total	139

ARRANGEMENT OF COURSES

Uniform Freshman Year (see page 35)

	<i>Semester Hours</i>		<i>Semester Hours</i>
Sophomore Year – 1st Semester		Sophomore Year – 2nd Semester	
E.E. 3251 Networks I	3	E.E. 4252 Networks II	4
C.E. 4234 Mechanics of Materials	4	C.E. 3238 Dynamics	3
Ma. 4317 Analytic Geometry & Calculus	4	Ma. 3436 Higher Mathematics for Engineers & Physicists	3
Ph. 4216 Heat, Electricity & Magnetism	4	Ph. 4317 Light, Sound & Modern Physics	4
E. 3269 Technical Writing	3	Hi. 3101 History of the United States	3
Total	18	Total	17
Junior Year – 1st Semester		Junior Year – 2nd Semester	
E.E. 4353 Networks III	4	E.E. 4340 Electronics II	4
E.E. 4339 Electronics I	4	E.E. 3321 Electromagnetic Field Theory	3
Me. 4203 Materials Science	4	M.E. 3375 Thermodynamics	3
Ma. 3435 Higher Mathematics for Engineers & Physicists	3	C.E. 3326 Engineering Economics	3
Hi. 3102 History of the United States	3	Co. 3210 American Government	3
Total	18	Approved Electives*	3
		Total	19
Senior Year – 1st Semester		Senior Year – 2nd Semester	
E.E. 3441 Electronics III	3	E.E. 4464 Feedback Control	4
E.E. 3447 Electromagnetic Energy Transmission & Radiation	3	E.E. 4468 Energy Conversion II	4
E.E. 1445 Communications Laboratory	1	M.E. 3451 Heat Transfer	3
E.E. 4467 Energy Conversion I	4	Approved Electives*	6
M.E. 1350 Heat Engineering Laboratory	1	Total	17
Co. 3211 American Government	3		
Approved Electives*	3		
Total	18		

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

**PLAN 3 — Leading to the Degree of
Bachelor of Science in Mechanical Engineering**

	<i>Semester Hours</i>
Chemistry 4103-04	8
Drawing 2101, 2104	4
Civil Engineering 3102, 3115, 4234, 3238, 3326, 3354, 1355	20
Electrical Engineering 3251, 4339	7
Mechanical Engineering 3236, 3341, 3362, 4363, 4364, 3375, 3376, 3451, 3465, 4466, 3481, 3482	39
English 3101-02, 3269	9
Government 3210, 3211	6
History 3101, 3102	6
Mathematics 4111, 4212, 4317, 3436	15
Metallurgy 4203	4
Physics 4216, 4317	8
Approved Technical Electives*	6
Approved Non Technical Electives*	6
Total	138

ARRANGEMENT OF COURSES

Uniform Freshman Year (see page 35)

	<i>Semester Hours</i>		<i>Semester Hours</i>
Sophomore Year — 1st Semester		Sophomore Year — 2nd Semester	
Ma. 4317 Analytic Geometry & Calculus	4	Ma. 3436 Higher Mathematics for Engineers & Physicists	3
E.E. 3251 Networks I	3	M.E. 3236 Manufacturing Processes	3
C.E. 4234 Mechanics of Materials	4	C.E. 3238 Dynamics	3
Ph. 4216 Heat, Electricity & Magnetism	4	Ph. 4317 Light, Sound & Modern Physics	4
Hi. 3101 History of the United States	3	E. 3269 Technical Writing	3
Total	18	Hi. 3102 History of the United States	3
		Total	19
Junior Year — 1st Semester		Junior Year — 2nd Semester	
M.E. 4363 Kinematics & Dynamics of Mechanisms	4	M.E. 4364 Design of Machine Members	4
M.E. 3375 Thermodynamics I	3	M.E. 3376 Thermodynamics II	3
E.E. 4339 Electronics I	4	M.E. 3362 Industrial Engineering	3
C.E. 3354 Fluid Mechanics	3	Me. 4203 Materials Science	4
M.E. 3341 Engineering Analysis	3	Approved Electives*	3
Total	17	Total	17
Senior Year — 1st Semester		Senior Year — 2nd Semester	
M.E. 3465 Design Problems	3	M.E. 4466 Machine Design	4
M.E. 3481 Mechanical Engineering Laboratory I	3	M.E. 3482 Mechanical Engineering Laboratory II	3
C.E. 1355 Fluid Mechanics Laboratory	1	C.E. 3326 Engineering Economics	3
Go. 3210 American Government	3	Go. 3211 American Government	3
M.E. 3451 Heat Transfer	3	Approved Electives*	6
Approved Electives*	3	Total	19
Total	16		

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

**PLAN 4 — Leading to the Degree of
Bachelor of Science in Metallurgical Engineering***

	Semester Hours
Chemistry 4103-04, 2221, 4360, 4361	18
Drawing 2101, 2104	4
English 3101-02, 3269	9
Civil Engineering 3115, 4234, 3238, 3326	13
Electrical Engineering 4370	4
Geology 2217	2
Government 3210-11	6
History 3101-02	6
Mathematics 4111, 4212, 4317, 3326	15
Metallurgy 1101, 3201, 4203, 4302, 4303, 3309, 3315, 3402, 3404, 3405, 4407, 3409, 4411, 4412, 3413, 3414	52
Physics 4216, 4317	8
Approved Non-Technical Electives**	6
Total	143

ARRANGEMENT OF COURSES

	Semester Hours		Semester Hours
Freshman Year — 1st Semester		Freshman Year — 2nd Semester	
Ch. 4103 General Chemistry	4	C.E. 3115 Statics	3
Dr. 2101 Engineering Graphics	2	Ch. 4104 General Chemistry	4
E. 3101 Freshman English	3	Dr. 2104 Descriptive Geometry	2
Hi. 3101 History of the United States	3	E. 3102 Freshman English	3
Ma. 4111 Analytic Geometry & Calculus	4	Ge. 2217 Minerology	2
Me. 1101 Introduction to Metallurgy I	1	Ma. 4212 Analytic Geometry & Calculus	4
Laboratory		Total	18
Total	17		
Sophomore Year — 1st Semester		Sophomore Year — 2nd Semester	
C.E. 3238 Dynamics	3	C.E. 4234 Mechanics of Materials	4
Ch. 2221 Organic Chemistry	2	E. 3269 Technical Writing	3
Hi. 3102 History of the United States	3	Ma. 3326 Differential Equations	3
Ma. 4317 Analytic Geometry & Calculus	4	Me. 4203 Materials Science	4
Me. 3201 Principles of Process Metallurgy	3	Ph. 4317 Light, Sound & Modern Physics	4
Ph. 4216 Heat, Electricity & Magnetism	4	Total	18
Total	19		
Junior Year — 1st Semester		Junior Year — 2nd Semester	
Ch. 4360 Physical Chemistry	4	C.E. 3326 Engineering Economics	3
E.E. 4370 Circuits & Electronics	4	Ch. 4361 Physical Chemistry	4
Go. 3210 American Government	3	Go. 3211 American Government	3
Me. 4302 Mineral Dressing I	4	Me. 4303 Mineral Dressing II	4
Me. 3309 Physics of Metals	3	Me. 3315 Non-Ferrous Process Metallurgy	3
Total	18	Total	17
Senior Year — 1st Semester		Senior Year — 2nd Semester	
Me. 3404 Electro-Metallurgy	3	Me. 3402 Ferrous Process Metallurgy	3
Me. 4407 Physical Metallurgy I	4	Me. 3405 Metallurgical Research	3
Me. 4411 Physical Metallurgy II	4	Me. 3409 Corrosion	3
Me. 3413 Thermodynamics of Metals	3	Me. 3414 Thermodynamics of Metals	3
Approved Electives**	3	Me. 4412 Physical Metallurgy III	4
Total	17	Approved Electives**	3
		Total	19

*Beginning in the Fall Semester 1964, Math 3115 and 2116 will no longer be counted for credit toward any Engineering Degree. Students needing these courses are urged to complete them in Summer School before entrance into regular freshman program.

**Six hours of electives must be selected from the Humanities and Social Sciences.

Required Performance

To stay in school and remain enrolled in the college students must maintain minimum standards, determined by grade points.

The grade of A is rated as 4 points per semester hour, a grade of B as 3 points, a grade of C as 2 points, a grade of D as one point.

A student in his first semester must make a minimum of 15 grade points; in his second semester he must make a minimum of 18 grade points; in his third or fourth semester he must make a minimum of 21 grade points; in his fifth and succeeding semesters he must make a minimum of 24 grade points. A student taking less than 12 semester hours must make at least a 1.5 grade point average for all work taken during the semester.

Academic Honors at Graduation

Honors will be awarded at graduation in the following categories:

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 Texas Western College 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 Texas Western College 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.

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 the Pre-Law Advisor, Mr. L. Phil Blanchard.

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, Mr. James B. Reeves.

SCHOOL OF ARTS AND SCIENCES

Requirements for Undergraduate Degrees

BACHELOR OF ARTS

BACHELOR OF BUSINESS ADMINISTRATION

BACHELOR OF SCIENCE IN THE SCIENCES

BACHELOR OF MUSIC

BACHELOR OF SCIENCE IN EDUCATION

In the School of Arts and Sciences the College offers work leading to undergraduate degrees with majors in twenty-one fields, as well as prerequisite courses for students wishing to begin their legal and medical training at Texas Western College. In the following pages prerequisite work for the various degrees is set forth in tabular form.

Bachelor of Arts

MAJOR SUBJECTS

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

MINOR SUBJECTS

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

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 56 of this catalog).

Bachelor of Arts *All Levels Teaching Programs* in Art, Physical Education, and Drama and Speech are outlined on pages 46, 47, and 48.

Min. Sem. Hrs.

- 24 — MAJOR SUBJECT: including 12 advanced hours. (A minimum of 33 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.
- § — FOREIGN LANGUAGE: completion of 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 3101. (For majors in Economics and Business Administration, 3103-04.)
- 6 — HISTORY 3101-02.
- 6 — GOVERNMENT 3210-11.
- 3 — PHILOSOPHY 3301 or 3311.*
- § — 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.

* *Philosophy 3301 strongly recommended for majors in the sciences. Philosophy 3311 for non-science majors.*

§ *Varies according to student's capabilities.*

BACHELOR OF ARTS INTER-AMERICAN STUDIES

In addition to the general requirements for the degree of Bachelor of Arts the following course program and requirements are prescribed for degree in Inter-American Studies.

- 1) GOVERNMENT 3332 or 3333.
- 2) HISTORY 3347, 3348 or 3349.
- 3) ECONOMICS 3366 and 3 additional semester hours of advanced hours.
- 4) PSYCHOLOGY 3101.
- 5) SPANISH: completion of 3357, and one of the following, 3324, 3360, 3362, 3363, 3364, 3365, 3467 — and completion of a comprehensive examination in Spanish.
- 6) SOCIOLOGY 3336.
- 7) A total of 12 additional semester hours to be elected from Business Administration, Economics, Government, History, Languages and Philosophy (Phil. 3212).

Bachelor of Science

(SCIENCES)

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

MINORS: Biological Sciences, Chemistry, Geology, Mathematics, Metallurgy, Physics.

Min. Sem. Hrs.

- § — MAJOR: at least 30 semester hours including 15 semester hours of advanced courses. (Specified for Chemistry: Chemistry 4213, 4324, 4321-22, 4460, 4461, 6 additional advanced semester hours in Chemistry, and German 4101-02.)
- § — MINOR: at least 18 semester hours including 6 semester hours of advanced courses.
- 6 — SCIENCE: another laboratory science as listed above. For the Mathematics Major, 12 semester hours of another of the sciences listed above.
- 6 — GOVERNMENT 3210-11.
- 6 — HISTORY 3101 and 3102.
- 3 — ECONOMICS 3101.
- 3 — PHILOSOPHY 3301* or 3311.
- 12 — ENGLISH 3101-02, and 3211-12 or 3213-14 or 3215 and 3216.
- § — 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.

* *Philosophy 3301 is strongly recommended for the Bachelor of Science degree.*

§ *Varies according to student's capabilities.*

Bachelor of Business Administration

- 39 — BUSINESS ADMINISTRATION: including 4111, 4112, 3220, 3251, 3325, 3326, 3331, 3340, 4361.
- 12 — ECONOMICS: including 3103, 3104.
- 12 — ENGLISH 3101-02 and 3211-12 or 3213-14 or 3215 and 3216.
- 6 — HISTORY 3101 and 3102.
- 6 — LABORATORY SCIENCES.
- 6 — MATHEMATICS 3101 and 3104.
- 6 — GOVERNMENT 3210-11.
- 6 — ANTHROPOLOGY, PHILOSOPHY, PSYCHOLOGY or SOCIOLOGY.
- 3 — SPEECH.
- § — ELECTIVES: to make a minimum total of 123 semester hours including 30 hours in advanced courses. Not more than 66 semester hours may be in the major subjects.

§ *Varies according to student's capabilities.*

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 Majors in Music Education: A grade average of 2.5 in the teaching field. Education and Music Education, a minimum grade average of 2.0 in both English 3101-3102 and Speech 3101 is required for graduation and for permission to do student teaching.

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 3101-02, 3211-12 or 3213-14 or 3215-16.
- 12 - MUSIC LITERATURE.
- 3 - SPEECH (not required in: 1. Music Theory and Composition and 2. Organ-Piano).
- 6 - HISTORY 3101-02.
- 6 - GOVERNMENT 3210-11.
- 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, orchestra, or choir) each semester in residence. For details, consult with department head. Bandmen 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 Texas Western College. Each teacher training program is concerned with the total education of the prospective teacher in emphasizing preparation for our American way of life, the development of moral and ethical character, and proficiency in the use of basic skill subjects. 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 new 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 year of graduate school work beyond the bachelor's degree. At Texas Western College all professional certificates are based on the master's degree.

The Texas Education Agency, the administrative agency for teacher certification in Texas, no longer analyzes the college transcripts of individual students for specific courses as a basis for issuing teaching certificates except in the case of out-of-state graduates. Certificates are now issued by the Agency upon receiving from the certifying agent of a particular college (1) verification that the student has completed a program approved for that college and (2) recommendation from the college that the applicant possesses personal attributes indicative of a successful teacher. Graduates of out-of-state colleges may send their transcripts directly to the Texas Education Agency to be evaluated for certification purposes.

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.

Texas Western College has approved provisional certificate programs at both the elementary and secondary school levels. In certain highly specialized fields, Texas Western College 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. Texas Western College 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 Arts and Sciences. In the field of special education the College is approved for the provisional mentally retarded certificate.

Texas Western College 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 50.
2. Secondary Education — there are two programs for this certificate, Programs A and B as outlined on page 51.
3. All-Levels Programs — these programs are described on pages 46, 47, and 48 of this catalog.
4. Mental Retardation — this program is described on page 51 of this catalog.

Texas Western College has approved professional certificate programs in the following areas:

1. Elementary Education.
2. Secondary Education.
3. Elementary School Principal.
4. Secondary School Principal.
5. Educational Supervisor in Elementary School.
6. Educational Supervisor in Secondary School.
7. 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^o and 3211-12 or 3213-14 or 3215 and 3216.
- 6 - HISTORY 3101, 3102.
- 6 - GOVERNMENT 3210, 3211.
- 12 - Twelve semester hours from two of the following:
SCIENCE - MATHEMATICS - FOREIGN LANGUAGES.

DEGREE REQUIREMENTS AND ELECTIVES (24 semester hours)

- 3 - SPEECH.*
- 3 - PHILOSOPHY 3301 or 3311.
- 3 - ECONOMICS 3101 or SOCIOLOGY 3101.
- 3 - DRAMA or MUSIC.
- 12 - ELECTIVES.

PROFESSIONAL DEVELOPMENT

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

ACADEMIC SPECIALIZATION

- 48 - ART 3101, 3102, 3201, 3202, 3203, 3204, 3205, 3206, 3308, 3311, 3312, 3314, plus 12 advanced hours. (A grade point average of not less than 2.5 is required in Art.)
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^o and 3211-12 or 3213-14 or 3215 and 3216.
- 6 - HISTORY 3101, 3102.
- 6 - GOVERNMENT 3210, 3211.
- 12 - Twelve semester hours from two of the following:
SCIENCE - MATHEMATICS - FOREIGN LANGUAGES.

^oA 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 3301 or 3311.
- 3 - ART or MUSIC.
- 18 - ELECTIVES.

PROFESSIONAL DEVELOPMENT

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

ACADEMIC SPECIALIZATION

- 49 - SPEECH 3101,^o 3102, 3103, 3120, 3215, 3306, 3333, and 3410.
 DRAMA 3113, (2130 and 2230) or (2330 and 2430), 3214, 3221, 3350, 3357, 3358, 3425.
 A minimum total of 127 semester hours including 30 advanced hours.

HEALTH AND PHYSICAL EDUCATION**ACADEMIC FOUNDATIONS (60 semester hours)****ARTS & SCIENCES (36 semester hours)**

- 12 - ENGLISH 3101-02^o and 3211-12 or 3213-14 or 3215 and 3216.
- 6 - HISTORY 3101, 3102.
- 6 - GOVERNMENT 3210, 3211.
- 12 - ZOOLOGY 3101, 3102; BIOLOGY 3202; and three hours of mathematics.

DEGREE REQUIREMENTS AND ELECTIVES (24 semester hours)

- 6 - HEALTH EDUCATION 3101, and three semesters of physical education service courses as prescribed in freshman and sophomore years (not required of students taking 3 semesters of military science, band, ballet, or goldiggers).
- 3 - SPEECH.^o
- 3 - PHILOSOPHY 3301 or 3311.
- 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

- 30 - PHYSICAL EDUCATION 3103, 3102 (Men) or 3104 (Women), 3202, 3203, 3205, 3303, 3304, 3412 (Men) or 3316 (Women), 3413 and Health Education 3302.

A minimum total of 123 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 and 3216.
- 6 — HISTORY 3101, 3102.
- 6 — GOVERNMENT 3210, 3211.
- 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.
- — MUSIC EDUCATION 1101 (Required each semester but not counted in the minimum hours).

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.

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>		ACADEMIC FOUNDATIONS:
PROGRAM A	PROGRAM B	
		ARTS AND SCIENCES (36 semester hours)
12	12	ENGLISH 3101-02* and 3211-12 or 3213-14 or 3215 & 3216.
6	6	HISTORY 3101, 3102.
6	6	GOVERNMENT 3210, 3211.
12	—	Twelve semester hours from two of the following: SCIENCE — MATHEMATICS — FOREIGN LANGUAGES.
—	6	FOREIGN LANGUAGE: Completion of 3201-02.
—	6	MATHEMATICS.
		DEGREE REQUIREMENTS AND ELECTIVES (30 semester hours)
6	—	EDUCATION 3101 or 3437, 3201.
3	3	SPEECH 3101.*
6	—	Six semester hours from Philosophy 3301, Economics 3101, Sociology 3101 or 3104 or 3215.
6 †	12 †	LABORATORY SCIENCES.
—	3	ECONOMICS.
—	3	PHILOSOPHY 3301 or 3311.
—	3	PSYCHOLOGY 3101.
9	6	ELECTIVES.

* 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.

† Elementary and mental retardation majors must complete Botany 3101 and Zoology 3101.

**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 his G.E. advisor. 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	ACADEMIC FOUNDATIONS (see page 49)
		ACADEMIC SPECIALIZATION , complete Plan I or II.
		PLAN I:
18	18	Teaching Subjects, [°] complete one teaching subject listed on page 52 under Teaching Subjects, Elementary Education, Plan I.
18	18	Combination Subjects, [†] complete 18 semester hours from the following: Art Education 3311, Mathematics 3302, Music Education 3334, Geography 3210, Physical Education 3205, Health Education 3302, not more than 6 hours of mathematics and/or physical science.
		PLAN II:
24	24	Teaching Subject, [°] complete one teaching subject listed on page 52 under Teaching Subjects, Elementary Education, Plan II.
12	12	Combination Subjects, [†] complete 12 semester hours from the following: Art Education 3311, Mathematics 3302, Music Education 3334, Geography 3210, Physical Education 3205, Health Education 3302, not more than 6 hours of mathematics and/or physical science.
		PROFESSIONAL DEVELOPMENT
18	18	EDUCATION 3301, 3302, 3306, 3403, 3496-97.
		ELEMENTARY CONTENT.
12	12	EDUCATION 3303, 3304, 3305, 3405.
§	§	ELECTIVES to make a minimum of 132 semester hours.

[°] *Teaching subjects may include courses in Academic Foundations.*

[†] *Combination Subjects may not include courses in Academic Foundations.*

[§] *Varies 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	ACADEMIC FOUNDATIONS (see page 49)
48	48	ACADEMIC SPECIALIZATION , complete Plan I or II.
		PLAN I:
		Secondary Teaching Fields,* complete two teaching fields listed on page 53 under Teaching Fields, Secondary Education, Plan I. (A grade average of not less than 2.5 is required in each teaching field.)
		PLAN II:
		Secondary Composite Teaching Field,* complete one composite teaching field on page 53 under Composite Teaching Fields, Secondary Education, Plan II. (A grade average of not less than 2.5 is required in the composite teaching field.)
		PROFESSIONAL DEVELOPMENT
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 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

- 123 - Complete all requirements in Program A or B in Elementary Education (see page 50) except for Electives in Academic Foundations (see page 49).
- 3 - EDUCATION 3409.
- 9 - Complete at least nine hours from Education 2421, 3422, 2429, 3435, 2436.
- § - ELECTIVES to make a minimum of 135 semester hours.

§ Varies 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

PLAN I (18 semester hours in a subject, 9 of which must be advanced)

ART – Art 3101, 3201, 3202, 3314, plus 6 advanced hours	Total: 18 hours
DRAMA AND SPEECH – Speech 3103, 3120, 3333, 3410; Drama 3113, 3350	Total: 18 hours
ECONOMICS – Economics 3101, 3303, 3330, 3340, plus 6 advanced hours	Total: 18 hours
GOVERNMENT – Government 3210, 3211, plus 12 advanced hours	Total: 18 hours
HEALTH AND PHYSICAL EDUCATION – Physical Education 3103, 3203, 3204, 3303, 3409, 3413	Total: 18 hours
HISTORY – History 3101, 3102, 3201 or 3202, plus 9 advanced hours	Total: 18 hours
PHYSICS – Physics 4215, 4216, plus 10 advanced hours	Total: 18 hours
SOCIOLOGY – Sociology 3101, 3102, 3104 or 3214, plus 9 advanced hours	Total: 18 hours

PLAN II (24 semester hours in one subject, 12 hours of which must be advanced)

ART – Art 3101, 3201, 3202, 3314, choice of 3 hours from 3203, 3204, 3205, plus 9 advanced hours	Total: 24 hours
BIOLOGICAL SCIENCES – Zoology 3101, 3102, 3303; Botany 3101, 3210, 3301; Microbiology 3301; Biology 3401	Total: 24 hours
CHEMISTRY – Chemistry 4103-04, 3211, 4213, 4321-22, 4324 or 3462	Total: 26 or 27 hours
DRAMA AND SPEECH – Speech 3103, 3101, 3120, 3305, 3333, 3410; Drama 3113, 3350	Total: 24 hours
ECONOMICS – Economics 3101, 3303, 3330, 3340, 3363; Bus. Adm. 4361; plus 6 advanced hours in Economics	Total: 25 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 examina- tions by Modern Languages Department required	Total: 26 hours
GEOLOGY – Geology 3101, 3102, 3216, 3217, plus twelve advanced hours	Total: 24 hours
GOVERNMENT – Government 3210, 3211, plus eighteen advanced hours	Total: 24 hours
HEALTH AND PHYSICAL EDUCATION – Physical Education 3103, 3203, 3204, 3303, 3409, 3413 Men: Physical Education 3102, 3414 Women: Physical Education 3104, 3406	Total: 24 hours
HISTORY – History 3101, 3102, 3201, 3202, plus twelve advanced hours	Total: 24 hours
MATHEMATICS – Mathematics 3115, 2116, 4111, 4212, plus twelve advanced hours	Total: 25 hours
PHYSICS – Physics 4103-04, 4213-14, plus twelve advanced hours –OR– Physics 4215, 4216, 4317, plus 12 adv. hours	Total: 24 or 28 hours
SPANISH – Spanish 4101-02, 3201-02, 3357; plus choice of three or six hours from Spanish Literature; plus choice of three or six hours from Spanish American Literature. Non-native speak- ers 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

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

BIOLOGICAL SCIENCES – Zoology 5201, 3301; Botany 3101, 3210, 3301; Microbiology 3301; choice of 6 hours from: Zoology 3302, 3303, 3304, Microbiology 3302, 4360, Biology 3301, 3401, 3415. Completion of Zoology 3101 and 3102 under Academic Foundations	Total: 26 hours
BOOKKEEPING AND GENERAL BUSINESS – B.A. 4111, 4112, 3211, 3220, 3325 (or any 3 hours in Econ. or B.A.); Economics 3303, 3326; plus 3 advanced hrs. in Accounting or Economics. Completion of Economics 3101 under Academic Foundations	Total: 26 hours
CHEMISTRY – Chemistry 4103-04, 3211, 4213, 4321-22, 4324 or 3462	Total: 26 or 27 hours
DRAMA – Drama 3113, 3214 (1111, 4 semesters) or (2130, 2230), (1311, 2 semesters) or 2330, 3425, plus nine hours from 3320, 3332, 3340, 3357, 3358, 3425	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
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
HEALTH AND PHYSICAL EDUCATION – Physical Education 3103, 3202, 3303, 3304, 3409, 3413. Men: Physical Education 3102, 3412. Women: Physical Education 3104, 3316	Total: 24 hours
HISTORY – History 3101, 3102, 3201, 3202, plus twelve 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 twelve advanced hours	Total: 25 hours
PHYSICS – Physics 4103-04, 4213-14, plus twelve advanced hours – O R – Physics 4215, 4216, 4317, plus twelve advanced hours	Total: 24 or 28 hours
SECRETARIAL SCIENCE – B.A. 3201-02, 3303, 3304, 3320, 3321, 3340, 3341. Completion of Economics 3101 under Academic Foundations	Total: 24 hours
SPANISH – Spanish 4101-02, 3201-02, 3357; plus choice of three or six hours from Spanish Literature; plus choice of three or six hours from Spanish American Literature. Completion of 4101-02 in a second language under Academic Foundations. Senior Spanish examination by Modern Languages Department required	Total: 26 hours
SPEECH – Speech 3102 or 3230, 3103, 3120, 3215, 3305 or 3315, 3333, plus six advanced hours	Total: 24 hours

Composite Teaching Fields: Secondary Education

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

SOCIAL STUDIES – History 3101, 3102, 3201, 3202, plus twelve advanced hours; Government 3210, 3211, plus three advanced hours; Sociology 3101, 3102, plus three advanced hours; Economics 3101; Geography 3210	Total: 48 hours
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GRADUATE DIVISION



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

ADMISSION TO THE GRADUATE DIVISION

TEXAS WESTERN COLLEGE offers work leading to the degrees of Master of Arts, Master of Science, and Master of Education. Graduate study is under the general supervision of the Graduate Council, the Graduate Dean acting as administrative officer. A professor in the major field will direct the work of the individual student who wishes to become a candidate for a degree or certificate. An average grade of at least "B" is required in all courses counted for graduate credit. A minimum of fifty per cent of the work applied on a degree program must be in graduate courses (3500 and above). Graduate courses are open to graduate students only, and have prerequisites of twelve semester hours of advanced courses in the field and a bachelor's degree.

Majors are offered in Education, English, History, Physics, and Spanish.

At the discretion of the major department, a minor of from six to twelve hours may be approved in a related field.

1. Qualifications of Applicants:

An applicant for admission to the Graduate Division must hold a bachelor's degree from an accredited college or university. Twenty-four semester hours of undergraduate work in the major subject (twelve advanced) and twelve semester hours in the minor subject are required. Graduate language majors who have been exempted from Freshman language will be required to show only eighteen undergraduate hours. Graduate majors in Spanish must have a background in a second language (French, German, or Russian). An English major from a foreign country must make a satisfactory score on the examination given by the English Language Institute of the University of Michigan.

2. Method of Application:

An application for admission must be made in the office of the Dean of the Graduate Division, where forms may be secured. Two complete transcripts must be provided—one for the Registrar, and one for the office of the Dean of the Graduate Division.

3. Transfer of Credit:

Acceptance of graduate credits from another institution may not exceed six semester hours, and is subject to approval by the Graduate Council.

Undergraduate Students Taking Work for Graduate Credit

An undergraduate student who has completed 108 semester hours of the requirements for a bachelor's degree may, upon petition to the Graduate Council, take courses for graduate credit.

Special Examinations

The Graduate Record Examination must be taken by all graduate students before admission to candidacy. A comprehensive examination, oral and/or written, may be given at the discretion of the major department. An oral examination is required in the Spanish major.

Graduate Load for Teachers

Students who are employed in full-time teaching positions should be limited to three semester hours of work each semester. With the written approval of the school superintendent, 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 Veterans

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

Admission to Candidacy

After a graduate student has completed twelve semester hours of effective work toward the master's degree, he will receive a Petition for Candidacy which is to be signed by the student and by the head of his department and returned promptly to the Graduate Office. If the department head does not approve the petition, a new application may be made at a later date. A student is not a candidate for a degree until his petition has been approved.

Withdrawals and Changes

Drops, withdrawals, and changes of program are handled in the office of the Graduate Dean.

Catalog Requirements

A student may obtain a degree according to the requirements of the catalog in force at the time of his admission to the Graduate Division or of a later catalog, subject to the restriction that all requirements must be completed within six years of the date of the catalogue chosen.

Residence

The minimum residence requirement for the master's degree is one long session or three summer sessions, or one semester of the long session and two summer sessions. In the case of students doing part-time graduate work during the long session, residence will be computed in terms of semester hours completed. No graduate credit may be secured for courses taken by correspondence or extension.

REQUIREMENTS FOR THE MASTER OF ARTS DEGREE

1. A thesis (six semester hours) and twenty-four hours of course work.
2. Thirty semester hours (including the thesis) in the major subject, except when the major department requires or approves a minor.
3. At the discretion of the head of the major department, a minor of six, nine or twelve hours in a related subject may be approved. A transfer student must complete at least three semester hours of the minor in residence.
4. At least fifteen semester hours, including the thesis, must be on the graduate level (courses numbered 3500 and above).

REQUIREMENTS FOR THE MASTER OF EDUCATION DEGREE

1. Thirty-six semester hours of course work.
2. Not less than twenty-one semester hours, nor more than thirty semester hours of Education.
3. A minor of not less than six semester hours nor more than fifteen semester hours.
4. There must be a minimum of eighteen semester hours of graduate courses (those numbered 3500 and above).

REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE IN PHYSICS

1. A thesis (six semester hours) and twenty-four semester hours of course work.
2. A six-hour minor in Mathematics may be included in the twenty-four hours of course work on recommendation of the head of the department.
3. There must be a minimum of fifteen semester hours, including the thesis, of graduate courses (those numbered 3500 and above).

(See the Graduate Bulletin for complete details)

Courses Offered . . .

<p>Anthropology 141</p> <p>Art 57</p> <p>Bible 60</p> <p>Biological Sciences 61</p> <p>Botany 62</p> <p>Business Administration 64</p> <p>Chemistry 71</p> <p>Drama 74</p> <p>Drawing 91</p> <p>Economics 77</p> <p>Education 80</p> <p>Engineering 86</p> <p>English 92</p> <p>French 124</p> <p>Geography 99, 142</p> <p>Geology 97</p> <p>German 125</p> <p>Government 100</p> <p>Health Education 102</p>	<p>History 105</p> <p>Journalism 109</p> <p>Mathematics 113</p> <p>Metallurgy 120</p> <p>Microbiology 61</p> <p>Military Science 122</p> <p>Mining 119</p> <p>Music 129</p> <p>Music Education 130</p> <p>Philosophy 137</p> <p>Physical Education 102</p> <p>Physics 115</p> <p>Psychology 138</p> <p>Radio and Television 111</p> <p>Russian 128</p> <p>Sociology 140</p> <p>Spanish 125</p> <p>Speech 75</p> <p>Zoology 62</p>
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For Explanation of

COURSE NUMBERING SYSTEM

See page 143



DR. JOSIAH L. M. BAIRD, *Head*

Professors BAIRD, HARRISON; *Associate Professor* MASSEY; *Assistant Professor* COOGLER;
Part-time Instructors ALEXANDER, ZINN.

B.A. Degree — Art courses required for a Major in Art are: Art 3101, 3102, 3201, 3202, 3203, 3204, 3206, and 12 hours of upper level art electives in three or more areas.

B.A. Degree with Teacher Certification (see page 46)—Art Majors are required to meet with the Department Head before 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.

BASIC

3101 Art Fundamentals

An introduction to art through design experience with various media. Includes discussion of ideas stressing the meaning of art to the individual as a vital cultural force through the development of understanding, creative production, and certain necessary disciplines.

DRAWING

3102 Drawing Orientation

Introduction to various types and uses of drawing in a variety of media and subject matter.

3308 Figure Drawing*

Methods and techniques of sketching from the living model. Emphasis will be placed on anatomy and figure construction. *Prerequisite:* Six semester hours of Art.

PAINTING

3201 Painting*

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:* 3101, 3102.

3301 Advanced Painting

Intended to develop awareness that previous experience with drawing and painting will become more useful when integrated to form a new experience, making it possible to accomplish complex aspects of picture making. *Prerequisite:* 3201.

SCULPTURE

3202 Sculpture and Modeling I*

An introduction to sculptural form and problems through the use of classic and contemporary materials and technique. *Prerequisite:* 3101.

3302 Advanced Sculpture

Designed to give intensified experience in sculptural art form with emphasis on individual experimentation and competence in one or more sculptural materials. *Prerequisite:* 3202.

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

JEWELRY

- 3203 Jewelry I°
Techniques in jewelry construction, casting, enameling and lapidary. *Prerequisite:* 3101.
- 3303 Advanced Jewelry
Construction, enameling and lapidary techniques. Emphasis on design and technical excellence. *Prerequisite:* 3203.
- 3309 Silversmithing°†
Basic techniques in silversmithing. Emphasis on modern approach to design in hollow and flatware forms. *Prerequisite:* 3203.

CERAMICS

- 3204 Ceramic Design I°
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:* 3101.
- 3304 Advanced Ceramic Design
A continuation of Ceramic Design I with emphasis on aesthetic production and research in form and technique. *Prerequisite:* 3204.

GRAPHICS

- 3205 Graphic Reproduction I°
Appreciation of design principles as they apply to print processes, with emphasis on etching and engraving. *Prerequisite:* 3101.
- 3305 Advanced Graphics
A continuation of Graphic Reproduction I with emphasis on advanced techniques and their application in graphic art form. *Prerequisite:* 3205.

ART HISTORY

- 3206 Art History of the Western World
A critical and analytical study of the great historical and contemporary works of art in the western world in architecture, sculpture, painting and the minor arts. *Prerequisite:* Sophomore standing.
- 3310 Art History of Mexico†
A survey of the Art of Mexico from the Mayan Period to the present. The effect of the Revolution, the era of mural painting and the natural characteristics of Mexican Art. Day and overnight field trips to Mexico is part of course. *Prerequisite:* Junior standing.
- 3314 Survey of Contemporary Art
Trends in painting, sculpture and architecture in Europe and America, from Goya to the present, including history, theory, philosophy, and criticism, relating to the Visual Arts. *Prerequisite:* Junior standing.

COMMERCIAL DESIGN

- 3207 Commercial Design I — Advertising°
Application of design and aesthetic principles to Commercial Art. *Prerequisite:* 3101.

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

†*Summer Session only.*

3307 Commercial Design II – Interior Decoration*

A critical analysis of modern living areas, studio project problems-lectures, visits to shops, etc. Survey of period styles. *Prerequisite:* Six semester hours of Art.

ART EDUCATION**3311 Art Methods in the Elementary School**

A course for the prospective teacher; deals with concepts, processes and handling of material suitable to the elementary curriculum. *Prerequisite or concurrently:* Education 3301.

3312 Art Methods in the Secondary School

Lectures, demonstrations, processes and production related to the teaching of Art at the secondary levels. *Prerequisite:* Junior standing.

RESEARCH**3401-3402 Research Problems in Art**

Designed for the professionally oriented art student to allow him to select and explore intensively in an approved art area with the guidance of a member of the art staff. *Prerequisite:* 2.5 average in art studies and permission of Department Head.

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

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

- 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.
- 3201 The Life of Paul
A historical study of the life and missionary endeavors of the Apostle Paul. *Prerequisite:* Sophomore standing.
- 3202 Prophetic and Wisdom Literature of the Old Testament
A study of the historical context, literary style and religious meaning of the prophetic and wisdom literature in the Old Testament. Special attention will be given to all the major and minor prophetic books as well as Job, Psalms, Proverbs and Ecclesiastes. *Prerequisite:* Sophomore standing.
- 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.

JAMES B. REEVES, Head
 Professors BERKMAN, REEVES; Associate Professors DUKE, WILLIAMS;
 Assistant Professors CHARPLIN, METCALF, WEBB, TUTLEY;
 Instructors LANDOLT, MANNING.

BIOLOGY

For Undergraduates

3101-02 Anatomy and Physiology (\$2-\$2)
 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. This course is open only to students in a school of nursing.

3202 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 3102. This course may not be counted for credit in addition to Zoology 5201.

3203 Introduction to Human Physiology (\$2)
 Body functions with emphasis on their relations to physical exercise. Three lectures and two laboratory hours per week. *Prerequisite:* Biology 3202 or Zoology 5201.

3204 Genetics
 Principles of heredity in their application to animals, plants, and mankind. *Prerequisite:* Zoology 3102 or Botany 3102 and Sophomore standing.

For Undergraduates and Graduates

3301 Physiology of Exercise (\$2)
 Brief review of embryogeny and histogenesis of muscles in Vertebrates; physiology of the nervous, muscular, digestive, and respiratory systems of man in relation to work and exercise; some aspects of external and internal stimuli, injuries, and health. Three lectures and two laboratory hours per week. *Prerequisite:* Biology 3203 or Zoology 5201.

3401 Technique in Histology and Cytology (\$2)
 Fixing, imbedding, sectioning, staining and mounting tissues and cells for critical microscopic examination. One lecture and six laboratory hours per week. *Prerequisite:* Chemistry 4213, or 3221-22, or Microbiology 3302, or 12 semester hours of zoology, or botany, and permission of the Head of the department.

3415 Selected Topics in the Biological Sciences — SEMINAR
 Three lectures per week. *Prerequisite:* 12 hours of advanced biological sciences and permission of the Head of the department.

MICROBIOLOGY

3201 Microbiology (\$2)
 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 3101. This course open only to students in a school of nursing.

BIOLOGICAL SCIENCES

3301 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:* Twelve semester hours in any one of the natural sciences or a combination of twelve semester hours in natural sciences and junior standing. It is strongly recommended wherever possible that eight hours of general chemistry be completed before registering for this course.

3302 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 3301; for juniors and seniors, the equivalent of Microbiology 3301 as determined by the Instructor and the Head of the department.

4360 Immunology (\$4)

Principles of the immune reaction, nature of antigens and antibodies, antigen-antibody reactions, allergic phenomena, antiviral immunity. Two lectures and six laboratory hours per week. *Prerequisite:* Microbiology 3302, and Chemistry 3221 or 4321 concurrently.

BOTANY

For Undergraduates

3101 General Botany (\$2)

Survey of the plant cell and plant body; mitosis and meiosis; survey of the algae and fungi coupled with an exposition of their functional relationship to man. Three lectures and two laboratory hours per week.

3102 General Botany (\$2)

Life cycles and survey of mosses, ferns, and seed plants. Three lectures and two laboratory hours per week. *Prerequisite:* Botany 3101.

3210 Morphology and Taxonomy (\$2)

The form, structure, and development of the higher plants with principles of collecting, preservation, identification and classification. *Prerequisite:* Botany 3102.

3301 Plant Ecology (\$2)

The adaptation of plants to environmental growth conditions. Emphasis is on the origin, development, and stabilization of plant communities. *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 3101 and 3102 and permission of Head of department.

ZOOLOGY

3101 General Zoology (\$2)

Fundamentals of Zoology; study of protoplasm, cells, and tissues; life histories, and development of representatives of the major invertebrate phyla; generalizations in biological theory. Three lectures and two laboratory hours per week.

3102 General Zoology (\$2)

Survey of the Chordata; the occurrence, classification, structure, function, adaptation, and development of representative vertebrates; heredity and evolution. Three lectures and two laboratory hours per week. *Prerequisite:* Zoology 3101, or three semester hours of general biology.

- 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 3102 with a grade of at least a "C" and sophomore standing.

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 Animal Cytology and Histology (\$2)
 Structure and function of vertebrate cells, tissues and organs; proficiency in microscopy. Two lectures and three laboratory hours per week. *Prerequisite:* Zoology 5201 with a grade of at least a "C" 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 3101-02 and six additional hours of biological science.
- 3304 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. Two lectures and three laboratory hours per week. *Prerequisite:* Zoology 5201 and Chemistry 4103-04.

MICHAEL BRAND, *Head*

Professor HARTRICK; *Associate Professors* BLACK, BLANCHARD, BRAND, LOWENSTEIN;
Assistant Professors BUCKNER, FREELAND, JENSEN, JOHNSON, TOMPKINS, SANDERS;
Part-time Instructors AKARD, FRUITHANDLER, SALAZAR, M. TAYLOR.

B.A. Degree — Specific courses required are B.A. 4111, 4112, 3220, 4361, and nine other advanced hours; Economics 3103-04 and six advanced hours in Economics. For **B.B.A. Degree** see page 43.

ACCOUNTING

For Undergraduate Credit Only

3110 Survey of Accounting Principles

(Open only to non-Business Administration majors.)

A survey course designed to give a broad basic understanding of accounting; principles, elements of cost accounting, the preparation and interpretation of financial statements and budgeting.

4111 Theory and Practice in Accounting (\$2)

Principles of double-entry bookkeeping, theories of general financial accounting, analysis and recording of business transactions, adjusting and closing entries; financial statements, sole proprietorship accounting, practice set. Three classroom and three laboratory hours per week.

4112 Theory and Practice of Accounting (\$2)

Continuation of Business Administration 4111. Partnership accounting, corporation accounting, reserves and reserve funds, manufacturing account, asset valuation, practice sets. Three classroom and three laboratory hours per week. *Prerequisite:* Business Administration 4111.

3130 Introduction to Data Processing

An introduction to the principles of data processing as applied to accounting and statistics. The operation of the various machines used in processing data and their use in relation to accounts receivable, inventories, payrolls, audit controls, flow charting, card design, and other phases of accounting. *Prerequisite:* Business Administration 4112 or equivalent as determined by instructor and Department Head.

3211 Intermediate Accounting, First Course

Classification and codification of accounts; form and content of financial statements; correction of books and statements; special phases of corporation accounting; cash and receivables; inventories; investments. *Prerequisite:* Business Administration 4112.

3212 Intermediate Accounting, Second Course

Tangible and intangible fixed assets; liabilities and reserves; analysis and interpretation of financial statements; application of funds and cash-flow statements; quasi-reorganizations; Income Tax allocation. *Prerequisite:* Business Administration 3211.

For Graduates and Undergraduates

3213 Introduction to Computers

Designed to familiarize the student with electronic computers and their social and economic impacts on society. Includes problem definition, flow charting, block diagramming, automatic coding, arithmetic operations, loading routines and other basic programming techniques. *Prerequisite:* Business Administration 3130 or equivalent as determined by instructor and Department Head.

3214 Management in Data Processing

Principles of planning, organizing and controlling business establishments. Introduction to management objectives and philosophy, physical facilities, control

- evaluation, scheduling, input and output control, personnel administration and organizational structure. *Prerequisite:* Business Administration 3130 or equivalent as determined by instructor and Department Head.
- 3311 **Cost Accounting, First Course**
A study covering cost procedures, cost control, cost reports, and cost analysis. Job order cost accounting and process cost accounting methods are studied. *Prerequisite:* Business Administration 3211 (may be taken concurrently).
- 3312 **Cost Accounting, Second Course**
This course includes a study of estimated costs, budgetary control with standard costs, and cost and profit analysis for decision-making purposes. *Prerequisite:* Business Administration 3311.
- 3313 **Auditing, First Course**
A study of auditing procedures used by internal auditors and independent public accountants. Includes the techniques of working paper preparation. *Prerequisite:* Business Administration 3212 (may be taken concurrently).
- 3314 **Auditing, Second Course**
A continuation of Business Administration 3313. An audit practice case is completed with the preparation of working papers and the audit report. Audit case studies involving auditing problems in special situations are presented. *Prerequisite:* Business Administration 3313.
- 3315 **Federal Tax Accounting for Individuals**
Theory and problems, income tax forms, most recent federal revenue acts, and application of federal tax problems to everyday personal and business questions. *Prerequisite:* Business Administration 4112.
- 3316 **Federal Tax Accounting for Partnerships and Corporations**
Theory and problems, estate and trust taxes, capital stock taxes, excess profits taxes, gift taxes, foreign income taxes, and problems of foreign taxpayers. *Prerequisite:* Business Administration 3315.
- 3317 **Governmental and Institutional Accounting**
Accounting principles and procedures characteristic of government units and institutions. *Prerequisite:* Business Administration 4112.
- 3411 **Advanced Accounting, First Course**
Special phases of partnership accounting; joint venture; consignments; accounting for insurance costs; statement of affairs and accounting for insolvent concerns; compound interest; home office and branch accounting. *Prerequisite:* Business Administration 3212.
- 3412 **Advanced Accounting, Second Course**
Consolidated balance sheets, consolidated income and surplus statements; holding companies; mergers. *Prerequisite:* Business Administration 3411.
- 3413 **C. P. A. Problems**
A study of problems and advanced theory dealing primarily with corporation accounting, assets and liabilities, analysis of statements, and cost accounting. Current C.P.A. examination problems will be stressed. *Prerequisite:* Twenty-one semester hours of courses in accounting, or equivalent as determined by instructor and Department Head.
- 3414 **C. P. A. Law Review**
Analysis of C.P.A. law examinations for recent years; fields of law covered by examinations; techniques of analyzing and answering law problems and cases. *Prerequisite:* Business Administration 3326.
- 3420 **Fundamentals of Accounting Systems**
A study of principles to be applied in designing accounting systems, and the relationship of the system to policies, organization, and operational procedures. *Prerequisite:* Business Administration 3212.

BUSINESS ADMINISTRATION

BUSINESS LAW

For Undergraduate Credit Only

3325 Business Law

Text and Case Study. The Law of Contracts and its effects on Business and Society as a whole. *Prerequisite:* Junior standing.

3326 Business Law

Text and Case Study. Law of Negotiable Instruments and other commercial aspects of law. *Prerequisite:* Business Administration 3325.

For Graduates and Undergraduates

3440 International Law of Commerce

An intensive study of the practical legal problems encountered by individuals and corporations doing business abroad under national and international law. The historical development of the law merchant and the principal world legal systems. An examination of the law of contracts, business organizations and negotiable instruments under a civil law jurisdiction. Particular attention will be paid to Latin-America. *Prerequisite:* Twelve semester hours of advanced Economics, Business Administration or Social Science.

3342 Labor Law

Historical development of labor law and the rights and duties of collective bargaining. Study of applicable Federal legislation. Administrative procedure, rulings and decisions. Significant Court Cases. *Prerequisite:* Junior standing.

3343 Real Estate Law

General principles of real estate law with particular reference to Texas. Estates and interests in land. Community and separate property. Adverse possession. Deeds, leases, and conveyancing. Liens and foreclosure procedures, etc. *Prerequisite:* Junior standing or permission of instructor and Department Head.

3344 Trade Regulation

A study of anti-trust regulation, functions and powers of the Federal Trade Commission, monopoly, conspiracies in restraint of trade, unfair competition, deceptive branding and advertising, copyright, trade mark and patent registration and infringement. *Prerequisite:* Junior standing or permission of instructor and Department Head.

FINANCE AND STATISTICS

For Undergraduate Credit Only

3331 Corporation Finance

Promotion of corporations, sources of capital, capital structures, internal financial management, receiverships, reorganizations, relation of corporation finance to banking, social consequences of over-promotion. *Prerequisite:* Economics 3104 or Economics 3101.

4361 Principles of Statistics

Quantitative methods of analysis, graphic and tabular presentations, organizing and describing data; frequency distribution, measures of central tendency, dispersion, skewness, time series analysis, correlation. Three classroom and three laboratory hours per week. *Prerequisite:* Six semester hours of mathematics and Junior standing.

3362 Intermediate Statistics

A continuation of the study of statistical methods and procedures with application to economic and business situations. Special emphasis on probability and theory of sampling; tests of significance and reliability; statistical induction; the normal curve; Chi-square test; analysis of variance; non-linear, multiple, and partial correlation; testing hypotheses. *Prerequisite:* Business Administration 4361.

- 3378 Investments *For Graduates and Undergraduates*
 Investment principles, investment banking, security analysis, security classification, including rails, industrials, utilities, governments, and others. Principally considers investor's viewpoint. *Prerequisite:* Business Administration 4112 and Economics 3104.

MANAGEMENT *For Undergraduate Credit Only*

- 3120 Business Machines
 Principles of operation of automatic and semi-automatic business calculating machines. Field trips to local firms to study how the system and flow of work is mechanized in various offices.
- 3121 Introduction to Business
 A general survey of the major industries in the United States with special emphasis on the competitive technological and historical forces underlying their growth and development. Economics and Business Administration students can only earn credit if this course is taken before they have completed 31 credit hours.
- 3131 Principles of Real Estate Management
 The principles and practices of the management of real estate. Building and real estate management problems in relation to the concentration of property ownership. Training in the fundamentals and changing structure of property management.
- 3220 Business Research and Communication
 Methods of business research and communication, with emphasis on techniques and proper English usage in business reports, letters and other written matter. *Prerequisite:* Sophomore standing and English 3101-02.
- 3340 Management Principles
 The principles and practices of the scientific approach to Management. The Management process and the functions that constitute the framework on which the concepts of Management are built. *Prerequisite:* Business Administration 4112 and Economics 3104.

For Graduates and Undergraduates

- 3341 Office Organization and Management
 Presentation of the fundamental principles and practices of office management providing essential information for the solution of office management problems. Emphasis placed on planning, organizing, and controlling office work. *Prerequisite:* Junior standing.
- 3345 Personnel Management
 Policies and practices of planning for and organizing personnel for the purpose of procuring, developing, maintaining, and utilizing employees. *Prerequisite:* Junior standing.
- 3346 Industrial Management
 Basic principles of industrial organization and management; problems connected with production and human relations; case studies. *Prerequisite:* Junior standing.
- 3347 Supervision of Personnel
 Managerial problems on the level of first-line supervisors; leadership and discipline; relations with subordinates, with superiors, and with other departments; problems of absenteeism, grievances, morale, and safety. *Prerequisite:* Junior standing.
- 3349 Purchasing
 The practices which underlie the sound procurement of materials, parts, supplies and equipment required in the normal conduct of a business with special attention to the meaning, scope, organization and principles of purchasing procedure; the place of value analysis, standardization and the legal aspects in the purchasing function. *Prerequisite:* Junior standing.

BUSINESS ADMINISTRATION

3448 Methods Improvement

An analysis of the procedures, processes and principles of motion economy and micromotion techniques; determining time standards and their relation to incentive systems; attendant human relations problems are examined. *Prerequisite:* Junior standing.

3449 Production Control

A study of the function of production control and its relationship with manufacturing sales, and technical staff departments. Observations of the techniques used by business are made by means of field trips and case problems. *Prerequisite:* Junior standing.

MARKETING

For Undergraduate Credit Only

3228 Insurance Fundamentals

The economic and social services, the important principles and practices, and the principal legal phases of all the common forms of insurance including life, property, casualty, and suretyship. *Prerequisite:* Business Administration 4112 or Economics 3104, or equivalent as determined by instructor and Department Head.

3232 Real Estate Principles and Practices

Fundamentals of the real estate business. The economics of real property. Ownership, titles, and interests in real estate; liens, taxes, contracts, leases, deeds; financing and investment; valuation and appraisal principles: subdivision, home ownership, and housing; insurance, ethics, licensing requirements, and operating procedures. *Prerequisite:* Economics 3104, or equivalent as determined by instructor and Department Head.

3251 Marketing

Considers functions, middlemen, institutions, law, policies, and practices in marketing. *Prerequisite:* Economics 3104 or Economics 3101.

3355 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:* Business Administration 4112, or equivalent as determined by instructor and Department Head.

For Graduates and Undergraduates

3350 Fundamentals of Advertising

Relation to other business functions. Study of campaigns, appropriations, media, and practical advertising activities. *Prerequisite:* Business Administration 3251, or equivalent as determined by instructor and Department Head.

3351 Advertising, Copywriting and Special Layouts

Instruction and practice in preparing various types of copywriting and layouts. Study of marketing media, direct mail advertising, circulars, store layouts. Two classroom and two practice hours per week. *Prerequisite:* Business Administration 3350.

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 government, employees, customers, supplies, social and religious institutions. *Prerequisite:* Junior standing or permission of instructor and Department Head.

3353 Business Salesmanship

Economic problems of personal selling, planning and execution of an interview, production and market analysis, building good will, salesman and employer relationship. *Prerequisite:* Business Administration 3251, or equivalent as determined by instructor and Department Head.

- 3379 **Credits and Collections**
 Considers the types of credit, credit terms, organization and operation of credit department, credit analysis and appraisal, credit information, collection devices, legal aspects, and procedures with past-due and insolvent accounts. *Prerequisite:* Business Administration 4112 and Economics 3104, or equivalent as determined by instructor and Department Head.
- 3450 **Principles of Retailing**
 Survey of all phases of retailing, internal and external. *Prerequisite:* Business Administration 4112 and 3251, or equivalent as determined by instructor and Department Head.
- 3451 **Market Research and Analysis**
Research methods and statistical techniques used in market research and analysis. Emphasis on collection of information from internal and external sources, analysis, interpretation, and presentation of research findings. *Prerequisite:* Business Administration 4361 and 3251.
- 3479 **Credit Management Problems**
 A case study of credit problems developing professional approaches to responsibilities, policies, and skills of credit management. *Prerequisite:* Business Administration 3379, or equivalent as determined by instructor and Department Head.

SECRETARIAL

For Undergraduate Credit Only

- 2101 **Elementary Typewriting**
 Fundamentals of touch typewriting; keyboard, techniques, copy work and page placement. Five hours per week.
- 2102 **Intermediate Typewriting**
 Advanced instruction in applied typewriting with emphasis upon increasing speed and accuracy; business letters and business forms; manuscript typing. Five hours per week. *Prerequisite:* Business Administration 2101 or equivalent.
- 2103 **Advanced Typewriting**
 A continuance of Business Administration 2102 with further emphasis on speed and accuracy; legal papers; manuscript writing; all business forms; radio and television copy; special emphasis on preparing in-put data for data-processing and computing machines. *Prerequisite:* Business Administration 2102 or equivalent as determined by instructor and Department Head.
- 4104-05 **Elementary Shorthand**
 Principles of Gregg shorthand; reading, writing and elementary transcription. Five hours per week for two semesters. *Prerequisite:* Business Administration 2102 (may be taken concurrently).
- 3201-02 **Advanced Shorthand and Transcription**
 Development of speed and accuracy in shorthand and typewriting; building of vocabulary, sustained dictation and transcription practice for secretarial efficiency. Three lectures and three laboratory hours per week for two semesters. *Prerequisite:* Business Administration 4105 and 2102 or equivalent as determined by instructor and Department Head.
- 3303-04 **Secretarial Office Practice and Problems**
 Practice of all office procedures; duplicating and dictation machines; filing; receptionist's duties; secretarial attitudes and responsibilities; semi-executive duties. Three lectures and three laboratory hours per week for two semesters. *Prerequisite:* Business Administration 3202 (may be taken concurrently).
- 3320 **Business Letters**
 Scope and importance of business communication; problems in letter writing for various types of business transactions, such as sales, adjustments, credit, and collection letters. *Prerequisite:* Business Administration 2101 or 2102, sophomore English, and Junior standing.

BUSINESS ADMINISTRATION

3321 Report Writing

Techniques of business research and training in the organization and writing of business reports. *Prerequisite:* Business Administration 2101 or 2102, sophomore English, and Junior standing.

SEMINAR

For Graduates and Undergraduates

2495 to 6495 Seminar in Economics and/or Business Administration

Special studies in areas for which a separate course is not organized. Supervised individual reading, research and 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:* Eighteen hours of Business Administration and/or Economics, six of which must be advanced; consent of instructor and Department Head.

For Graduate Students Only

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

3594 Statement Analysis

An analytical study of differential financial statements.

3595 Managerial Organization

A survey of the important literature in the field of industrial organization and management. The student has an opportunity to participate in seminar discussions of industrial management problems.

3596 Personnel Administration Problems

A survey of the important literature in the field of human relations. The student has an opportunity to participate in seminar discussions of human relations problems.

3598 Readings in Marketing

A course designed to broaden the perspective of the student in the history, institutions, middlemen, merchandising techniques, legal aspects, and current trends in the distributive process.



CHEMISTRY



DR. J. A. HANCOCK, *Head*

Professors ALEXANDER, HANCOCK, LAKE (Emeritus), O'NEAL;
Associate Professor LLOYD; *Assistant Professors* MILLER, RIVERA, SCRUGGS;
Instructors FOULDS, MILEDI, SHOJI; *Part-time Instructor* SPRINGER.

B.S. Degree — The minimum course requirements in Chemistry for the Bachelor of Science Degree are Chemistry 4103-04, 3211, 4213, 4324, 4321-22, 4460, 4461, and six additional advanced hours in Chemistry. **B.A. Degree** outlined on page 42.

For Undergraduates

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.

3211 Qualitative Analysis (\$2)

Analytical reactions from the point of view of the laws of chemical equilibrium applied to solutions of electrolytes. Analysis of the common ions using the semi-micro technique. One lecture and six laboratory hours per week. *Prerequisite:* Chemistry 4103-04 with a grade of not less than "C" in each semester.

2211 Qualitative Analysis (\$2)

Lectures the same as Chemistry 3211 but with only three laboratory hours per week. *Prerequisite:* Chemistry 4103-04 with a grade of not less than "C" in each semester.

4213 Quantitative Analysis (\$6)

Principles of gravimetric and volumetric analyses. Two lectures and six laboratory hours per week. *Prerequisite:* Chemistry 3211 or permission of the Head of the Chemistry Department. May not be counted in addition to Chemistry 4214. Three of the four credit hours may be counted as advanced if course is preceded by Chemistry 3211 with a grade of not less than "C".

4214 Quantitative Analysis (\$6)

A one semester course in gravimetric and volumetric analysis with special emphasis on ores and metallurgical products. Two lectures and six laboratory hours per week. *Prerequisite:* Chemistry 3211 or 2211. Not counted in addition to Chemistry 4213.

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*.

For Undergraduates and Graduates

4321-22 Organic Chemistry (\$6-\$5)

A study of the fundamental types of carbon compounds with emphasis on syntheses, reaction mechanisms, and functional groups. Three lectures and five laboratory hours per week. *Prerequisite*: *Chemistry 4213* or *4214* 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*.

4324 Quantitative Analysis (\$8)

A continuation of *Chemistry 4213* with emphasis on special techniques and instrumental analyses. Two lectures and six laboratory hours per week. *Prerequisite*: *Chemistry 4213* with a grade of not less than "C".

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 4322*, *Mathematics 4212* and *Physics 4216*.

4451 Spectrochemical Analysis (\$8)

A study of the principles and practices of emission spectrography and its applications to qualitative and quantitative procedures. Two lectures and six laboratory hours per week. *Prerequisite*: *Chemistry 4213* or *4214* and *Physics 4216*.

4360 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 4460*.

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 4461*.

4460 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 4213* and *4322*, *Mathematics 4212*, and *Physics 4216*. May not be counted in addition to *Chemistry 4360*.

4461 Physical Chemistry (\$4)

Homogeneous and heterogeneous equilibria; kinetics of reaction, electrochemistry, and chemical thermodynamics. Three lectures and three laboratory hours per week. *Prerequisite*: *Chemistry 4460*.

3462 Biochemistry (\$2)

Chemistry of food substances, digestion, vitamins, enzymes, absorption, and blood. Two lectures and three laboratory hours per week. *Prerequisite*: *Chemistry 3221-22* or *4321-22*.

3463 Biochemistry

Immunochemistry, chemistry of respiration, hormones, intermediary metabolism, etc., with emphasis on cell metabolism. Three lectures per week. *Prerequisite*: *Chemistry 3462*.

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 4324.

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.

3478 Advanced Topics – SEMINAR

A study of the more recent discoveries in the field of chemistry and its allied sciences. Three lectures per week. *Prerequisite:* Permission of the Head of the Chemistry Department.

2496 to 6496 Introduction to Research (\$4)

Credit will be granted, up to six semester hours, for research satisfactorily completed by advanced students in the Chemistry Department. Only specially qualified students approved by the Head of the Chemistry Department will be accepted for this work. Credit will be granted only in the senior year on the recommendation of the Head of the Chemistry Department. *Prerequisite:* Permission of the Head of the Chemistry Department.

Breakage charges may be assessed, in addition to announced laboratory fees.

E. C. REYNOLDS, *Acting Head*

Professor LEECH; Associate Professor E. C. REYNOLDS; Assistant Professors ETHERIDGE,
 *HARLAND, JONES, TUCKER; Instructors ADKINS, BRADY, FRIEDMAN, MICULKA,
 G. H. REYNOLDS; Part-time Instructor GONZALES.

DRAMA

For Undergraduates and Graduates

- 3113 **An Introduction to Drama**
 A beginning course designed to familiarize the student with the major areas of theatre art, including acting, directing, lighting, costuming, playwriting, technical production, scenic design, types and styles of drama.
- 1111 **Basic Theatre Practice**
 Practical laboratory experience in all phases of production of major plays for public presentation. May be taken four semesters for credit.
- 3121 **Beginning Drama Workshop**
 A lecture-laboratory course in play production involving all phases of dramatic art, leading to public presentation of major dramas. May be repeated for credit.
- 2130 **Rehearsal and Performance**
 Evaluation of acting and crew work in major departmental productions, experimental theatre productions, and laboratory workshop productions. A minimum of six laboratory hours weekly for one semester.
- 3214 **Acting**
 A workshop course in which a student may develop his ability to analyze a character and create a role. Two lecture and four workshop hours per week. *Prerequisite:* Six semester hours of Speech and/or Drama or sophomore standing.
- 3218 **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. *Prerequisite:* English 3101-02 and sophomore standing. May be repeated for credit.
- 3221 **Stagecraft** [New]
 Instruction and practice in stage methodology. Includes basic instruction in stage design and structure. Two hours of lecture and three hours of laboratory per week. *Prerequisite:* Drama 3113 and sophomore standing.
- 2230 **Rehearsal and Performance**
Prerequisite: Drama 2130 with a grade of at least "B" and sophomore standing. A minimum of six laboratory hours weekly for one semester.
- 1311 **Basic Theatre Practice**
 A continuation of Drama 1111 for advanced credit. May be taken four semesters for credit.
- 3320 **Advanced Drama Workshop**
 A lecture-laboratory course in play production involving further work in the rehearsal and production of major dramas. May be repeated for credit. *Prerequisite:* Six hours of Drama courses, or the equivalent, and junior standing.
- 3321 **Advanced Acting**
 Detailed study of characterization and styles of acting through assignment of individual roles and group rehearsal of scenes. Two lecture and four workshop hours per week. *Prerequisite:* Drama 3214 and junior standing. May be repeated for credit.

*On Leave of Absence.

- 2330 **Advanced Rehearsal and Performance**
Prerequisite: Drama 2230 with a grade of at least "B" and junior standing. A minimum of six laboratory hours weekly for one semester.
- 3332 **Technical Production and Design**
 Detailed study of the technical problems of theatre production. Methods of constructing and handling scenery, lighting, backstage organization, designer's drawings, properties, and sound effects. Two classes and four workshop hours per week. *Prerequisite:* Six hours of Drama courses and junior standing.
- 3340 **A History of Costume**
 A study of costumes from the earliest times to the present and their use on the stage. Practical application in designing and executing costumes for actual production. *Prerequisite:* Junior standing.
- 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 one demonstration workshop weekly. *Prerequisite:* Junior standing.
- 3357 **The Development of the Early Theatre**
 A survey of the development of theatre art from the earliest times through the later Elizabethans. Discussions include plays, playwrights, actors, costumes, and technical devices of each period. *Prerequisite:* English 3211-12, 3213-14, or 3215-16 and junior standing.
- 3358 **The Development of the Modern Theatre**
 A survey of the development of theatre art from the Restoration to Broadway. Goethe, Ibsen, Maeterlinck, Pirandello, Chekhov, Synge, Shaw, O'Neill, Anderson, and others are studied as well as the actors, costumes, and technical devices in each period. *Prerequisite:* English 3211-12, 3213-14, or 3215-16 and junior standing.
- 3425 **Directing**
 Study of techniques in direction, emphasizing style, type of play, mood, dramatic values and effects. Two class and four workshop hours per week. *Prerequisite:* Drama 3113 and junior standing.
- 2430 **Advanced Rehearsal and Performance**
Prerequisite: Drama 2330 with a grade of at least "B". A minimum of six laboratory hours weekly for one semester.
- 3440 **SEMINAR**
 Independent research in an area to be chosen from dramatic criticism, costumes, lighting, technical production, or scene design plus service on technical crews where applicable for one semester. May be repeated once for credit. *Prerequisite:* Twelve hours of drama courses including Drama 3113.

SPEECH

For Undergraduates and Graduates

- 3101 **Basic Principles of Speech**
 Emphasis on the development of poise and confidence in extemporaneous discourse, directness of approach, the conversational spirit, appropriate body action, the use of the voice.
- 3102 **Platform Speaking**
 Planning, organizing, and delivering speeches intended to inform, to entertain, and to inspire, including speeches for various types of special occasions. *Prerequisite:* Speech 3101.
- 3103 **Phonetics, Voice and Articulation**
 A course intended to develop clear articulation and enunciation, correct pronunciation, proper vowel placement, and control of the speaking voice.
- 3120 **Beginning Oral Interpretation**
 Practice in the oral interpretation of literature and study of the technique involved.

- 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 debates on timely issues. *Prerequisite:* Speech 3101 and sophomore standing. For entering freshmen with two years of high school debate experience, admission to the course will be granted on the basis of a departmental proficiency examination.
- 3230 **Language and Thought: General Semantics**
 A practical analysis of the influence of verbal habits in human affairs with emphasis on the formulations of General Semantics which deal with communication problems such as conflict, confusion, prejudice; accuracy and precision in the use of verbal symbols. *Prerequisite:* Sophomore standing.
- 3305 **Oral Interpretation**
 A course for developing an adequate mental and emotional response to the meaning of literature with emphasis on improvement in voice, pronunciation, and enunciation. *Prerequisite:* Speech 3120 and junior standing.
- 3306 **Techniques of Public Discussion**
 A course intended to develop skill in leading and participating in discussion groups of all kinds. Attention is given to forums, panels, round tables, and symposiums, and to actual practice in the discussion of current problems. *Prerequisite:* Six hours of Speech or junior standing.
- 3312 **Voice Science**
 A study of the vocal anatomy; the physical processes involved in speech production, including respiration, phonation, and articulation. *Prerequisite:* Speech 3103 and junior standing.
- 3315 **Advanced Debate – Technique and Theory**
 A thorough analysis of the use of formal debate in our society. Emphasis on the ethical and logical means of persuasion, recognition of fallacies and the preparation of summations. *Prerequisite:* Speech 3215.
- 3319 **Advanced Public Speaking**
 A course designed to further the student's ability through the study of speech theory and model speeches. Emphasis on the various types of public address. *Prerequisite:* Completion of Speech 3102 and junior standing.
- 3333 **Direction of Speech Curriculum and Activities**
 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. *Prerequisite:* Six hours of Speech or junior standing.
- 3410 **Survey of Major Speech Disorders**
 A study of the nature, causes, and treatment of speech disorders and defects, designed to give classroom teachers basic skills in working with the speech-defective child. *Prerequisite:* Junior standing. May not be counted in addition to Education 3410.
- 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:* Six hours of Speech or junior standing.
- 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:* Six hours of Speech or junior standing.
- 3430 **SEMINAR**
 Independent research in an area to be chosen from oral interpretation, phonetics, public address, semantics, speech and hearing therapy, discussion, or speech education. May be repeated once for credit. *Prerequisite:* Twelve hours of speech courses.



ECONOMICS



MICHAEL BRAND, *Head*

Associate Professors BRAND, DURIEZ, RICHARDS; *Assistant Professors* JAMES, STONE;
Instructor SMITH; *Part-time Instructors* BROWN, HAVEKOST, R. TAYLOR.

B.A. Degree – Specific courses required are Economics 3103-04, 3303, three of the following five courses: Economics 3310, 3330, 3340, 3365, 3375; and six other advanced hours, and B.A. 3110, 4361.

For Undergraduate Credit Only

- 3101 **Survey of Economics**
(Open only to non-economic and non-business administration majors.)
A survey course on the principles of economics designed to give a broad basic understanding of our economic world. (This course may be used by non-economic and non-business administration majors to satisfy the Economics 3104 requirement to advanced courses.)
- 3103-04 **Principles of Economics**
An introduction to the basic principles of Economics and an analysis of the manner in which they operate in the institutional complex of our society.
- 3205 **Applied Economic Theory**
An intermediate study of the concept of maximization both in traditional economic theory and under current managerial situations. Special attention will be given to the use, evaluation and limitation of operations analysis techniques.
Prerequisite: Economics 3104 or Economics 3101.
- 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 3104 or Economics 3101.
- 3310 **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 3104 or Economics 3101.

For Graduates and Undergraduates

- 3321 **History of Economic Thought**
A study of the development of principal economic doctrines and schools of economic thought. *Prerequisite:* Economics 3104 or Economics 3101.
- 3325 **Comparative Economic Systems**
A consideration of economic foundations of the capitalistic and other systems; objective study of economic construction of fascism, socialism, communism, capitalism. *Prerequisite:* Economics 3104 or Economics 3101.
- 3326 **Business and Government**
A study of the impact of government planning upon business and the effect of governmental regulation and control upon industry, utilities, finance, and transportation. *Prerequisite:* Economics 3104 or Economics 3101.

- 3327 Economic Analysis of Consumer Behavior**
 An analysis of the processes and significance of consumer behavior in the economy. Attention will be given to the economic and cultural forces influencing and determining consumer behavior, many of the alternatives faced in consumption spending, and the impact of consumer behavior on the national economy. *Prerequisite:* Economics 3104 or Economics 3101, and junior standing.
- 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 3104 or Economics 3101.
- 3340 Labor Problems**
 An introductory course in labor-management relations, unions, management, and the government; including pertinent history, and labor legislation. *Prerequisite:* Economics 3104 or Economics 3101.
- 3355 Transportation, Economics of Regulated Industries**
 History and economic characteristics of transportation and public utility industries. Theory of rate making, rate levels, and an analysis of public policy. *Prerequisite:* Economics 3104 or Economics 3101.
- 3363 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 3104 or Economics 3101.
- 3365 International Economics**
 Introductory course in international trade principles dealing with the principal theories of trade, foreign exchange, tariffs, and other trade barriers. Some time is devoted to import-export procedures, documents, and current problems. *Prerequisite:* Economics 3104 or Economics 3101.
- 3366 Economic Survey of Latin America**
 Considers the historical setting, economic development, monetary and fiscal problems, investments, and trade practices of the area countries. *Prerequisite:* Economics 3104 or Economics 3101.
- 3367 Economic Development**
 A course designed to familiarize the student with problems of economic growth. Emphasis will be directed toward Latin America; and in particular to Mexico. Topics included are a study of basic resources, industrialization, technological development, capital formation, and the growth of international trade. *Prerequisite:* Economics 3104 or Economics 3101.
- 3375 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 3104 or Economics 3101.
- 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 3104 or Economics 3101.
- 3470 Monetary and Fiscal Policy**
 An analysis and critique of monetary and fiscal policies and practices to facilitate economic stability and promote economic progress. *Prerequisite:* Economics 3375.

SEMINAR

For Graduates and Undergraduates

2495 to 6495 Seminar in Economics and/or Business Administration

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:* Eighteen hours of Business Administration and/or Economics, six of which must be advanced; 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.



EDUCATION



DR. JAMES F. DAY, *Head*

Professors DAY, BURNS, FARQUEAR, FOSTER, HENDERSON, MEADOWS;
Associate Professor FISHER; *Assistant Professors* AHO, CLINE, COOPER, DAVIS, HALLUM,
LOWRANCE, O'MALLEY; *Instructor* DURIO;
Part-time Instructor ZANKER; *Part-time Lecturer* WIVEL.

See pages 45-53 for Degree Plan Requirements and Certificates.

For Undergraduate Credit Only

GENERAL (*Elementary or Secondary Education*)

- 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

- 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.
- 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.
- 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).

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

- 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 practice 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.
- 3311 **Introduction to the 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.)
- 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.)

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

†By staff of department concerned.

EDUCATION

- 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-level program, permission of the department head concerned.) Students must file a practice teaching application with their college supervisor of practice 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.
- 3405 Arithmetic in the Elementary School
Content, materials and methods of teaching arithmetic in the elementary school.
- 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.
- 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.
**Prerequisite* as indicated or equivalent as determined by head of the department.
†By staff of department concerned.

- 3435 Principles of Psychological Testing^o
 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^o
 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^o
 Consideration given to the philosophy, problems, treatment and methods of providing appropriate education and training for exceptional children.
- 2421 Psychology of Mental Retardation^o
 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^o
 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.
- 2429 Observation, Teaching, and Field Work with Mentally Retarded — SEMINAR^o
Prerequisite: Education 3409, 2421, and 3422 or permission of the head of the 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.

^o*Prerequisite* as indicated or equivalent as determined by head of the department.

EDUCATION

- 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.
- 3511 Curriculum Construction and Organization of Subject Matter — SEMINAR
The student is permitted to devote his attention exclusively to a pertinent curriculum problem either in the elementary or 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.
- 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.
- 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.
- 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.



DEAN L. L. ABERNETHY, *Acting Head*

Professors ABERNETHY, COLEMAN, DECKER, HASSLER, NICHOLS, THOMAS;
Associate Professors AUSTIN, BHADURI, CERVENKA, COLTHARP, WHITACRE, YOUNG;
Assistant Professors BOURQUIN, ROZENDAL; *Part-time Instructors* GRADO,
HINTZE, McDONALD, FEINADO.

CIVIL ENGINEERING

PROFESSOR HASSLER, *in charge of curriculum.*

- 3102 Introduction to Engineering [Replaces 1101 and 2211]
Studies to include the profession, curricula, functions, fields, tools and techniques of problem analysis, and the works of the engineer.
- 3115 Statics [Formerly 3215]
Forces in space, friction, centroids, centers of gravity, moment of inertia, radius of gyration and kinetics of rigid bodies in rectilinear translation. *Prerequisite:* Drawing 2101 or 3103 and Mathematics 4212 concurrently.
- 3213 Engineering Measurements
Summer work: Theory and practice of surveying measurements with emphasis on precision, errors and significant figures. Theory of simple, reverse, compound and vertical curves; spirals and earthwork. Seven and one-half hours per week for six weeks. *Prerequisite:* Mathematics 4111 and Drawing 2101 or 3103.
- 3214 Field Surveying (\$2) [Combines 2314 and 2322]
Summer Work: Practical application of the topics covered in Civil Engineering 3213 concurrently in the field. Twenty-four hours of field work each week for six weeks. *Prerequisite:* Civil Engineering 3213 concurrently.
- 4234 Mechanics of Materials (\$6) [Formerly 4334]
Stress and strain; torsion; shear and moment; flexure; combined stress; column action; fatigue and impact. Three lecture and three laboratory hours per week. *Prerequisite:* Civil Engineering 3115.
- 3238 Dynamics [Formerly 2338]
Principles of dynamics and application to engineering problems; motion of a particle, translation, rotation, plane motion, work and energy, impulse, and momentum. *Prerequisite:* Civil Engineering 3115.
- 3326 Engineering Economics [Formerly 3426]
Business economy, cost determination, business law, engineering procedures and ethics. *Prerequisite:* Junior classification.
- 3335 Reinforced Concrete
The theory of reinforced concrete; design of beams, slabs, footings and retaining walls. A study of the current design specifications. *Prerequisite:* Civil Engineering 4234.
- 3343 Structural Analysis
Analysis of simple framed structures, roof trusses, girders and bridges. A study of moving loads and influence lines. Two lectures and three laboratory hours per week. *Prerequisite:* Civil Engineering 4234 and 3238.
- 3348 Soil Engineering (\$2) [Formerly 3448]
Soil stability, stress distribution, compressibility, lateral earth pressure, settlement of structures and choice of foundation types. Two lectures and three laboratory hours per week. *Prerequisite:* Civil Engineering 3115 and junior standing.

- 3354 **Fluid Mechanics**
Statics, kinematics, and dynamics of fluids; fluid measurements and fluid flow in pipes and open channels. *Prerequisite:* Mathematics 4317, and Civil Engineering 3115 and 3238.
- 1355 **Fluid Mechanics Laboratory**
Experiments on the properties of fluids, fluid measurements, and the principles of fluid motion. Three laboratory hours per week. *Prerequisite:* Civil Engineering 3354.
- 4356 **Hydraulic Engineering** [Formerly 2356]
Principles of hydrology and hydraulics applied to the design of hydraulic projects. Three lectures and three laboratory hours per week. *Prerequisite:* Civil Engineering 3354.
- 3360 **Advanced Structural Analysis** [Formerly 4460]
Structural analysis of statically indeterminate structures including continuous beams and rigid frames. *Prerequisite:* Civil Engineering 3343.
- 3440 **Transportation Engineering**
Planning, economics, finance, location, design and administration of transportation systems. *Prerequisite:* Civil Engineering 3213, 3214 and 3348.
- 3441 **Water Treatment and Analysis (\$2)**
Principles of water treatment and application to the design and operation of municipal and industrial water treatment plants. Laboratory analyses of water. Two lectures and three laboratory hours per week. *Prerequisite:* Chemistry 4103-04 and Civil Engineering 4356.
- 3442 **Waste Treatment and Analysis (\$2)**
Principles of waste treatment and disposal. Application to the design and operation of waste treatment plants. Laboratory analyses of wastes. Two lectures and three laboratory hours per week. *Prerequisite:* Civil Engineering 3441.
- 3446 **Engineering Law and Ethics**
Advanced study of topics involving engineering law and economics and professional ethics. *Prerequisite:* Civil Engineering 3326.
- 3461 **Structural Design**
Structural design of concrete, steel and timber structures, including application of plastic design in steel and the current design specifications. One lecture and six laboratory hours per week. *Prerequisite:* Civil Engineering 3335 and 3360.
- 3470 **Advanced Strength of Materials**
Analysis of problems dealing with energy methods, curved bars, torsion of non-circular sections, fatigue and stress concentration and plane stress plus strain. *Prerequisite:* Civil Engineering 4234.
- 3471 **Advanced Engineering Problems**
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.
- 3473 **Advanced Concrete Design**
Covers modern development in concrete design including ultimate strength theory, shrinkage and creep, pre-stress, design, torsion, shear walls, plate slabs, yield line theory of slabs and thin shell analysis of design. *Prerequisite:* Civil Engineering 3335 and Civil Engineering 3343.
- 3483 **Foundations**
Design and construction of foundations for bridges and buildings, considering soil pressure distribution. Spread and combined footings, mats, pile groups, caissons and piers. *Prerequisite:* Civil Engineering 3335 and 3348.

ELECTRICAL ENGINEERINGPROFESSOR NICHOLS, *in charge of curriculum.*

- 3251 Networks I [Formerly 5351]
Theory and analysis of networks including the basic laws, complex phasor algebra and impedance, sinusoidal single-phase circuits, resonance, and network equations and theorems. *Prerequisite:* Mathematics 4212 and Physics 4216 concurrently.
- 4252 Networks II [Formerly 5352]
Continuation of Networks I. Graphical methods, balanced and unbalanced poly-phase circuits, coupled circuits and transformers, non-linear elements, transient response and the complex frequency plane, the Laplace transformation, and two-terminal-pair networks. Three lectures and three laboratory hours per week. *Prerequisite:* Electrical Engineering 3251 and Mathematics 4317.
- 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:* Electrical Engineering 3251 and Mathematics 3435.
- 4339 Electronics I (\$2) [Formerly 3339]
Electronic properties of materials, terminal characteristics of semiconductor and vacuum tube devices, graphical methods, two-point network analysis, small-signal equivalent circuits, frequency response methods, root-locus analysis. Three lectures and three laboratory hours per week. *Prerequisite:* Electrical Engineering 3251 and Mathematics 3436.
- 4340 Electronics II (\$2)
Applications of the concepts and methods developed in E.E. 4339 to large- and small-signal tuned and broad-band amplifiers, feedback amplifiers, oscillators, and wave-shaping networks. Three lecture and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4339 or Physics 4339.
- 4353 Networks III [Formerly included in 5351-52]
Continuation of Networks II. Fourier series, exponential series and the Fourier integral, filters, signal flow, and synthesis. Three lectures and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4252.
- 4370 Circuits and Electronics [Replaces 4377-78]
Direct- and alternating-current circuits and measurements, basic electronic circuits, rectifiers and amplifiers. Three lectures and three laboratory hours per week. *Prerequisite:* Physics 4216 and Mathematics 4317.
- 3441 Electronics III [Formerly 4441]
Advanced topics in communications, including frequency analysis of signals, modulation, noise, information transmission, and statistical methods in system analysis. *Prerequisite:* Electrical Engineering 4340 and Mathematics 3436.
- 1445 Communications Laboratory (\$2)
Laboratory experiments utilizing the principles set forth in Electrical Engineering 3441 and 3447. Three laboratory hours per week. *Prerequisite:* Electrical Engineering 3441 (or concurrently) and 3447 (or concurrently).
- 3447 Electromagnetic Energy Transmission and Radiation
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. *Prerequisite:* Mathematics 3436 and Electrical Engineering 3321 and 4340.
- 4464 Feedback Control
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 lectures and three laboratory hours per week. *Prerequisite:* Civil Engineering 3238, Mathematics 3435 and 3436, and Electrical Engineering 4340 (or permission of instructor).

4467-68 Energy Conversion I and II

Theory and performance characteristics of electromechanical energy conversion equipment to include both static and dynamic properties of both direct- and alternating-current motors, generators, transformers, special machines and other devices, and the control and control devices employed therewith. Three lectures and three laboratory hours per week. *Prerequisite:* Electrical Engineering 4353.

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:* Physics 4216 and Mathematics 4317. May be counted as Physics.

3471 Advanced Engineering Problems

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.

3472 Digital Computers

An introduction to digital computers including arithmetic procedures, basic programming patterns, input-output systems, storage systems, arithmetic units, methods 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. May be counted as Physics.

3474 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:* Physics 4216 and Mathematics 3326 or 3436. May be counted as Physics.

MECHANICAL ENGINEERING

PROFESSOR WHITACRE, *in charge of curriculum.*

3236 Manufacturing Processes (\$4)

Theory and practice of material forming, shaping and joining processes, including economics and quality control. Two lectures and three laboratory hours per week. *Prerequisite:* Sophomore standing and Mathematics 4111 (or permission of instructor).

3341 Engineering Analysis

Application of mathematical principles to the analysis of engineering problems; emphasis on analytical description of the system, and use of vector algebra, differential and integral calculus, complex variables, graphical and numerical methods. *Prerequisite:* Mathematics 3326 or 3436.

1350 Heat Engineering Laboratory

Calibration and use of pressure, temperature, fluid flow and power measuring instruments and analysis of gas and vapor cycles. Three laboratory hours per week. *Prerequisite:* M.E. 3375.

- 3362 **Industrial Engineering**
 A survey of industrial practice in the areas of industrial engineering, organization, control functions; the relationship of the engineer to these areas. *Prerequisite:* Junior standing.
- 4363 **Kinematics and Dynamics of Mechanisms** [Replaces 4323 and 3324]
 Analysis of displacement, velocity and acceleration in basic mechanisms for control, transmission and conversion of motion and force. Forces associated with accelerated motion. Mechanical vibration; balancing and isolation. Three lectures and three laboratory hours per week. *Prerequisite:* C.E. 3238.
- 4364 **Design of Machine Members** [Formerly 4479]
 Application of mechanics, kinematics and material science to the design and selection of machine members, fastenings, pressure vessels. Lubrication theory; stress concentration and residual stresses. Three lectures and three laboratory hour per week. *Prerequisite:* M.E. 4363.
- 3375 **Thermodynamics I**
 Principles of thermodynamics of single and multi-phase systems of pure substances. *Prerequisite:* Mathematics 4317 and Physics 4216.
- 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.
- 3451 **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 Mathematics 3326 or Mathematics 3436.
- 3465 **Design Problems**
 Application of dynamics and vibration theory to the design of machines. Single and multiple degrees of freedom of vibration; critical speeds. Vibration isolation and damping devices and mountings; instrumentation and analogies. *Prerequisite:* M.E. 4364.
- 4466 **Machine Design** [Formerly 4480]
 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 lectures and six laboratory hours per week. *Prerequisite:* M.E. 3465.
- 3471 **Advanced Engineering Problems**
 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.
- 3481 **Mechanical Engineering Laboratory I**
 Calibration and use of instrumentation in the areas of property determination, thermodynamics, heat transfer, fluid flow, dynamics. Two lectures and three laboratory hours per week. *Prerequisite:* M.E. 3375.
- 3482 **Mechanical Engineering Laboratory II**
 Continuation of M.E. 3481. Testing and analysis of systems; analogies. Two lectures and three laboratory hours per week. *Prerequisite:* M.E. 3481.

DRAWING

PROFESSOR COLEMAN, *in charge of program.*

2101 Engineering Graphics (\$2)

Multi-view projections, lettering, free hand drawing, primary and secondary auxiliaries, sections and conventions, detail drawings, design layouts, working drawings, dimensioning, quality control, fasteners, pictorial representations, roots of equations, simultaneous equations, empirical equations, alignment diagrams, periodic functions, graphical differentiation, and graphical integration. Two lectures and four hours supervised drawing per week. *Prerequisite:* One year of high-school mechanical drawing or Drawing 3103. [Not to be counted in addition to Drawing 3103 toward a degree in Engineering.]

3103 Engineering Graphics (\$2)

Basic fundamentals of the use of instruments, lettering, geometric construction, orthographic projection, primary and secondary auxiliary views, sectional views and conventions, freehand drawing, pictorial representations, fasteners, dimensioning, quality control, working drawings, and engineering graphic problems. Three hours lecture and six hours supervised drawing per week.

2104 Descriptive Geometry

Relation of points, lines, planes and their graphical representations. Graphical solutions as applied to layouts and solutions of spatial relationships, application of graphical methods in the solution of mining and geological problems. Two lectures and four hours of supervised drawing per week. *Prerequisite:* Engineering Graphics 2101 or Engineering Graphics 3103.

DR. JOSEPH LEACH, *Head*

Professors BRADY, BURLINGAME, LEACH, PAST, SMALL, SONNICHSEN;
Associate Professors JAMES, MOSES, RICHESON, STROUD, WEST;
Assistant Professors BIRKINSHAW, COLLINGWOOD, COLTHARP, EHMANN, FUGATE,
 SAFDARI, SMITH, SPIESE, WADDELL; *Instructors* BERKMAN, CALHOUN, DANZ, ESCH,
 HALL, JUSTICE, LAFONTAINE, LUSCHEI, PENFIELD, QUARM, SIPIORA, WALKER,
 WIDMAYER, WRIGHT; *Teaching Assistants* ADAMS, BARAKAT, DUGAN,
 ENGLISH, EVANS, A. FINNEGAN, J. FINNEGAN, MINTON.

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.

For the degree of Bachelor of Science in the Engineering fields English 3101-02 and English 3269 are required.

Drama 3357 and 3358 may be counted for English credit.

B.A. Degree — Specific course requirements for the English major are English 3211-12, 3320, 3321, and twelve other advanced hours in English. *A comprehensive English Major Examination is required of all English majors who cannot present, at the time of their intended 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.

3101-02 Freshman English

Practice in improving written expression in 3101 and reading comprehension in 3102. A long library research paper and various writing techniques are additional points of emphasis in 3102. Required of all freshmen unless exempted by advanced placement examination.

3211-12 English Literature

English literature from the beginning with emphasis on major works and authors. Required of all English majors. *Prerequisite:* English 3101-02.

3213-14 English and American Literature of Today

Contemporary novels, short stories, plays, poetry, and various types of non-fiction. *Prerequisite:* English 3101-02.

3213 English and American Literature of Today

The first semester of English 3213-14 for students wishing three hours independent credit in literature. *Prerequisite:* English 3101-02.

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 3101-02.

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 3101-02.

- 3269 **Technical Writing** [Formerly 3369]
The types of writing and reports a student will need to prepare in pursuing a course in science or engineering. The kinds of writing useful to students expecting to be employed in science, engineering, and industry. *Prerequisite:* Engl. 3101-02.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 3309 **The Structure of English**
An investigation of the nature of modern spoken American English and the relation between it and its written form; a study of the levels of usage, American dialects, and recent developments in linguistic science. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 3312 **American Literature**
Representative writers from the Civil War to the present, with emphasis on major figures from Whitman to Faulkner. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 3313 **The American Novel**
The representative American novels and novelists from 1787 to the present. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 3316 **Medieval English Literature**
Medieval English literature in translations from 1066 to Chaucer: romances, visions, satires, and the morality play. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 3320 **Shakespeare: The 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:* English 3211-12, 3213-14, or 3215-16.
- 3321 **Shakespeare: The Later Plays**
Detailed study of some of the great tragedies, followed by a more rapid examination of other plays written after 1600. Required of all English majors. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 3323 **Seventeenth-Century Prose and Poetry** [Formerly 3325 & 3326]
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:* English 3211-12, 3213-14, or 3215-16.

- 3328 Eighteenth-Century Prose and Poetry [Formerly 3329 & 3330]
The prose and poetry of the major neo-classical figures from Pope through Johnson with attention to the decline of neo-classicism in Goldsmith, Thomson, and Young. Exclusive of Burns and Blake. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 3334 English Romantic Poetry [Formerly 3331 & 3332]
The works of Burns, Blake, Scott, Wordsworth, Coleridge, Byron, Shelly, Keats, and some of their contemporaries. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 3337 Nineteenth-Century English Prose [Formerly 3335 & 3336]
The prose of Lamb, Coleridge, Hazlett, DeQuincey, Macaulay, Carlyle, Newman, Arnold, Ruskin, Huxley, Stevenson, and their contemporaries. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 3341 Victorian Poetry [Formerly 3339 & 3340]
The poetry of Tennyson, Browning, Arnold, the Rosettis, Meredith, Morris, Swinburne, Hardy, Hopkins, Housman, and the early Yeats. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 3348 The English Novel
A continuation of English 3347, with study of typical works of Dickens, Thackeray, the Brontes, George Eliot, Hardy, and Meredith. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 3352 The English Novel [Formerly 3350 & 3351]
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:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 3355 The Drama in English since 1660
Representative plays of the Restoration, of the eighteenth and nineteenth centuries, and of such modern playwrights as Jones, Pinero, Barker, St. John Hankin, Shaw, Coward, Galsworthy, Maugham, and Dane. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 3361 *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:* English 3211-12, 3213-14, or 3215-16.

- 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:* English 3211-12, 3213-14, or 3215-16.
- 3367 **Fiction Writing**
Study and practice in the techniques of contemporary fiction writing, with particular attention to the short story form. Emphasis is given to the techniques of characterization and the development of plot from character. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3367, or 3361 and permission of the instructor.
- 3372 **Folklore**
The types and characteristics of folk literature with particular emphasis on the folklore of the Southwest and Mexico. *Prerequisite:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 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:* English 3211-12, 3213-14, or 3215-16.
- 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** [Formerly 3415 & 3416]
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** [Formerly 3417 & 3418]
The development of English from Old through Middle English, with selected readings in the original. *Prerequisite:* Six hours of advanced courses in English.
- 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 in Literature***
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.
- 3475 **Methods of Teaching Literature** [New]
Designed for teachers of high school English. *Prerequisite:* Eighteen hours of advanced courses in English.

*Seminar.

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: Thirty semester hours of graduate credits in English, at least half of which consist of courses numbered between 3500 and 3600 (including 3511, 3515 or the Oral Examination, 3598, 3599); the remaining may consist of courses numbered between 3300 and 3500, provided these credits were not taken to satisfy requirements for the B.A. degree.

A student may not count subject matter other than English toward the M.A. degree except by approval of the Head, Department of English.

The student planning to continue graduate work at another institution is strongly advised to take English 3411, 3413, and 3419.

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 are held, but discussion groups meet regularly. Students who make a passing grade are exempted from the *Master's Oral Examination in English*.

3520 Studies in Poe and his Influence*

Recommended prerequisite: English 3511.

3522 Studies in English Literature*

The subject is chosen by the professor in charge. May be repeated for credit when the topic varies. *Recommended prerequisite:* English 3511.

3523 Studies in American Literature*

The subject is chosen by the professor in charge. May be repeated for credit when the topic varies. *Recommended prerequisite:* English 3511.

3525 Studies in American Transcendentalism
(Emerson, Thoreau, and Whitman)*

Recommended prerequisite: English 3511.

3535 Studies in American Thought*

The origin and significance of the major thought patterns of American literature. May not be counted in addition to English 3435. *Recommended prerequisite:* English 3511.

3540 Studies in Melville and Hawthorne*

Recommended prerequisite: English 3511.

3560 Studies in Shakespeare*

Recommended prerequisite: English 3511.

3565 Studies in Folklore*

May be repeated for credit when the topic varies. *Prerequisite:* English 3372. *Recommended prerequisite:* English 3511.

3598-99 The Master of Arts Thesis

Prerequisite: English 3511 and approval of the Head of the English Department.

*Seminar.



DR. H. E. QUINN, *Head*

Professors QUINN, NELSON; Associate Professor STRAIN; Instructor VOWELL.

GEOLOGY

Students who elect to work for the Bachelor of Science Degree in the Sciences with a major in geology are advised to obtain adequate training in chemistry, at least an elementary course in physics, preferably physics through electricity, mathematics through calculus, a course in ordinary surveying, and drawing through descriptive geometry. The student should also elect the English course in technical writing, and a course in public speaking. Students intending to major in the paleontological field should be adequately grounded in the biological sciences.

For Undergraduates

3101 Physical Geology (\$2)

A critical study of the principles of physiography and dynamic and structural geology. Three lectures and two laboratory hours per week. (For engineering and science majors three laboratory hours will be required each week.)

3102 Historical Geology (\$2)

A critical study of the principles of stratigraphy, paleogeography and organic developments. Three lectures and two laboratory hours per week. (Three laboratory hours will be required each week of students majoring in engineering or science.)

3210 Principles of Geomorphology (\$2)

Analysis of geomorphic processes and land forms with special reference to conditions and surface expression in North America and their interpretation from topographic and geologic maps and aerial photographs. Two lectures and three laboratory hours. *Prerequisite: Geology 3101 and 3102.*

3216 Mineralogy (\$4)

Crystallography and blow pipe analysis; a study of the crystallographic, chemical and physical characteristics of minerals and mineral determination by blow pipe methods. Classification of minerals. One lecture and six laboratory hours per week. *Prerequisite: Chemistry 3102 (Chemistry 4104 for engineering students and science majors; or Chemistry 4103-04 in advance, or concurrently for engineering students and science majors with sophomore standing).*

2217 Mineralogy (\$4)

Determinative mineralogy. Largely devoted to the identification of minerals by physical characteristics. Six laboratory hours per week. *Prerequisite: Geology 3216.*

3217 Mineralogy (\$4)

Determinative mineralogy. Same as Geology 2217 with an additional hour of lecture per week. *Prerequisite: Geology 3216.*

4218 Invertebrate Paleontology (\$4)

A study of the structure and classification of invertebrates and their development and geologic significance. Three lectures and three laboratory hours. *Prerequisite: Geology 3101 and 3102.*

4219 Paleontological Stratigraphy (\$4)

A comprehensive study of the stratigraphy of North America and especially of West Texas and the Southwest. The last two hours count as advanced. Three lectures and three laboratory hours per week. *Prerequisite: Geology 4218.*

For Undergraduates and Graduates

- 4321 **Advanced General Geology (\$4)**
Certain topics of general geology such as petrology, structural geology and stratigraphy are expanded in an advanced and quantitative manner. Three lectures and three laboratory hours per week. *Prerequisite:* Geology 2217 or 3217, and Geology 3101 and 3102.
- 3322 **General Economic Geology**
A study of the occurrence of mineral deposits and ore deposits. *Prerequisite:* Geology 2217 or 3217.
- 4323 **Structural Geology (\$2)**
A study of the principles and theories of structural geology. Special attention is given to primary and secondary rock structures particularly with reference to those important in mining, petroleum and engineering operations. (Three lectures and three laboratory hours per week). *Prerequisite:* Geology 4321 and Drawing 2101, or permission of the Head of the department.
- 3324 **An Introduction to Geochemistry**
An introductory course treating of the scope, methods, and literature of geochemistry and specifically of the chemistry of minerals and rocks and rock-weathering. *Prerequisite:* Mathematics 3214, in advance or concurrently, Chemistry 4104, and Geology 2217 or 3217.
- 3325 **Sedimentation and Sedimentary Rocks (\$2)**
Methods of study and interpretation of sediments, including grain size, and statistical analysis. In addition consideration is given to the genesis and classification of sedimentary rocks through field observation and through laboratory study of hand specimens. Two lectures and one afternoon in the field or laboratory per week. *Prerequisite:* Twelve semester hours of Geology.
- 4327 **Petrology and Petrography (\$4)**
The determination, origin and subsequent history of minerals and rocks as revealed in mineral grains and thin sections by the petrographic microscope. Three lectures and three laboratory hours per week. *Prerequisite:* Geology 4321 in advance or concurrently.
- 3461 **Advanced Economic Geology (\$2)**
Mining Geology, ore guides, methods of examination, preparation of reports, study of ore minerals under the microscope, etc. Two lectures and three laboratory hours per week. *Prerequisite:* Geology 3322 or senior standing.
- 2462 **Stratigraphy**
A study of the fundamental principles of stratigraphy with special emphasis placed on the stratigraphy of the Southwestern United States and Northern Mexico. *Prerequisite:* Twelve semester hours of Geology including Geology 4218, or permission of the Head of the department.
- 4463 **Geology of Petroleum and Natural Gas (\$2)**
A study of the origin, migration and accumulation of petroleum and natural gas. Three lectures and three laboratory hours per week. *Prerequisite:* Geology 4219, 4321 and 4323; or permission of the Head of the department.
- 2464 **Field Geology (\$4)**
A field study of an area near the college and the application of quantitative standards to the mapping and geologic field studies. A typed report and satisfactory geologic map are required. One lecture and one afternoon in the field per week. *Prerequisite:* Six semester hours of advanced courses in geology.
- 6465 **Field Geology [summer] (\$4)**
A six week summer course in field geology. The work will involve the preparation of topographic and geologic maps, cross-sections and columnar sections, and

detailed structural studies of a region of sedimentary and igneous rocks. Plane table and other 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 for one summer session. *Prerequisite:* Senior standing or permission of the Head of the department.

2421 Geological Trip (Transportation: \$50.00)

A survey trip of about two weeks over regions of geologic interest. Required for graduation in the Bachelor of Science in Mining Engineering. *Prerequisite:* Senior standing.

PHYSICAL GEOGRAPHY (See Page 142 for Cultural Geography)

3103 Elements of Geography (\$2)

A study of the major geographic realms emphasizing the relation of man to the various natural elements of his environment. Three lectures and two laboratory hours per week.

3104 Elements of Geography (\$2)

A continuation of Geography 3103. Three lecture hours and two laboratory hours per week. *Prerequisite:* Geography 3103.

DR. S. D. MYRES, *Head*

Professors MYRES, RAY; Associate Professor STRAUS; Assistant Professor CARDENAS; Instructors HOVEL, MEEK; Lecturers HORWITZ, CUNNINGHAM.

B.A. Degree — Specific course requirements for the Government major are Government 3210, 3211, and 3338, and eighteen additional advanced hours.

For Undergraduates

Government 3210 and 3211 fulfill the legislative requirement of the State of Texas for a course on the Constitutions of the United States and Texas. *Prerequisite* for Government 3210 is sophomore standing; *prerequisite* for Government 3211 is Government 3210.

3210 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.

3211 American Government

The government of the United States — national, state and local with special emphasis upon the Constitution of the United States.

For Undergraduates and Graduates

Prerequisite: Government 3210-11, or Government 3210 and three semesters of advanced Military Science.

3321 American State and Local Government

Origin and growth of state constitutions; organization and work of state departments; local governments; relation between state and local governments.

3322 American State and Local Government

Organization, powers, functions, and business methods of state and local administrative agencies; problems of integration, centralization, budget and fiscal control. Plans for reorganization and cooperation with federal and local agencies. Special reference to Texas.

3323 The Governments of Great Britain and the Empire

Rise of English political institutions, a critical analysis of the English and British systems of government; the larger problems of the British Empire.

3324 The Governments of Continental Europe

The governments and politics of France, Italy, Switzerland, Germany, and Russia, with some attention given to lesser European countries.

3325 The Party System in The United States

An historical survey of the political party as a reflection of social and economic thought in the United States. Attention will be given to the role of the party in national politics and its relation to the functions of the Federal Government. Occasional reference will be made to the party system of other democratic nations.

3326 American Constitutional Development*

(Constitutional Law, Constitutional History)

The development of fundamental principles of constitutional interpretation and their application to public policy through judicial decision. Emphasis given to the judicial process as an aspect of political behavior.

3330 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.

*Government 3326 may be counted for History in satisfying the major or minor requirements.

- 3331 **International Organization and Administration**
The development of the machinery and procedure of international government for the peaceful settlement of international disputes.
- 3332 **The Government and Politics of Mexico and the Caribbean Area**
The constitutional development, governmental organization, and contemporary political problems of representative states, with special attention to Mexico.
- 3333 **The Government and Politics of South America**
The governmental structure and politics of the principal South American countries.
- 3335 **American National Government and Administration**
A general view of the powers of Congress; National Executive and National Court System; the organization, personnel work of the Civil Service and of the Budget Bureau.
- 3336 **Elements of Political Theory**
An introduction to the study of political theory through a presentation of some major political concepts, both ancient and modern. Emphasis will be placed on the contest in Western political thought between absolutism, modern totalitarianism, and constitutionalism.
- 3337 **American Political Thought**
The origins and development of American principles of democracy and representative government. Attention will be given to the shifting intellectual and social context of our political tradition in order to show its influence upon the concepts of formal political theorists.
- 3338 **Government and Administration** [New]
Intensive review and integration of principles of government, politics, and administration, including constitutionalism, federalism, bureaucracy in a democracy. *Prerequisite:* Government 3210-11 and consent of instructor. Required of Government majors.
- 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 International Relations**
Latin American relations of the United States; the political, economic, and cultural relations among the Latin American states.
- 3350 **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 government in the United States.
- 3351 **Municipal Planning Administration**
History, principles and theories of urban growth, planning and redevelopment with emphasis on public policy, and the administrative and legislative processes.

For Graduate Students Only

Prerequisite for Graduate Courses: Twelve (12) semester hours of advanced courses in Government and a bachelor's degree.

- 3580 **Selected Problems in Government — SEMINAR**

HEALTH and PHYSICAL EDUCATION

MR. BEN W. COLLINS, *Acting Head*

Associate Professors COLLINS, HARRIS, McCARTY; *Assistant Professors* CRAIGO, GLARDON, HARDIN, LOPER; *Instructors* MOORE, HASKINS, IBA, DUKE, ALMOND.

HEALTH EDUCATION *For Undergraduates*

- 3101 **Personal Hygiene**
Study of personal, home and community health problems. Emphasis and stress on physical fitness, prevention of disease, safety, establishment of proper health habits, and knowledge to use medical science effectively.
- 3211 **Health Service for Elementary School Children**
The scope of health service with emphasis upon the purpose, technique, and adaptation of health examinations of school children. *Prerequisite:* Sophomore standing.
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 chairman of the department.
- 3302 **School Health Problems**
Major problems of the organization and administration of school health programs will be analyzed. Three hours of lecture and special field trips. *Prerequisite:* Junior standing or permission of the chairman 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 chairman of the department.
- 3304 **Principles of Health Education**
Individual and community health problems will be discussed. Hygienic effects to be realized from an organized health program and a discussion of the prevention of communicable diseases in schools, communities, and cities will be presented. *Prerequisite:* Junior standing or permission of the chairman of the department.
- 3306 **Methods and Materials in Health Education**
The field of health education, problems in administering the program, teaching aids for the health teacher, the teacher's part in health protection of children. *Prerequisite:* Junior standing or permission of the chairman 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 chairman of the department.

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.
- 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 and physical education.

- Three lectures and two hours of laboratory per week. (Field trips and demonstrations are included in this course.)
- 3102 **Fundamentals of Physical Education Activities for Men**
Theory and practice in physical education activities that are applicable to the boy's physical education program in the public schools. Three lectures and two hours of laboratory per week.
- 3104 **Fundamentals of Physical Education Activities for Women**
Theory and practice in physical education activities that are applicable to the girl's physical education program in the public schools. Three lectures and two hours of laboratory per week.
- 3202 **Kinesiology**
The mechanical and anatomical study of the Physical Education program as a basis for the analysis of activities in coaching, the selection and adaptation of activities in curriculum construction, and in corrective procedures. *Prerequisite:* Zoology 3101, 3102 and Biology 3202.
- 3203 **Curriculum Construction**
A study of the principles of curriculum construction, the philosophy of play, content, progression and organization of the play program for all levels of the educational program. A curriculum to meet a specific situation will be outlined. *Prerequisite:* Six semester hours of Physical Education or permission of the chairman of the department.
- 3204 **Physical Education for Elementary Schools**
Philosophy of play, content, progression and organization of the play program for elementary and junior high schools. *Prerequisite:* Twelve semester hours of Physical Education or permission of the chairman 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 play program including rhythms for the Elementary and Junior High levels. *Prerequisite:* Six semester hours of Physical Education or permission of the chairman of the department.
- 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 chairman of the department.
- 3304 **Current Methods and Materials in Physical Education**
A laboratory and demonstration course presenting Physical Education instruction materials and methods. Students will be used in demonstrations. *Prerequisite:* Twelve semester hours of Physical Education or permission of the chairman of the department.
- 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:* Physical Education 3103 and 3102 for men, 3103 and 3104 for women and junior standing.
- 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 chairman of the department.
- 3408 **Athletic 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 football and basketball. Three hours of lecture per week and/or field experience in officiating. *Prerequisite:* Twelve semester hours of Physical Education or permission of the chairman of the department.

- 3409 **Sports Activities Injuries, Training and First Aid**
The recognition and prevention of injuries in Physical Education and sports activities as well as the first aid care for the usual playground injuries are emphasized. *Prerequisite:* Twelve semester hours of Physical Education or permission of the chairman of the department.
- 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 chairman of the department.
- 3412 **Fundamentals and Philosophy of Major Sports**
Consideration is given to methods and techniques, conditioning, practice schedules, fundamentals and to the philosophy of major sports. *Prerequisite:* Twelve semester hours of Physical Education or permission of the chairman of the department.
- 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 chairman of the department.
- 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:* Education 3311; twenty-one hours of Health and Physical Education; senior standing; and permission of the department chairman.
- 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:* Twenty-one hours of Health and Physical Education; senior standing; eighteen hours of education including Education 3311 and permission of the department chairman.

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.
- 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 supervisors in health and physical education in elementary and secondary schools.



HISTORY



DR. W. H. TIMMONS, *Head*

Professor Emeritus WALLER; *Professors* STRICKLAND, PORTER, TIMMONS, FULLER, BAILEY; *Associate Professor* McNEELY; *Assistant Professors* HARVEY, SHOVER WARNER; *Instructors* BROADDUS, DENNY, JACKSON.

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) Geography 3210 or 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: Sophomore standing and six hours of History. History 3201 and 3203 are prerequisites for History 3202 and 3204 respectively.

3201 History of Western Civilization, to 1715 [Formerly 3106]
The ancient and classical civilizations, medieval Europe, Renaissance and Reformation, development of national states, expansion of Europe, age of absolutism, development of parliamentary government in England.

3202 History of Western Civilization, since 1715 [Formerly 3107]
The European states in the 18th century, the Enlightenment, the era of the French Revolution, Industrial Revolution and its impact, nationalism, intellectual currents, imperialism and World War I, the dictatorships, the world in conflict since 1939.

3203 History of England, to 1603 [New]
A survey course in English history embracing primarily the period between the Conquest and the death of Elizabeth I, with special stress on the evolution of legal, constitutional, and parliamentary institutions.

3204 History of England, since 1603 [New]
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.

For Undergraduates and Graduates

Prerequisites: Junior standing; and 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 [Formerly 3325]
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 [New]
Causes of the colonial revolt, the military, political, diplomatic, social aspects of the Revolution, the Confederation, and Federal Constitution.

HISTORY

- 3303 The Early National Period, 1789-1829 [Formerly 3326]
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 [Formerly 3335]
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 [Formerly 3336]
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 [Formerly 3355]
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 [Formerly 3356]
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 [New]
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.
- 3311 Diplomatic History of the United States, to 1900 [Formerly 3350]
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 [Formerly 3351]
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 [New]
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.
- 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.
- 3320 The New South [Formerly 3357]
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 The Trans-Mississippi West, to 1860 [Formerly 3359]
American expansion into Texas and the Southwest, Santa Fé trade, the Texas Revolution, British and American rivalry in Texas, Mexican War and the acquisition of California.

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.
- 3332 *The Near and Middle East*
Survey of the break-up of the Ottoman Empire in Western Asia, the succession states, Arab nationalism, the rise of Israel, modern Egypt, Iran, and Iraq.
- 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 *History of Brazil* [New]
Survey of the major political, social, economic, and cultural trends from the period of settlement to the present. Emphasis will be placed on Brazil as a distinctive civilization in Latin America.
- 3347 *History of Spanish South America*
The native inhabitants, European discovery, conquest, and colonization, colonial institutions, the revolutions for independence, the national histories of Argentina and the La Plata countries, Chile and the Andean countries.
- 3348 *History of Mexico and the Caribbean Area, 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 *History of Mexico and the Caribbean Area, since 1821*
Independent Mexico, the period of Santa Anna, Juárez and the Reform, the Díaz regime, the Revolution, major developments since 1920, survey of Central America, and the Caribbean nations.

EUROPE

- 3353 *Great Britain in the Nineteenth Century*
Tory rule, the beginnings of reform, the Victorian age, Gladstone and Disraeli, the Irish question, imperial relations.
- 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.
- 3361 *The Ancient World* [Formerly 3212]
The ancient civilizations of Babylonia, Chaldea, Assyria, Persia, and Egypt; the civilization of Greece and its spread throughout the Mediterranean world; Roman civilization and its expansion over Europe.
- 3362 *Medieval Europe* [Formerly 3213]
Decline of the Roman Empire, Germanic kingdoms, Eastern Roman Empire, rise of Islam and the Crusades, the medieval Church, rise of towns, feudalism, rise of the universities, and the culture of the Middle Ages.

HISTORY

- 3363 The Renaissance and Reformation [Formerly 3340]
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 [Formerly 3341]
Absolutism in France, Prussia, Austria, Russia, social and economic trends, international relations, scientific and intellectual revolution, enlightened despotism.
- 3365 The French Revolution and Napoleon [Formerly 3342]
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 [Formerly 3343]
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 [Formerly 3323]
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 [Formerly 3324]
World War II, the United Nations, the Cold War, the rising tide of nationalism in Asia, the Middle East, and Africa, and the movement toward European unity.

For Graduate Students Only

Prerequisite for Graduate Courses: Twelve semester hours of advanced courses in History and a bachelor's degree.

- 3580 Topics in Regional History — SEMINAR
- 3581 Historical Method and Historiography¹ — SEMINAR
- 3582 Topics in Modern European History — SEMINAR
- 3583 Topics in Latin-American History² — SEMINAR
- 3584 International Aspects of Texas History, 1803-1850 — SEMINAR
- 3585 Topics in American History³ — SEMINAR
- 3598-99 Thesis Course for the Master's Degree

¹ Required of all History majors in the M.A. Degree.

² Reading knowledge of Spanish required.

³ May be repeated once for credit.

JOURNALISM, RADIO-TELEVISION and PUBLICATIONS

VERGIL C. HICKS, *Head*, Radio-Television

JOHN J. MIDDAGH, *Head*, Journalism

Professors HICKS, MIDDAGH; *Associate Professor* LOWENSTEIN;

Consultant in Publicity and Public Relations, STEELE JONES.

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 RADIO-TELEVISION MAJOR are Radio 3102, 3214-15, 3330-31 and six advanced hours.

(Upon approval of the Head of the Department, Business Administration 3350 and 3352 will be accepted for credit as part of a major or minor in Journalism.)

JOURNALISM

For Undergraduates

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.

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*: Sophomore 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. Practice in writing advertisement headlines and copy. Discussion of advertising's role in small and large business enterprises. *Prerequisite:* Junior standing or consent of the head of the department.

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 head of the department.

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.

**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, 1105 Publications

Work on the staff of one of the college publications. Members are required to be on the staff of at least one of the official college publications and to work at prescribed periods under supervision. Three hours per week for two semesters. May not be taken for credit at the same time a student is enrolled in Journalism 3201 or 3202.

- 1204, 1205 Publications (second year)
Further work on the college publications with increased responsibility. Three hours per week for two semesters. *Prerequisite:* Journalism 1104-05.
- 1304, 1305 Publications (third year)
Further work on the college publications with increased responsibility. Three hours per week for two semesters. *Prerequisite:* Journalism 1204-05.
- 1404, 1405 Publications (fourth year)
Further work on the college publications with increased responsibility. Three hours per week for two semesters. *Prerequisite:* Journalism 1304-05.

RADIO — TELEVISION

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 Radio and Television
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 television 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:* Radio-TV 3320 or consent of the head of the department.

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 - FM *For Undergraduates*

1104-05 Radio Station KVOF-FM

Work on the staff of Radio Station KVOF-FM. Three hours per week for two semesters. *Prerequisite:* Consent of the head of the department.

1204-05 Radio Station KVOF-FM (second year)

Work on Radio Station KVOF-FM 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.



DR. E. J. KNAPP, *Head*

Professors KNAPP, BARNES, McMAHAN; *Associate Professors* BENTZ, GLADMAN, SCHUMAKER, BRIENT, AGARWAL; *Assistant Professors* MICULKA, PATTERSON, KRUSCHWITZ, COOPER, RESLEY, SLUSHER; *Instructors* THREADGILL, OMUNDSON, BURGETT, MITER, PRYOR, FOX, HANSEN, HWANG, HORNER, PARRA, BAILEY, LIGUOHI, McDONALD; *Part-time Instructors* BROWN, CASTANEDA, DEAN, DURAN, RODRIGUEZ, SHLANTA, UNDERHILL, WEBB, WIEMER.

MATHEMATICS

B.A. Degree — Six semester hours of mathematics are required for all Bachelor of Arts degrees. Mathematics 3101 and 3102 are recommended for those students whose mathematics requirements are not explicitly stated in degree plans. Specific courses required for Mathematics majors are Mathematics 3115, 2116, 4111, 4212, and twelve advanced hours.

Some of the advanced courses are given in alternate years.

Physics 3451 and 3452 may be counted as Mathematics credit.

For Undergraduates

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.

3104 Mathematics of Investment

Elementary course in the theory and application of the mathematics of finance. Topics covered include logarithms, progressions, simple and compound interest, annuities, amortization, perpetuities. May be applied toward the mathematics requirement or elective hours for the Bachelor of Arts Degree. *Prerequisite:* Mathematics 3101 or 3115.

3106 Trigonometry

Prerequisite: Three semester hours of mathematics, or two units of high school algebra and one unit of plane geometry.

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.

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.

- 4212 Analytical Geometry and Calculus
Continuation of Mathematics 4111. *Prerequisite:* Mathematics 4111.
- 4317 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. 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:* Mathematics 3201 or its equivalent and junior standing, or current experience in elementary teaching and consent of the instructor. May not be counted for advanced undergraduate credit unless preceded by twelve semester hours of Mathematics.
- 3421 Theory of Equations
Theory of polynomials, cubic and quartic equations, approximate methods, determinants, symmetric functions, and other topics. *Prerequisite:* Mathematics 3214, or 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 or 3214.
- 3423 Vector Spaces and Matrix Algebra
An introduction to the algebra of vectors and matrices, and to linear transformations on vector spaces. *Prerequisite:* Mathematics 4212 or 3214.
- 3326 Differential Equations
Study of the common types of ordinary differential equations of geometry, mathematics, mechanics, and electricity. *Prerequisite:* Mathematics 3214, or 4212.
- 3327 Selected Topics in Modern Mathematics
An introductory course in modern concepts, especially recommended for teachers and prospective teachers of high school mathematics. *Prerequisite:* Six hours of calculus or eight hours of calculus-analytical geometry; or a bachelor's degree with credit for six semester hours of mathematics; or current experience in teaching mathematics and consent of the instructor.
- 3328 Selected Topics in Modern Mathematics
A continuation of Mathematics 3327. *Prerequisite:* Same as for Mathematics 3327.
- 3331 Statistics
An introductory course in the fundamental concepts of mathematical statistics. *Prerequisite:* Mathematics 4212.
- 3435 Higher Mathematics for Engineers and Physicists
Designed to help the student in senior and graduate work in engineering, mathematics, physics and certain fields of chemistry. Line integrals and Green's Lemma, Surface integrals. Introduction to complex variables, analytic functions, Cauchy's theorem, Cauchy's integral formula, infinite series, residues and elementary mappings. Introductory vector analysis, gradient, directional derivative, Stoke's theorem, the divergence theorem. *Prerequisite:* Mathematics 3325, or 4317.

- 3436 Higher Mathematics for Engineers and Physicists
Continuation of Mathematics 3435. Additional work with partial derivatives and infinite series. Fourier series, series solutions of differential equations, Bessel functions, Laplace transforms, the Gamma function. *Prerequisite:* Mathematics 3325, or 4317.
- 3441 Advanced Calculus
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 4317.
- 3442 Advanced Calculus
A continuation of Mathematics 3441. *Prerequisite:* Mathematics 3441.

PHYSICS

For Undergraduates

- 4103-04 General Physics (\$2, \$2)
Mechanics, heat, electricity, magnetism, sound, and light. Three lectures and two laboratory hours per week.
- 3106 Elementary Theory of Sound
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. Given in alternate years. Given in 1964-65.
- 4107 Elementary Astronomy (\$2)
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)
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.
- 4213-14 Second-Year Physics (\$2, \$2)
First semester: Light, electricity, and magnetism. Second semester: Mechanics, heat, and sound. For students majoring in physics. Calculus is used throughout the course. Three lectures and three laboratory hours per week. *Prerequisite:* Mathematics 4212 concurrently and six hours of physics. May not be counted in addition to 4215-16 or any other sophomore course in physics but may be counted as a laboratory science in the liberal arts curriculum.
- 4215 Mechanics (\$2)
Three lectures and three laboratory hours per week. *Prerequisite:* Mathematics 4212 concurrently and one unit of high school physics or three credit hours of college physics.
- 4216 Heat, Electricity, and Magnetism (\$2)
Three lectures and three laboratory hours per week. *Prerequisite:* Mathematics 4212 concurrently and Physics 4215.

For Undergraduates and Graduates

- 4317 Light, Sound, and Modern Physics (\$2)
 Three lectures and three laboratory hours per week. *Prerequisite:* Physics 4216 and Mathematics 4212.
- 4320 Introduction to Geophysics (\$2)
 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. *Prerequisite:* Mathematics 4212, eight semester hours of physics, and Geology 3101, or concurrently. Not counted in addition to Physics 3320.
- 4321 Introduction to Geophysics (\$2)
 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. *Prerequisite:* Physics 3320.
- 3322 Heat and Thermodynamics
 Advanced topics. *Prerequisite:* Mathematics 4212 and six semester hours of physics.
- 3323 Optics
 Advanced topics. *Prerequisite:* Mathematics 4212 and six semester hours of physics.
- 4324 Applied Geophysics (\$2)
 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. *Prerequisite:* Physics 4320.
- 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. *Prerequisite:* Mathematics 4212 and six semester hours of physics which includes electricity and light.
- 3326 The Fundamentals of Modern Physics
 Continuation of Physics 3325. Further study of positrons, neutrons, cosmic rays, mesons, artificial radioactivity, and atomic fission. A short introduction to wave mechanics is given. *Prerequisite:* Mathematics 4212 and six semester hours of physics which includes electricity and light.
- 3427 Theoretical Geophysics
 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 4317, Mathematics 3326, and eight semester hours of physics.
- 3428 Theoretical Geophysics
 A continuation of Physics 3427. *Prerequisite:* Physics 3427.
- 4339 Electronics (\$2)
 Experimental techniques and elementary theory of circuit elements. Includes linear passive elements, linear electronic and transistor circuits. Also includes nonlinear electronic elements such as trigger circuits. Three lectures and three laboratory hours per week. *Prerequisite:* Physics 4214 or Physics 4216. May not be counted in addition to Engineering 4339.

- 4340 **Theory and Applications of Electron Tubes (\$2)**
 Theory and applications of a wide variety of electron tubes and circuits. Includes analysis of steady state and transient response in electronic systems by means of equivalent circuits. Also included are power supplies, feedback amplifiers, television and radio circuits, microwaves, and recent electronic developments. Three lectures and three laboratory hours per week. *Prerequisite:* Mathematics 4212 and Physics 4339. May not be counted in addition to Engineering 4340.
- 3341 **Electricity and Magnetism**
 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 4214 and Mathematics 4212.
- 3342 **Electricity and Magnetism**
 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 3341.
- 2343 **Advanced Laboratory Practice (\$2)**
 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. *Prerequisite:* Physics 4214 or 4216.
- 2344 **Advanced Laboratory Practice (\$2)**
 A continuation of Physics 2343. *Prerequisite:* Physics 4214 or 4216.
- 4445 **Electromagnetic Waves and Radiating Systems (\$2)**
 Application of Maxwell's equations to electromagnetic wave transmission, reflection, and refraction, including the study of guided waves, transmission lines, and antennas. Three lectures and three laboratory hours per week. *Prerequisite:* Physics 4340 or Engineering 4340 or Physics 3342.
- 3347 **Fundamentals of Acoustics**
 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:* Physics 4214 or 4317 and Mathematics 4317. (Offered 1957-58 and subsequently when demand is sufficient.)
- 3451 **Analytical Mechanics**
 Equilibrium and motion of a particle and a rigid body in two and three dimensions. May be counted as three advanced hours in Mathematics. *Prerequisite:* Mathematics 4212 and ten credit hours in physics or six credit hours in physics and Mathematics 3436.
- 3452 **Analytical Mechanics**
 Continuation of Physics 3451. May be counted as three advanced hours in mathematics. *Prerequisite:* Physics 3451.
- 3470 **Atmospheric Physics**
 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 operations in the atmosphere are discussed with emphasis on the relatively new factors presented by recent expansion into the new speed and space regime. *Prerequisite:* Mathematics 3214 or 4212 and six semester hours of physics.

3471 Atmospheric Physical Processes

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.

For Graduate Students Only

Prerequisite: For courses for which no additional prerequisite is stated, Twelve semester hours of advanced courses in Physics and Mathematics 3326 or 3436.

3581 Principles of Geodynamics

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.

3582 Principles of Geodynamics

A continuation of Physics 3581. *Prerequisite:* Physics 3581.

3583 Quantum Mechanics (Fall Semester)

3584 Quantum Mechanics (Spring Semester)

Prerequisite: Physics 3583.

3585 Solid State Physics (Fall Semester)

3586 Cosmic Radiation (Spring Semester)

3587 Theoretical Physics (Fall Semester)

3588 Theoretical Physics (Spring Semester)

Prerequisite: Physics 3587.

3598 Thesis Course for the Master's Degree (Fall Semester)

3599 Thesis Course for the Master's Degree (Spring Semester)



DR. J. C. RINTELEN, JR., *Head*

Professors RINTELEN, ABERNETHY, THOMAS, HEER; Associate Professor EHRLINGER.

(*See pages 35-39 for Degree Plans*)

MINING ENGINEERING

[These courses will not be offered after August, 1965]

3101 History of Mining

Historical highlights of various mining eras including the Egyptian, Phoenician, Greek, Roman, Early Asian, Early European and Colonial eras, Appalachian Coal, Coeur d'Alene, Comstock Lode, Michigan Copper, Mesabi Iron Range, Butte, Bingham Canyon, Leadville, Black Hills, Grass Valley, Tri-State and Tennessee Copper Districts. Three lectures per week with outside reading assignments and reading research assignments into various historical mining operations by the individual students. *Prerequisite:* Open to all students.

1102 The Mineral Industry

An introductory course into mining and metallurgical plant operations in the immediate area to El Paso. Three laboratory hours per week with field trips to various plants and operations. Written Reports required on each plant trip. *Prerequisite:* Open to all students.

3201 Elements of Mining

An introduction to mining with the study of prospecting, development, explosives, drilling, shaft sinking, timbering, underground transportation and hoisting. *Prerequisite:* Physics 4215.

2301 Mining Methods

A comprehensive study of mining methods. Analysis is made of influencing factors on various methods as to their applicability, safety, production, and comparative costs. *Prerequisite:* Mining 3201 and Geology 2217.

3302 Mine Surveying (\$2)

Theory and practice of problems encountered in shaft plumbing, surveys for patenting mining claims, stope surveying with transit or Brunton compass, determination and transferring the meridian underground and other conditions peculiar to mine surveying. *Prerequisite:* Mining 2301 and Engineering 2314.

2304 Mine Surveying; Summer Field Work (\$2)

A field course in mine surveying. A complete survey and map of one of the mines in the vicinity of the College are required. Students are required to pay all expenses for their transportation and board while on this trip. *Prerequisite:* Mining 3302. Eight hours daily for two weeks, starting Monday two weeks prior to registration.

2401 Tunneling and Blasting

Methods of excavation and material handling in tunneling and hard-rock foundation. Handling of explosives, placement of charges, safety precautions, ventilation. *Prerequisite:* Junior standing.

3402 Mine Examination and Valuation

A study of sampling, ore estimation and mining reports. In the laboratory the student is required, from a sampled mine or exploration, to determine the value of the property, select a mining method, suggest suitable equipment and write a detailed report. Two hour lectures and three laboratory hours per week. *Prerequisite:* Mining 2301.

2403 Mine Management

Study of administrative and economic problems of mining companies including organization, industrial and labor relations, mining law, economics of mining operations, net smelter returns on products, depletion and depreciation problems, development and research programs, analyses of industrial plant operations for recoveries, cost data and total economical return. Two lectures per week. *Prerequisite:* Mining 2301.

- 4404 Mine Plant (\$4)
A study of loading and transporting of mine materials, hoisting plant, compressed air plant, rock drills, pumping, ventilation, and design of mine structures. Three lectures and three laboratory hours per week. *Prerequisite:* Mining 2301.
- 3406 Rock Mechanics (\$3)
A study of the properties of rocks and their effect on the design and behavior of mine structures. The laboratory work will consist of the determination of the physical properties of rocks; the evaluation of the stress and strain distributions in models of underground structures using strain gage and photoelastic methods; and the use of the petrographic microscope to study mineral content and structure of rocks in order to correlate structure with the observed physical properties. Two lectures and three laboratory hours per week. *Prerequisite:* Mining 2301 and Engineering 4234.
- 2421 Mining Trip (Transportation fee: \$75.00)
At the present time this trip will be taken with Metallurgy 2421. When it is to the best interests of the mining students to deviate from the route of the Metallurgy 2421 trip, such changes will be made, but in the main, the two trips will be taken together. *Prerequisite:* Junior standing.

METALLURGICAL ENGINEERING

- 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.
- 1101 Introduction to Metallurgy I – Laboratory (\$2)
An introductory course in metallurgical engineering plant operations in the general area of El Paso. Three laboratory hours per week with field trips to various plants and operations. Written reports are required on each field trip. This course is conducted with the laboratory section of Metallurgy 3101. *Prerequisite:* 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 [Formerly 3301]
A study of the fundamental engineering principles applied to metallurgical processes. *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:* Geology 2217 and one semester of physics.
- 4303 Mineral Dressing II (\$2) [Formerly 4408]
Advanced principles of ore dressing, ore testing, flowsheets, and mill design. Three lecture and three laboratory hours per week. *Prerequisite:* Metallurgy 4302.
- 3309 Physics of Metals
A study of solid state physics applied to metals and alloys. *Prerequisite:* Metallurgy 4203 or Math 4212 and Physics 4216 or 4214.

- 3315 Non-Ferrous Process Metallurgy [Formerly 3403]
The smelting and refining of non-ferrous metals. One-third of the course is devoted to calculations pertaining to the above subjects. *Prerequisite:* Chemistry 4103-04, one semester of physics, and Math 3115 or Metallurgy 3201.
- 2315 Non-Ferrous Metallurgy
Same as Metallurgy 3315 except that the calculations are omitted. *Prerequisite:* Permission of the Head of the Metallurgical Engineering Department.
- 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. *Prerequisite:* Metallurgy 3201 and 4203.
- 2402 Ferrous Metallurgy
Same as Metallurgy 3402 except that the calculations are omitted. *Prerequisite:* Permission of the Head of the Metallurgical Engineering Department.
- 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 3301 or Chemistry 4103-04 and Physics 4214 or 4216.
- 3405 Metallurgical Research (\$4)
Fundamental and applied research problems are investigated. Nine laboratory hours per week. *Prerequisite:* Metallurgy 3309 or 4302.
- 3406 Metallurgical Research \$4
Continuation of Metallurgy 3405.
- 2405 Metallurgical Research (\$3)
This course handles part of the work covered by Metallurgy 3405 and is intended for those students who wish to do some research work but cannot devote the time necessary for full credit toward graduation. Six laboratory hours per week. *Prerequisite:* Metallurgy 3305 or 4302.
- 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. *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.
- 3413-14 Thermodynamics of Metals
The thermodynamics of metals and metallurgical processes. *Prerequisite:* Metallurgy 4203 and Chemistry 4361 or 4461.
- 2421 Metallurgical Trip (Transportation fee: \$75.00)
At the present time this trip will be taken with Mining 2421. When it is to the best interests of the metallurgical students to deviate from the route of the Mining 2421 trip, such changes will be made, but in the main, the two trips will be taken together. *Prerequisite:* Junior standing.



MILITARY SCIENCE



COLONEL RICHARD R. MOORMAN, *Commandant*

Professor COLONEL MOORMAN;

Assistant Professors MAJORS BOND, KIEFER, NEELY and CAPTAIN WOODYARD.

Courses offered by this department are designed to produce junior commissioned officers who by their education, training, and inherent qualities are suitable for continued development as officers in the United States Army. Training in military leadership is emphasized. Instruction is provided in subjects common to all branches of the Army.

Students who qualify as Distinguished Military Graduates are eligible for appointment as commissioned officers in the Regular Army.

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. The second two years (Military Science 3301-02 and 3401-02) form the Advanced Course. All Military Science courses are elective, but enrollment in either the Basic or Advanced Course causes completion of such course to become a prerequisite to graduation. Military Science courses may not be dropped solely at the desire of the student. The Professor of Military Science will consider such action for each individual case. He will determine if the student may be relieved of this obligation under regulations prescribed by the Secretary of the Army.

ELIGIBILITY: Normally a student may enroll only in the Military Science Course that corresponds to his academic year in College, and he may be permitted to begin Military Science only if sufficient time remains in College to complete all Military Science Courses by the time he obtains a baccalaureate degree. Enrollment is limited to students who can qualify for a degree prior to becoming 28 years of age. Exemption may be granted by the Professor of Military Science from as much as one year of the Basic Course for high school ROTC and from as much as all of the Basic Course for previous active military service. In exceptional cases students may be authorized to complete the Military Science Courses in less than four years. Inquiries pertaining thereto should be directed to the PMS. Subject to the above requirements a student may enroll in the Basic Course providing he is a regularly enrolled student at Texas Western College, is a citizen of the United States, and is physically qualified. Upon completion of the Basic Course he may, subject to the above requirements, enroll in the Advanced Course providing he is selected by the President of the College and the Professor of Military Science.

If accepted for the Advanced Course, the student will be required to execute a written agreement with the Government to continue the course as long as he remains in good standing in the College, and, upon graduation, to accept a commission in the United States Army Reserve if such a commission is tendered. Once enrolled, completion of the Advanced Course, including summer camp, is a prerequisite to graduation, unless the student is relieved of his contractual obligations.

SUMMER CAMP: Advanced Course students are required to attend a 6 weeks' summer camp between their junior and senior academic years. A student may be authorized to postpone attendance at camp until the summer following his graduation if cogent reasons therefor exist.

All regularly enrolled students are furnished necessary uniforms, texts, and equipment on a loan basis. A twenty-dollar (\$20.00) deposit is required at the time of initial registration to cover loss or damage of the property. This sum will remain on deposit and be maintained at that value as long as the individual remains enrolled in ROTC classes. The Government pays all Advanced Course students a subsistence allowance of \$.90 per day for not more than 595 days and \$78.00 per month for the six weeks' summer camp. Veterans' payments are not affected by the payment of the above allowances.

Only under special circumstances may students enroll who do not meet the requirements for enrollment. Permission must be obtained from the President of the College and the Professor of Military Science. They will not receive monetary allowances nor be issued government uniforms. Students will not be enrolled for academic credit only.

Upon successful completion of the four-year ROTC program and graduation a student is tendered a commission in the United States Army Reserve and will be required to serve a tour of active duty. The length of this tour will depend upon the requirements of the Army and will consist either of six months or two years. It will include a course of instruction at an officers' basic school.

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. This elective may be used to meet both graduation and military science requirements.



DR. EDGAR T. RUFF, *Head*

*Professors RUFF, SHARP; Associate Professors BEVANS, TAPPAN, WEBB, GABRIEL;
Assistant Professor BREWER; Instructors SCRUGGS, HAUGHTON, BAILEY, RODRIGUEZ.*

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.

FRENCH

4101-02 Fundamentals of Reading, Writing and Speaking

Oral drill, dictation, grammar, reading of elementary and intermediate texts, laboratory and written exercises. Three recitation and two workshop hours.

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*

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*

3335 Modern Novel: Early Period

Reading of such eighteenth century novelists as Lesage, l'Abbé Prevost and Bernardin de Saint-Pierre and of the nineteenth century novelists up to 1850. *Prerequisite:* French 3202.

*Undergraduate courses indicated by an asterisk are not given in the period covered by this catalog.

- 3337 Modern Novel: Later Period*
- 3341 Modern French Drama*
- 3357 Advanced Composition and Grammar Review
Oral and written composition on topics of current interest; commercial letters and correspondence with students abroad. *Prerequisite:* French 3202.
- 3358 Contemporary French Literature
Emphasis on the novel with some attention to the contemporary drama. Study of such authors as Proust, Romain, 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. Three recitation and two workshop hours.
- 3108 Conversational German*
- 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.

SPANISH

- 4101-02 Fundamentals of Reading, Writing and Speaking
Oral drill, dictation, grammar, reading of elementary and intermediate texts, laboratory and written exercises. Three recitation and two workshop hours.
- 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.

*Undergraduate courses indicated by an asterisk are not given in the period covered by this catalog.

- 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***
- 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

- 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.
- 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 Mio Cid*, *Libro de Buen Amor*, *La Celestina*, etc. *Prerequisite:* Spanish 3202.
- 3335 **Modern Novel: Early Period**
 The Spanish novel of the first half of the nineteenth century: Fernán Caballero, Valera, Alarcón, Pereda, Pérez Galdós, Pardo Bazan, etc. *Prerequisite:* Spanish 3202.
- 3337 **Modern Novel: Later Period**
 The Spanish novel of the second half of the nineteenth century: Palacio Valdés, Blasco Ibáñez, Pio 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***
- 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.)

*Undergraduate courses indicated by an asterisk are not given in the period covered by this catalog.

- 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, Zunzunegui, etc. *Prerequisite:* Spanish 3202.
- 3360 **The Regional and Historical Novel in South America***
- 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*; Cortes' *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***
- 3365 **Contemporary Urban Novel of Latin America***
- 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.
- 3377 **History of Spanish Poetry**
A survey of Spanish poetry to the middle of the twentieth century. *Prerequisite:* Spanish 3202.
- 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***

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.

*Undergraduate courses indicated by an asterisk are not given in the period covered by this catalog.

MODERN LANGUAGES

- 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.

RUSSIAN

- 4101 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.
- 4102 Written and Spoken Russian
A continuation of Russian 4101. Intermediate graded reading. *Prerequisite:* Russian 4101.
- 3108 Conversational Russian
Intended to broaden the vocabulary of Russian 4101 for oral use. Attention also will be given to basic military terminology. *Prerequisite:* With or after Russian 4101.



MUSIC



DR. E. A. THORMODSCAARD, *Head*

Professors EIDBO, THORMODSCAARD; *Associate Professors* BRIGGS, HENDERSON;
Assistant Professors CHAVEZ, HILLYER, MEYER; *Instructors* CARDON, THAYER;
Part-time Instructors ALDERETTE, EICHER, 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.

MUSIC

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 non-technical course for all students which, through directed listening, aims to increase the enjoyment and appreciation of potential music lovers. 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 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.

MUSIC EDUCATION

For Undergraduates

1101 Professional Laboratory Experiences

Observation of instrumental and vocal performances by individuals, groups, and classes of all age levels (elementary school, secondary school and college) under the guidance of public school and college instructors. Participation required in one or more performance media. Required of all music majors each semester in residence. May be repeated for credit.

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.

*May be repeated for credit.

- 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; function 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, 3332 Choral Methods, Techniques and Conducting**
A study of unique problems in choir organization including the selection of voices. Special attention is given to 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 Conducting Methods and Materials**
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.
- 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.

MUSIC

- 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 the Elementary Schools and 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.

*May be repeated for credit.

1155 All-College 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. Three 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.

For Undergraduates and Graduates

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," or registers in all voice classifications. Methods of voice development through song literature. Repertoire and effective interpretation. *Prerequisite:* Senior standing in music, or equivalent in vocal study and experience, Voice 2292, and permission of instructor.

For Undergraduates

BALLET

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.

*May be repeated for credit.

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 "9" 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.

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 fifteen practice hours per week. Recital participation. *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.

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.

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.

MUSIC

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 and PSYCHOLOGY



DR. J. H. HADDOX, *Head*

Professors CRAWFORD, HADDOX; *Associate Professors* BOSWORTH, WHITWORTH, KLIEVER;
Assistant Professors BARRIENTOS, WHITE; *Part-time Special Lecturer* FIERMAN;
Part-time Instructor HACKETT.

B.A. Degree — Specific courses required for the degree of Bachelor of Arts in Psychology are: Psychology 3101, 3317, 3421, and Chemistry 3101-02 or Physics 4103-04 or Zoology 3101-02. Additional courses especially recommended for the undergraduate major in Psychology are Psychology 3102, 3211, 3302, 3310, and 3401. Specific courses required for the degree of Bachelor of Arts in Philosophy are Philosophy 3101, 3201, 3202, 3301; also History 3212, 3213; also English 3211 and 3212, or English 3215 and 3216. The undergraduate major in Philosophy is especially recommended for pre-law and pre-ministerial students.

PHILOSOPHY

- 3103 Introduction to Philosophy [Formerly 3102]
The problems of matter, life, mind, truth and value.
- 3104 Introductory Logic [Formerly 3101]
The validities and fallacies of both deductive and inductive thinking.
- 3201 Ancient and Medieval Philosophy
Philosophic thought from Thales to Bacon and Hobbes. *Prerequisite:* Sophomore standing.
- 3202 Modern Philosophy
Philosophic thought from Descartes and Spinoza to the present. *Prerequisite:* Sophomore standing.
- 3211 Philosophies of Life
The historic philosophies of life and their moral, esthetic and religious values. *Prerequisite:* Sophomore standing.
- 3212 Latin-American Philosophy
Latin-American thought viewed against the background of continental, and especially Spanish, influences. Some philosophers to be considered: Ortega y Cassett, Unamuno, Vasconcelos, Caso and Reyes. *Prerequisite:* Sophomore standing or the equivalent as determined by the head of the department.

(The *prerequisite* for each of the courses listed below is Junior standing.)

- 3301 Ethics
Man's internal and external relationships, in the individual, social, and universal orders respectively.
- 3311 Philosophy of Science
A study of the inter-relationships of the physical, biological, and psychological sciences.
- 3321 Philosophy of Civilization
The philosophies of the various phases of human culture, such as language, myth, ritual, art, politics, and history.
- 3322 Philosophy of Religion
A study of the origin, nature and validity of the concepts of religious thought.
- 3401 Symbolic Logic
A study of contemporary mathematical logic.

PHILOSOPHY AND PSYCHOLOGY

- 3402 **Metaphysics**
A study of being as such, and hence of the validity of the postulates of the sciences.
- 3411 **Epistemology**
A study of the ways of knowing and of the criteria of truth.
- 3412 **Aesthetics**
The philosophy of art.
- 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 3101, 3201, 3202; or the equivalent as determined by the Head of the department.
- 3452 **Problems of Philosophy – SEMINAR**
The problem of knowledge, the mind-body problems, the problems of values, and such problems as those of matter, life, consciousness, personality, etc. May be repeated when the course content varies. *Prerequisite:* Philosophy 3101, 3201, 3202; or the equivalent as determined by the Head of the department.

PSYCHOLOGY

For Undergraduate Students Only

- 3101 **Introduction to Psychology**
A survey of basic principles in general psychology. *Prerequisite:* College entrance.
- 3102 **Methods of Psychology**
A general survey of the principle methodologies used to investigate the different areas of psychology. *Prerequisite:* Psychology 3101.
- 3201 **Child Psychology**
Principles of growth and development from infancy to adolescence. *Prerequisite:* Psychology 3101.
- 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. *Prerequisite:* Psychology 3101.
- 3210 **Developmental Psychology**
A study of the behavior and special problems characteristic in the development of the individual. *Prerequisite:* Psychology 3101.
- 3211 **History and Systems of Psychology**
A study of the historical development of psychological views. *Prerequisite:* Psychology 3101.

For Graduates and Undergraduates

Prerequisite for all courses listed below: Twelve semester hours in Psychology, including Psychology 3101.

- 3302 **Theory of Personality**
Description of the process of personal development.

- 3304 **Personnel Psychology**
A survey of principles and methods used for selection and placement in personnel management and industry. *Prerequisite:* Twelve semester hours in Psychology, including Psychology 3101 or junior standing in Business Administration or in Engineering. Three lectures per week.
- 3308 **Principles of Counseling**
The basic principles underlying counseling.
- 3310 **Introduction to Learning Theory**
Introduction to the nature of the learning process and the application of learning principles. Three lectures per week.
- 3311 **Clinical Psychology**
A study of clinical problems, case study methods and discussion of psychological tests used in common clinical situations. Three lectures per week.
- 3312 **Abnormal Psychology**
Study of variations in the personality processes that are referred to as abnormal.
- 3317 **Psychological Statistics**
A study of the basic concepts of descriptive and sampling statistics as applied to psychological research. Topics include percentiles, t-Ratios, correlation, analysis of variance and chi square. Three lectures and one laboratory session per week.
- 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.
- 3402 **Practicum in Intelligence Testing (§3)**
Instruction and practice in the administration, scoring, and interpretation of intelligence tests. Two lectures and two laboratory hours per week. *Prerequisite:* Psychology 3401 or the equivalent as determined by the head of the department.
- 3411 **Physiological Psychology**
Basic psychological processes in relation to structure and function. Three lectures per week.
- 3421 **Experimental Psychology**
An introduction to method and theory in contemporary experimental psychology. *Emphasis is on method rather than content.* A survey is made of classical studies in sensory and perceptual phenomena, learning, verbal behavior, problem solving and social processes. Three lectures and one laboratory session per week.
- 3441 **Motivation and Learning**
The similarities in motivation and learning with an attempt to clarify the processes involved.
- 3452 **Independent Study**
Independent student work under the supervision of the staff. Permission of the instructor required.
- 3453 **Independent Study**
Independent student work under the supervision of the staff. Permission of the instructor required.
- 3454 **Seminar in Psychology**
Topic to be discussed will be selected. Permission of the instructor required.



SOCIOLOGY



DR. CLARK S. KNOWLTON, *Head*

*Professor KNOWLTON; Associate Professor QUINN; Assistant Professor GERALD;
Instructor GOODMAN.*

B.A. Degree — Specific course requirements for a Sociology major are: 1) Sociology 3101 and 3102, and twelve advanced hours; 2) three semester hours of Anthropology.

SOCIOLOGY

3101 **Introduction to Sociology**
Study of the individual in group action. Includes broad consideration of heredity and environment, and a study of the major social institutions and processes.

3102 **Social Problems**
Physical and mental defectiveness considered from the sociological viewpoint; defects in social organization; poverty and dependency. Social controls applied to social problems.

Prerequisite for the following courses is sophomore standing, Sociology 3101 and 3102, or permission of Department Head.

3212 **Urban Sociology** [New]
A study of the growth, characteristics, and problems of cities. Emphasis will be placed upon urbanization in Texas.

3213 **Rural Sociology** [New]
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**
Methods of studying the community; a comparative study of community types, analysis of underlying social processes and institutions, and the trends and problems of community change.

3215 **Marriage and Family Life**
A study of the factors involved in an adequate preparation for marriage, marital adjustment and parenthood.

For Undergraduates and Graduates

Prerequisite: Twelve hours in Sociology or six hours of Sociology and six hours of other social science.

3320 **Fields of Social Work**
A survey of the various fields of social work now operating, both public and private in sponsorship, with particular attention to those organized on regional and national basis; and an examination of the methods used in the various fields considered.

3325 **Social Class and Stratification** [New]
A study of the social class structure of the United States and the social functions of a class structure within a society.

3327 **Minority Groups in the United States** [New]
A study of the principal minority groups in the United States and of the process of accommodation, acculturation, and assimilation.

- 3333 **Juvenile Delinquency**
 A study of the causative factors in juvenile delinquency. Attention is given to the methods of social analysis, the clinical approach, the interrelation of physical, mental and social factors in delinquency.
- 3336 **Comparative Cultures**
 A study of the folkways, 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** [New]
 A study of the social processes and social systems of industrial and business organizations with reference to the social relationships that prevail within these organizations.
- 3345 **Border Sociology** [New]
 A survey of the major ethnic groups, social processes, problems, and characteristics of the inhabitants in northern Mexico and Southwestern United States.
- 3347 **Population Problems and Immigration**
 Population movements and their social control; problems of population, distribution, and assimilation, consideration of Americanization programs and immigration laws.
- 3348 **Criminology**
 Causes, characteristics, and relief of crime, with consideration of mental, physical, economic and social factors in crime. A sociological analysis and evaluation of penal methods.
- 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 Problems**
 The development of the rights of the child in relation to parental rights, as evidenced in the child labor laws, juvenile court, adoption, mother's aid legislation, the changing status of the illegitimate child, and public organization for more effective administration of other laws relating to child dependency, delinquency and neglect.
- 3355 **Social Theory** [New]
 A survey of the major social theorists from Comte through Parsons and their importance in developing the science of sociology. The relationship between theory and research will also be considered.

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.

SOCIOLOGY

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 History, or sophomore standing. Not counted as laboratory science.

3312 Geography of Latin America

[New]

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.

☞ *Explanation of Course Numbering System* ☞

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 are designated in the course description by a hyphen, for example, English 3101-02. In such cases no credit 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)

Statistical Summaries

STUDENTS

ENGINEERING:	LONG SESSION, 1962-63		
	Men	Women	Total
Postgraduates	19	---	19
Seniors	99	1	100
Juniors	122	1	123
Sophomores	179	1	180
Freshmen	345	1	346
TOTAL	764	4	768

ARTS and SCIENCES:

Postgraduates	564	352	916
Seniors	436	245	681
Juniors	468	327	795
Sophomores	718	481	1199
Freshmen	1416	970	2386
TOTAL	3602	2375	5977

<i>Total Individual Students</i>	4366	2379	6745
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	SUMMER SESSION, 1963		
	Men	Women	Total
Students registered in the first term	1586	1316	2902
Students registered in the second term	1431	966	2397
TOTAL	3017	2282	5299
<i>Total Individual Students in Summer Session</i>	2013	1672	3690

Official Regulations

Student Expense

[TUITION]

Financial Aid to Students

[SCHOLARSHIPS AND LOANS]

Regulations Affecting Student Life

[CONDUCT - DISCIPLINE]

Extra Curricular Activities

[ORGANIZATIONS]

Scholastic Regulations

[GRADES]

Statistics

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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 College provided they are in the amount owed the College. 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.

Wives and children of military personnel are required to have on file in the Registrar's Office, during their period of enrollment, a letter from their husband's or father's Commanding Officer certifying to their status as a military dependent, and to the fact that the husband or father is stationed 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**.

7. Appointment as member of the teaching or research staff or the holding of a scholarship, or assistantship does not affect the residence status of a student.

8. If the parents of a **RESIDENT** student under 21 years of age move out of the

* *Exception: A woman student of the College who is classified as a resident student and, while so classified, marries a non-resident student of the College will be permitted to continue to pay the resident fee for the two long sessions immediately following such marriage.*

STUDENT EXPENSES

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. 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 and Registration Fees

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 or registration fees. These rates of tuition are subject to change by the Legislature of the State of Texas.

Long Session (each semester)

<i>Semester Hours</i>	<i>Resident</i>	<i>Non-resident</i>
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)

<i>Semester Hours</i>	<i>Resident</i>	<i>Non-resident</i>
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 College 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 fee

will be taken seriously and may lead to expulsion.

Any student who wrongfully pays the Texas rather than the non-resident 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 Fees

A refund of the registration and tuition fee 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 and registration fee 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	<i>No Refund</i>

In no case shall the total refund exceed 70% of the registration and tuition fee.

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 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 registration and tuition fee 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

STUDENT EXPENSES

in the Armed Forces in World War I, World War II, the Korean conflict, or in certain of the auxiliary services, 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 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.

Laboratory Fees	<i>per semester</i>
Art 2211, 2311, 2313, 2413, 2411, 2412, 2131, 2231, 2232, 2233, 2331, 2332, 2365, 3392 . . .	\$2.00
2141, 2181, 2341, 2342, 2381, 2382	5.00
Microbiology 3301, 3302	2.00
Microbiology 4360	4.00
Biology 3101, 3102, 3201, 3202, 3203, 3301, 3401	2.00
Botany 3101, 3210, 3301	2.00
Business Administration 4111, 4112	2.00
Chemistry 2211, 3101, 3102, 3106, 3107, 3211, 3462, 3463, 4450	2.00
2496, 3221, 3222, 3496, 4461, 4496, 5496, 6496	4.00
4322, 4460	5.00
4103, 4104, 4213, 4214, 4321	6.00
4324, 4451	8.00
4470	8.00
Drawing 2101, 3103	2.00
Engineering 2212, 2216, 2314, 3441, 3442, 3443, 4339, 4340	2.00
3336	4.00
4334	6.00
Geography 3103, 3104	2.00
Geology 3101, 3102, 3210, 3325, 3461, 4323, 4463	2.00
2217, 2464, 3216, 3217, 4218, 4219, 4321, 4327, 6465	4.00
Journalism 3308, 4207	5.00
Metallurgy 4302, 4408	2.00
2405, 3404, 3305, 4308, 4407, 4411	3.00
3405, 3406	4.00
2303	8.00

Mining 2304, 3302	2.00
3406	3.00
4404	4.00
Physical Education 1101, 1102, 1201, 1202	2.00
Physics 2343, 2344, 4103, 4104, 4107, 4108, 4213, 4214, 4215, 4216, 4317, 4321, 4339, 4340, 4445	2.00
Psychology 3401, 3402, 3421	3.00
Zoology 3101, 3102, 3301, 3302, 3303	2.00
3304	4.00
5201	7.00
Music:	
Piano Sight Reading 2373, 2374	2.00
Class Voice 2171, 2172, 2271, 2272, 2371, 2372	2.00
Class Piano, high strings, low strings, reeds, brass, percussion 2171, 2172, 2271, 2272, 2371, 2372	4.00
Applied 2181, 2182, 2191, 2192, 2281, 2282, 2291, 2292, 2381, 2382, 2391, 2392, 2481, 2482, 2491, 2492	25.00
Applied 3181, 3182, 3191, 3192, 3281, 3282, 3291, 3292, 4191, 4192, 4291, 4292	45.00
Applied 3381, 3382, 3391, 3392, 3481, 3482, 3491, 3492, 4391, 4392, 4491, 4492	50.00
Transportation Fees:	
Geology 2421	50.00
Metallurgy 2421	50.00
Mining 2421	50.00

Miscellaneous Required Fees

Student Union Fee — Under the authority of Senate Bill No. 359, enacted into law by the 54th Legislature, the Board of Regents has authorized a Student Union Fee in the amount of \$4.00 for each semester of the Long Session and \$2.00 for each term of the Summer Session for the purpose of constructing, equipping and maintaining the Student Union Building. This fee is required of all students registering for course work on campus including full time and part time students enrolled for day and/or evening classes.

Refund of the fee will be made only under the same conditions as the Tuition and Registration fee.

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 College under an exemption as mentioned on pages 148-149 are not exempted from payment of this fee.

Student Services Fee—Under the authority of legislation enacted by the 55th Legislature, the Board of Regents has authorized a Student Services Fee in the amount of \$22.50 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 include: Health Service, Student Association, Intramurals, Intercollegiate Athletics, Student Publications, Swimming Pool, Band, Choir, Orchestra, Co-ed Association and Forensics.

Refund of the fee will be made only under the same conditions as the Tuition and Registration fee, 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 55th 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:

	Seniors Juniors	Soph. Fresh.
Fall Semester	\$4.00	\$3.00
Spring Semester	2.50	2.00
Summer Session	1.50	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	10.00

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 College property. The student, upon notice from the Business 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 College.

General Property Deposits will be refunded only when a student ends his career at the College; Military Property Deposits will be refunded only when a student ends his military career at the College. 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 College 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 College 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.

DORMITORIES

The College 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.

Texas Western College considers student housing as an integral part of the total educational process. Every dormitory is supervised by a Head Resident, student counselors and an elective council, each of which endeavors to provide opportunities for social, cultural and academic development of all residents. All housing at Texas Western is administered by the Dean of Students who delegates supervision of men's dormitories and Student Family Housing to the Dean of Men and women's dormitories to the Dean of Women.

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 College 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 living in Worrell. Hudspeth Hall houses 100 men, two to a room. Conveniences include a washbasin in each room, evaporative cooling, television and study lounges, and a kitchen. Burges Hall was completed in 1963 and houses 180 men in double rooms. It has refrigerated air conditioning throughout.

There are two College owned and operated women's residence halls, Bell Hall

houses 98 women in double rooms; Benedict Hall houses 24 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 Texas Western College has been made, room reservations should be made by sending a deposit of \$10.00 to the office of the Business Manager. Remittances must be in the form of a check, draft or money order and made payable to Texas Western College. The \$10.00 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 Texas Western 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 cancelled their reservations prior to September 1 for the Fall Semester or January 15 for the Spring Semester. A room reservation is cancelled and the Dormitory Deposit is forfeited if the room is not claimed by 11:00 p.m. the last day of registration before classes begin. Students are advised of their room assignments after August 1 for the Fall Semester and after January 1 for the Spring Semester.

Charges

Charges for room and board per person are \$325.00 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 (the new air-conditioned men's dormitory), are \$355.00 per semester. An additional charge of approximately \$9.00 per semester per student is made for linen. This charge must be paid at the beginning of the semester by each student. The entire amount of room and board charges may be paid upon entering the dormitory or the student may pay one-quarter upon entering the dormitory and the balance in three quarterly payments which shall be due on or before such dates as will be announced.

STUDENT EXPENSES

A two percent (2%) Texas State Sales Tax applies to meals. It is, therefore, necessary to collect an amount for this tax in addition to regular dormitory charges.

Room Rent and Board

Per Semester, Per Person:

Bell Hall (women); Hudspeth Hall (men)

<i>Room and Board</i>	<i>Tax</i>	<i>Laundry</i>	<i>Total</i>
\$325.00	\$4.70	\$9.00	\$338.70

Benedict Hall (women);

Worrell Hall and Burges Hall (men)

<i>Room and Board</i>	<i>Tax</i>	<i>Laundry</i>	<i>Total</i>
\$355.00	\$4.70	\$9.00	\$368.70

A College - approved privately owned dormitory is available adjacent to the campus. This dormitory operates under rules and regulations which are the same

as those for students living in College-owned dormitories. The Dormitory Director is responsible to the Dean of Students for the careful supervision of her residents.

STUDENT FAMILY HOUSING

TWC Village located on Oregon and Robinson Streets on the Texas Western 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 \$10.00 Housing Deposit to the Business Manager and complete a Student Family Housing Application Form.

FINANCIAL AID TO STUDENTS

Texas Western College students can obtain financial assistance through the College in several ways: Employment by the College, placement in part-time off-campus jobs through the Placement Office, scholarships, and loan funds.

EMPLOYMENT BY THE COLLEGE

More than a hundred students are employed by the College in jobs ranging from semiskilled laborers to student readers, research assistants, and laboratory and teaching assistants. Payment is normally on an hourly basis, the rate depending upon the individual's knowledge and prowess. 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 College, enabling their spouses to devote full attention to academic work during the period of college attendance. The El Paso area, of course, provides many additional opportunities for such employment.

PLACEMENT OFFICE

For the student who wishes to contribute to his income while attending college, the Placement Office acts as an employment agency. The office makes every effort to assist students in securing employment, but the College assumes no responsibility for guaranteeing employment.

As an additional service, seniors and graduates must file records of their training and experience for submission by the office to both national and local employers and interviews. Many graduates receive career jobs through the Placement Office.

Address applications and correspondence to: *Director of Personnel and Placement Texas Western College, El Paso, Tex.*

Scholarships

While seeking to develop its students in culture, in character, and in citizenship, Texas Western College has available rewards for scholarship. To encourage this devotion to learning, there have been established, through the donation of friends of the College, a number of scholarships to be awarded principally to students with high academic accomplishment. Besides high academic accomplishment, some of these scholarships stipulate that the financial requirements of the student be given consideration.

To be eligible for scholarship, college students must have completed a minimum

of 14 hours in the preceding semester with an average of 3.0 and must enroll for a minimum of 14 hours.

High school students must have completed high school with a B average in the Basic Courses and must enroll for a minimum of 14 hours.

Texas Western College has a printed brochure listing all scholarships, donors, restrictions and other pertinent information. These are available to any interested person in numerous high school administration offices or upon request.

Interested students should write the Dean of Students, Texas Western College, for information and a brochure on available scholarships, as well as scholarship application forms.

Loan Funds

Student loan funds are administered by a faculty committee. For information concerning loans, contact Dr. J. H. Meadows, Chairman, Student Loan Committee. It is suggested that a personal interview be arranged if at all possible. Student loans at Texas Western College are of two types:

Long-Time Loans:

These loans are payable after graduation or after the borrower ceases to be a full-time student. The National Defense Student Loan program which is jointly sponsored by the Federal government and Texas Western College is included in this category. The National Defense Loan draws no interest until one year after the borrower ceases to be a full-time student. At this time, interest begins to accumulate at the rate of 3% per annum on the unpaid balance.

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 Chairman of the Student Loan Committee for details.

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 College 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.

TWC Women's Auxiliary Loan Fund: This fund was established by the Women's Auxiliary of Texas Western College and is administered by the loan office of the College.

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 Texas Western College.

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.

TWC Ex-Student's Loan Fund: This fund was established by the Ex-Student's of Texas Western College 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.

TWC Loan Fund: This fund is made up of small contributions from students and friends of the College. 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. At the present time it contains many restrictions.

REGULATIONS AFFECTING STUDENT LIFE

Student Services

The Office of the Dean of Students is the office on the campus of the college responsible for all student affairs. This office consists of the Dean of Students, the Dean of Men, the Dean of Women, and the Counseling Service. These staff members are available to talk over personal or organizational problems, and to answer questions that concern members of the student body.

The Dean of Men and the Dean of Women supervise student housing, student activities, and the Student Association.

The Dean of Students supervises the scholarship program, the counseling service, and coordinates all student affairs on the campus.

The personnel in the Office of the Dean of Students is concerned with the welfare of the entire student body and all are available for the discussion of any problem the student may have.

The Counseling Service is another student welfare service. This office administers the Freshman testing program and makes its services available to all those who wish counseling or vocational selection help.

In addition, there is a college health service, and a placement service which aids students in finding jobs. Various student organizations, led by the student government, render such services as activities orientation and providing tutoring service.

CONDUCT

Discipline of the College will be so administered by the faculty as to maintain a high standard of integrity and a scrupulous regard for truth. 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 regarded by the faculty as 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.

The possession of any material not allowed by the instructor during an examination is considered prima-facie evidence of intention to use such material illegally.

Discipline

1. Through matriculation at the College, a student neither loses the rights nor escapes the responsibility of citizenship.

2. Obedience to the law being a primary duty of the citizen, the conviction of the student for violation of law renders him subject also to disciplinary action on the part of the College.

3. A jury indictment for a felony or other offense of serious character suspends the student, without prejudice, until acquitted.

4. All students are expected to show respect for properly constituted authority and to observe correct standards of conduct. Illegal conduct, improper use of alcoholic beverages, gambling, dishonesty, conduct inconsistent with general good order, and failure to respond promptly to official notices may subject the student to disciplinary action.

5. Persons not registered in the College when guilty of misconduct that affects college life and work, if former or prospective students, will have the known circumstances inscribed in their records as presumptions against their moral characters. They will not be later admitted to the College unless they can prove moral desirability.

Penalties

The following penalties may be imposed: admonition; probation; suspension of social rights and privileges; suspension of eligibility for official athletic and non-athletic extracurricular activities; suspension of eligibility for any student office or honor; publication of the name of the offender, his offense, and the penalty imposed; increase in the number of courses required for a degree; cancellation of credits for scholastic work done; suspension from the College; expulsion; or such other penalty as the Faculty Committee on Discipline deems proper.

Probation

Disciplinary probation will be for a definite period and carries with it the following condition during the period of such probation: any further violation of College regulations during the time of probation will cause such student to be suspended for a period to be determined by the Faculty Committee on Discipline.

A student on probation may not hold office in any organization connected with the College, nor represent the College in any of its activities.

A student on probation who absents himself from any class exercise or neglects any class work, except for reasons con-

sidered imperative by his Dean, will be dropped from the College rolls for the remainder of the session.

Absences and neglect on the part of such student, not explained to his Dean within one day—beforehand if possible—will be presumed to be without excuse and will effect the dropping mentioned above.

A student on probation may not pledge or be initiated into any social or honorary organization.

Suspension from the College

A student suspended from the College shall remain off the campus of the College during the entire period of his suspension, excepting when summoned by an administrative official of the College, or when an appointment with an official has been previously arranged. A student while under suspension may not room or board in a dormitory or rooming house where other students are living, 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 Texas Western College 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 Faculty Committee on Discipline. This privilege shall not be allowed in cases involving cheating.

Expulsion from the College

A sentence of expulsion means permanent severance from the College. A sentence of expulsion shall be reviewed by the administrative officers, who, when in doubt about its propriety, shall return the case to the trial committee with the reason for so doing.

These penalties may be imposed singly or in any combination upon individuals, or groups, or organizations.

In every case in which a student is found guilty of any offense by the Faculty Committee on Discipline and in any other matter in which an emergency arises, parents or guardians will be informed and asked to co-operate with the authorities.

Debts

The College is not responsible for debts contracted by individual students or by student organizations.

The College expects all students and student organizations to conduct themselves honorably in all commercial transactions. The College will not assume the role of a collection agency for organizations, firms and individuals to whom students may owe bills, nor will the College adjudicate disputes between students and creditors over the existence or the amounts of debts.

Bad Checks

A student who gives the College a bad check, the fault not being that of the bank, and who does not make it good within five days will be dropped from the College. A student or a College organization who gives a bad check in a commercial transaction, and does not make it good within five days will be subject to disciplinary action by the Faculty Committee on Discipline. The College will not accept a check from a student who has once given a bad check.

Hazing

A student who violates his pledge of hazing, or who engages in, instigates, or encourages any type of class rush not specifically approved by the College will be liable to suspension or expulsion.



STUDENT AFFAIRS

At Texas Western College a complete program of student activities is designed so as to complement classroom experiences. The College makes available a wide range of cultural, social, recreational, and leadership opportunities which contribute to the education of its students.

ATHLETICS

Texas Western College participates as an independent institution in a variety of intercollegiate sports. This allows for student participation and gives students, staff and community residents a great deal of spectator enjoyment. There is also a large intramural athletic program, and all students are invited to engage in sports and recreation of their choosing. The Health and Physical Education Department, Student Association, and Dean of Students sponsor these activities.

ORGANIZATIONS

Other major participation areas include student publications, governmental organizations, four national sororities, one local and seven national fraternities, music and drama groups, and departmental organizations. There are close to eighty different groups from which a student may choose his activities. They are:

Accounting Club—organization of Business Administration students specializing in accounting.
Alpha Chi—scholastic honorary for Juniors and Seniors.
Alpha Epsilon Phi—national social society.
Alpha Epsilon Rho—honorary radio society.
Alpha Lambda Delta—national honorary society for freshmen women.
Alpha Phi Omega—local fraternity for Engineers.
Alpha Psi Omega—honorary drama society.
Alpha Sigma Mu—collegiate branch of national honorary metallurgical engineering society.
American Chemical Society—collegiate branch of professional society.
American Institute of Electrical Engineers—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—all regularly enrolled women students of TWC.

Association for Childhood Education—organization of future teachers of elementary schools.

Baptist Student Union—campus organization of Baptist Students.

Bridge Club.

Canterbury Club (Episcopal Community)—campus organization of Episcopalian students.

Chenrizig—scholastic and service honorary for senior women.

Chess Club—social organization of regularly enrolled students interested in chess.

Chimes—service organization for junior women.

Chi Omega—national social sorority.

Christian Science—a campus organization of Christian Science students and faculty members.

Circle K International—men's service club.

Co-Ed Council—co-ordinating group for all women's organizations.

College Players—drama group which puts on plays.

Collegiate Chorale—college choir sponsored by the Department of Music.

Cosmopolitan Club—to assist foreign students in adjusting to college life at Texas Western College.

Delta Chi—national social fraternity.

Delta Delta Delta—national social sorority.

Delta Sigma Pi—Professional society for men Business majors.

Engineering Council—co-ordinating group for all Engineering activities.

Gold Diggers—girls pep squad that marches with the band.

Hillel—social, cultural and religious organization for Jewish students.

Independent Club Council.

Interdormitory Council—representatives from men's and women's dorms who coordinate the athletic, social, cultural and scholarly activities among dormitory students.

Interfaith 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 social sorority.

Kappa Delta Pi—national honorary teacher's society.

Kappa Kappa Psi—honorary organization of band and Marching Cavalcade.

Kappa Pi—honorary art society.

Kappa Sigma—national social fraternity.

Kidd Mining Club—regularly enrolled earth science students.

Lambda Chi Alpha — national social fraternity.

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.

"M" Club — organization of Varsity lettermen in athletics.

Modern Dance Club — organization of students interested in Modern Dance.

Music Educators National Conference — student chapter for those going into Music professionally.

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 Kappa Tau — national social fraternity.

Phrateres International — national non-Greek social group for women.

Physical Education Majors Club — sponsored by PE department.

Pi Delta Phi — honorary French society.

Pi Kappa Delta — national honorary Forensic fraternity.

Political Science Club — regularly enrolled students interested in political science.

Pre-Med Club — students interested in the profession of medicine.

Press Club — campus organization of working members on campus publications.

Psi Chi Society — students interested in Psychology.

Rodeo Club — social organization for students interested in Rodeos.

Sardonyx — scholastic and service honorary for Junior and Senior men.

Scabbard and Blade — ROTC honorary society.

Sigma Alpha Epsilon — national social fraternity.

Sigma Alpha Mu — national social fraternity.

Sigma Delta Pi — this is an honorary Spanish society.

Sigma Gamma Epsilon — honorary society for earth sciences.

Sigma Pi Sigma — students majoring in Physics.

Society of American Military Engineers — national professional society for ROTC and Engineering students.

Sociology Club.

Speleological and Palcontological Club — social organization for students interested in geological formation.

Spurs — national service organization for sophomore women.

Student Activities Board — co-ordinating group for the Union building and its activities.

Student Senate — composed of qualified members of recognized college organizations chosen as representatives to the Student Senate.

Tau Beta Sigma — honorary service to promote band activities.

Tau Kappa Epsilon — national social fraternity.

United Campus Christian Fellowship — (UCCF) — this group is an inter-denominational religious organization consisting of the following groups: Presbyterian, Churches of Christ, United Lutherans of America, Congregational Christian, Christian Churches, and the Churches of the Nazarene.

Wesley Foundation — campus organization for Methodist students.

Young Republican 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 Conference

At the beginning of each semester selected student leaders are invited to participate in discussions of topics of special concern to students.

"M" Day

The "M" on the east side of Mt. Franklin was first laid out in 1923. Every year since, it has been repaired and re-white-washed by the freshman men and women, under the supervision of the Student Association Officers and Senate. Painting the "M" is followed by a traditional "Bean Feed" sponsored by the Student Association.

Homecoming

Homecoming activities, usually held in November of each year, center around a Border Conference home football game. Ex-students return to town for a series of parties and meetings and are guests of honor at open houses given in each sorority and fraternity lodge. A prize is awarded for the best decorated float entered in a downtown parade, and prizes are also awarded to the winners in the four divisions set up by the Ex-Students Association. The sororities also decorate their lodges. After the football game, a dance is given in the Student Union ballroom. The football queen is crowned at intermission.

Co-Ed Ball

This is the traditional all-college Christmas dance, when the girls make the dates, pay expenses, send flowers, use their own cars, call for their boy friends, and do the tagging. The Associated Women Students make this affair one of the most popular and original throughout the year.

Variety Show

In the late Spring semester, Alpha Psi Omega sponsors a Variety Show in which the proceeds go to a drama scholarship. Any organization may compete with original skits.

Campus Chest

Each fall a drive is held on campus to raise money for charitable distribution.

Beard Growing Contest

January 1st is more than New Year's Day at Texas Western College. It is also the day when men on the campus start growing beards to compete in the annual beard contest which is judged at the Hard Luck dance held on or near St. Pat's Day. Originally an engineering tradition, beard growing has spread to the East Side.

St. Pat's Day

On March 17th, St. Patrick's Day, Texas Western engineers gather for an all-day picnic during which freshman engineers are initiated into the order of St. Pat, patron saint of engineers. The initiation is traditionally held in the TWC mines around the area of Seaman Hall.

Hard Luck Dance

The Hard Luck Dance, sponsored by the engineers, is held on the closest Saturday to March 17th, St. Pat's Day. The beard growing contest is judged during the intermission—with prizes awarded to the longest and the prettiest beards and the one showing the most effort with the least results. A prize is also awarded the man and woman wearing the best hard luck costumes.

Western Day

The Southwestern Championship Rodeo, held in El Paso each year, heralds Western Day at Texas Western College. On that day the "no slacks on campus" rule is relaxed and co-eds and campus men all dress in Western clothes, complete with boots and cowboy hats.

Sing Song

The annual fraternity-sorority sing-song, held in the Fall semester, is a concert in which the various choruses compete for a cup. This event has grown in size to the point where many organizations other than the Greeks complete.

Beauty Contest

The Flowsheet annually sponsors this contest to select a beauty queen and several runners-up for the yearbook's feature section. In a preliminary contest about 12 finalists are selected from entries made by the social organizations on the campus. At the final contest, the beauty is crowned and presented with a bouquet of roses.

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.

All TWC Day and Spring Fiesta

A day of social and sports events is set aside each year as All-Texas Western Day. Held usually in April or May, the day's activities open with social organizations competing in a swimming meet. Organizations on campus set up booths of games or refreshments for the festival. Highlight of the day is the annual beauty revue at which "Miss TWC" is selected from entries made by campus organizations.

Flowsheet Queen

Each year a nationally known celebrity is asked to act as judge in the Flowsheet Queen Contest. The identity of the queen, who is selected from photographic entries, is not revealed until the yearbook is distributed in May. Any girl who is a student is eligible to compete.

Honors Night

Sardonyx, junior and senior men's honorary organization at Texas Western College, sponsors, each spring, the annual Honors Night ceremony. At this traditional Honors Night, Texas Western College gives public recognition to those students who excel in scholarship and citizenship. The students being honored are in one or more of the following groups: (1) Members of Texas Western College honor societies; (2) Members of national honor societies; (3) Students who merit recognition for distinction in citizenship and scholarship; and (4) Student Council representatives.

Womens' Honors Night

Chenrizig, Alpha Lambda Delta and Spurs tap new members at a Womens' Honors Night in each Spring Semester. All women students who have achieved special distinction in any major field of study are recognized and an outstanding Faculty woman is named. This event is sponsored by Associated Women Students.



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 Dean, (b) validation by the Business Office, and (c) filing with the Registrar.

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) validation by the Business Office, and (c) 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 *WP* or *WF* depend-

ing upon the student's standing in the course at the time.

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 *WF*.

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 College 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.

(b) 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.

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

Engineering Students—Beginning freshmen may not register for more than nineteen semester hours except with permission of the Dean. Sophomores, juniors, and seniors may not register for hours in excess of those prescribed in the course of study except in accordance with the grade point rule (39 grade points during their preceding semester), and in no case may they register for more than twenty-one semester hours.

Arts and Science 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 nineteen semester hours if the grade score has been 39 points for the preceding semester. A full summer session may be counted as a semester.

In no case may a student register for more than twenty-one semester hours.

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.

Official Notices

Official notices are posted on bulletin boards, 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.

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 *Px*.
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 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. Will be searching in character, strictly graded, and four hours in length.
4. The passing grade is *B*.
5. Absence from the examination, after a permit has been granted, gives a grade of *F*.
6. No student is eligible who has registered for or has been given a grade in the course.
7. The Registrar supervises the examination.
8. Student must currently or previously be registered in the College.
9. Credit thus earned is applicable toward a degree from this College only.

Scholarship

Grades and Grade Points

The grades used are: *A* (excellent), *B* (good), *C* (average), *D* (inferior but passing), *F* (failure), *WP* (withdrawal from the course with a passing grade), *WF* (withdrawal from the course with a failing grade), *Pr* (in Progress), *Inc.* (incomplete), and *Px* (postponed final examination).

In the case of students who drop courses or who withdraw from school the following grades apply:

1. A student who drops a course before mid-semester reports are filed in the Registrar's Office will receive a grade of *WP* if passing and *WF* if failing. The student will receive a grade of *WF* in any course dropped after the mid-semester unless the drop is initiated by the student's Dean.
2. Students who officially withdraw from college during the semester will receive, grades of *WP* in courses which they are passing and *WF* 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*, *WF*, *Inc.*, and *Px*.

Involuntary Military Call-Up of Students

Any student who withdraws from the College on or after the middle of the term or semester and enters immediately into active duty in some branch of the Armed Forces will be given as his final grade for the term or semester the standing which he had in each course on the day of withdrawal; provided, however, that this rule shall not apply to students who were on active duty status when they registered.

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 *Px* 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-*Px* 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.

When the student is given the grade of *Incomplete*, or *Px*, the grade points for the course will be considered as if the grade were *F* in calculating the standing of the student.

If *Px* or *Inc* grades are removed within the first two weeks of the semester immediately following the one in which they were received, the scholastic standing of the student will be adjusted according to his earned grades. *Px* examinations will be given within two weeks after the close of each semester.

Repetition of Course

If a student repeats a course, the official grade is the last one made.

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 *Px*, *Inc.*, *WF*, or *F*. (If a *Px*, or *Inc.* is removed within two weeks after the end of the semester the last grade earned will be considered.)

In publishing the honor list the Engineering and the Arts and Sciences Schools 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.

Standard of Work Required

The grades *Px*, *Inc.*, and *F* will not be considered passing. (If *Px*, or *Inc.* are removed within two weeks after the end of the semester, the student's status will be adjusted.)

Required Minimum

Academic Performance

Regular Students (12 or more hours)

1. If a student is in his first semester, he must make a minimum of 15 grade points.
2. If a student is in his 2nd semester, he must make a minimum of 18 grade points.
3. If a student is in his 3rd or 4th semester, he must make a minimum of 21 grade points.
4. If a student is in his 5th or any succeeding semester, he must make a minimum of 24 grade points.

Irregular Students (Less than 12 hours)

The number of semesters for which a student may have been enrolled in another College will be counted in determining the proper semester as listed above.

A student taking less than twelve semester hours must make a minimum average of 1.5 grade points in all work taken during the semester. However, a student will not be removed from good standing if he is registered for only one course and is in his first semester of attendance at the College, or has not been in attendance at the College during the preceding academic year.

A student in good standing does not incur any scholastic penalty by attending a Summer Session, except that a student who fails all his work must have the permission of his Dean before he may re-enter the College.

Except for those offered in the School of Mines and Engineering, and Department of Military Science, no one-hour course nor grade points earned on any one-hour course may be counted in determining the above minimum standard of performance.

Scholastic Probation

A student who fails to attain the required minimum at the end of a semester will be placed on Scholastic Probation.

The student will be warned by his Dean and his parents will be notified by the Registrar.

A student who withdraws while on Scholastic Probation will be continued in that status for the next semester or summer session of attendance.

Scholastic probation shall mean that a student may not:

1. Register for more than sixteen hours except by written permission of his Dean.
2. Represent the College in any intercollegiate contest, hold any collegiate office or elective collegiate position, or officially represent the College in student activities taking place off campus.
3. Be absent from classes, except under extenuating circumstances, without being dropped from the rolls of the College by the Registrar at the request of his Dean.

Removal of Scholastic Probation

A student taking twelve or more semester hours may return to good standing by meeting the requirements outlined under Minimum Academic Performance.

A student taking less than twelve semester hours may return to good standing:

1. By making a minimum average of 1.70 grade points in all work taken. However, this section may not be used to remove Scholastic Probation incurred while a regular student.
2. By attending a Summer Session and passing a minimum of nine semester hours with a C average in all courses taken.

A student attending the Summer Session while on Scholastic Probation and taking less than nine semester hours will be continued on that status for the next period of attendance.

Enforced Academic Withdrawal

A student shall be dropped:

1. When he fails to remove Scholastic Probation in his next period of attendance.
2. When he does not pass any of his work in a semester.

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 first semester—the succeeding second semester. (b) Failure at the end of the second semester—the succeeding summer session and the first semester. (c) Failure at the end of the Summer Session—the succeeding first 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 College with the consent of his Dean and clearance of all financial obligations with the Business Office. If he is a minor he must present a written statement from his parent, guardian, or sponsor indicating that the responsible party has knowledge of the student's intent to withdraw.

Unofficial Withdrawal

Withdrawal from the College without consent of the student's Dean constitutes an unofficial withdrawal. In such cases the student will receive a grade of WF in each course for which he was registered. Students who withdraw unofficially must comply with the regulations listed under Readmission.

DEGREES CONFERRED

	CONFERRED IN 1962			CONFERRED IN 1963			TOTAL
	Men	Women	Both	Men	Women	Both	1916 - 1963
ENGINEERING:							
Engineer of Mines	---	---	---	---	---	---	49
Bachelor of Science in Mining Engineering	3	---	3	2	---	2	387
Bachelor of Science in Engineering:							
Civil	---	---	---	---	---	---	120
Electrical	---	---	---	---	---	---	147
Bachelor of Science in Civil Engineering	11	---	11	15	---	15	70
Bachelor of Science in Electrical Engineering	17	---	17	29	1	30	151
Bachelor of Science in Mechanical Engineering	6	---	6	12	---	12	18
Bachelor of Science in Metallurgical Engineering	9	---	9	3	---	3	53
	46	---	46	61	1	62	995
ARTS and SCIENCE:							
Bachelor of Arts	104	59	163	126	76	202	3778
Bachelor of Science in the Sciences	51	6	57	61	8	69	776
Bachelor of Business Administration	71	13	84	70	3	73	988
Bachelor of Music	5	6	11	4	5	9	140
Bachelor of Science in Education	7	86	93	22	104	126	369
	238	170	408	283	196	479	6051
GRADUATES:							
Master of Arts	15	8	23	9	4	13	792
Master of Education	9	10	19	14	12	26	107
	24	18	42	23	16	39	899
TOTAL DEGREES CONFERRED							7945



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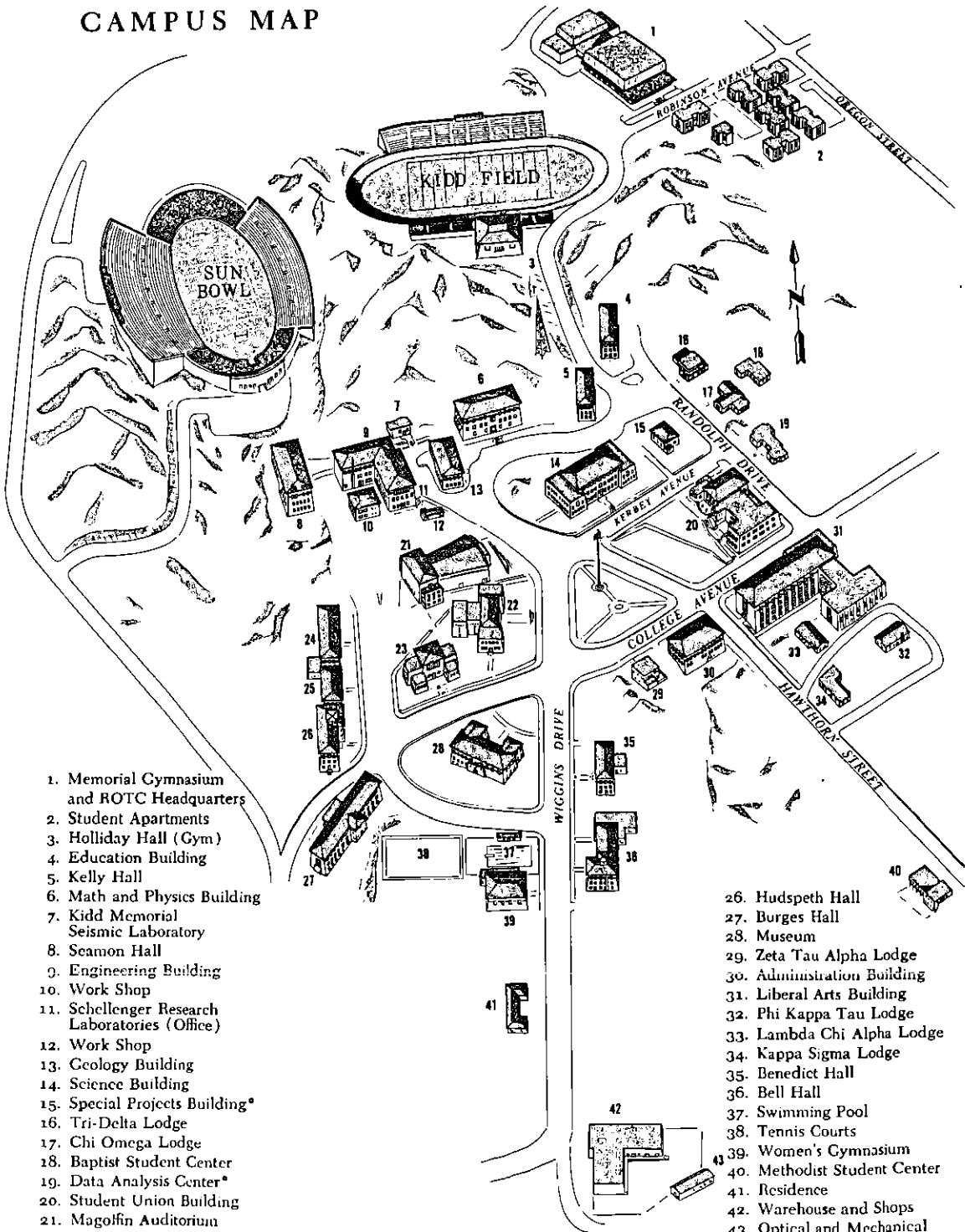
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CAMPUS MAP



- 1. Memorial Gymnasium and ROTC Headquarters
- 2. Student Apartments
- 3. Holiday Hall (Gym)
- 4. Education Building
- 5. Kelly Hall
- 6. Math and Physics Building
- 7. Kidd Memorial Seismic Laboratory
- 8. Seamon Hall
- 9. Engineering Building
- 10. Work Shop
- 11. Schellenger Research Laboratories (Office)
- 12. Work Shop
- 13. Geology Building
- 14. Science Building
- 15. Special Projects Building*
- 16. Tri-Delta Lodge
- 17. Chi Omega Lodge
- 18. Baptist Student Center
- 19. Data Analysis Center*
- 20. Student Union Building
- 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. Methodist Student Center
- 41. Residence
- 42. Warehouse and Shops
- 43. Optical and Mechanical Test Center*

*Schellenger Research Laboratories

