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BULLETIN OF
THE UNIVERSITY OF WISCONSIN

GENERAL ANNOUNCEMENT OF COURSES

1931-32

(CATALOG 1930-31)

PUBLISHED BY THE UNIVERSITY
MADISON—JULY, 1931

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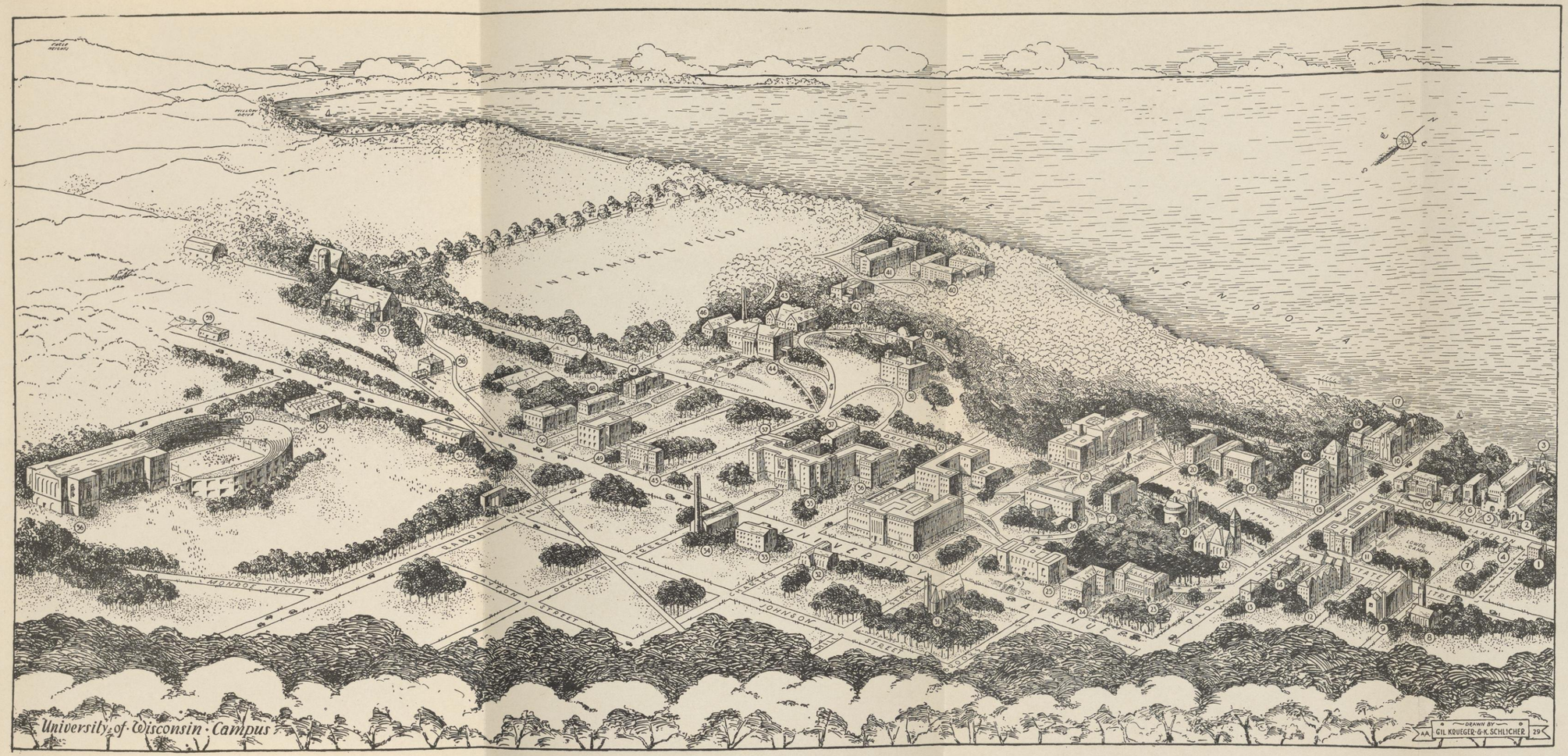
BULLETIN OF THE UNIVERSITY OF WISCONSIN
Serial No. 1739, General Series No. 1513

Issued monthly by the University of Wisconsin, at Madison, Wisconsin
Entered as second-class matter, July 11, 1916, at the postoffice
at Madison, Wis., under the Act of August 24, 1912



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1. Langdon Hall
2. Gymnasium Annex
3. Boathouse
4. Athletic Ticket Office
5. Gymnasium and Armory
6. Y. M. C. A. Building
7. Applied Arts Laboratory
8. Calvary Lutheran Church
9. St. Paul's Catholic Chapel
10. Memorial Union
11. Historical Library
12. University Club
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14. Administration Building
15. Science Hall.
16. Chem. Engineering Bldg.
17. Hydraulics Laboratory
18. Machine Shop, Electrical Lab., Industrial Arts Lab.
19. Engineering Building
20. North Hall
21. Law Building
22. Music Hall
23. Chadbourne Hall
24. Barnard Hall
25. Lathrop Hall
26. Biology Building
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38. Home Economics and Extension Bldg.
39. Washburn Observatory
40. Tripp Hall
41. Adams Hall
42. Refectory
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45. Nurses' Dormitory
46. Hiram Smith Hall (Dairy Building)
47. Agr. Engineering Bldg.
48. Agronomy Building
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52. Forest Products Lab.
53. Stock Pavilion
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43. Soils Building
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4. Athletic Ticket Office
3. Boathouse
38. Extension Building
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34. Heating Station
25. Lathrop Hall
21. Law Building
11. Library
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39. Observatory
33. Service Building
55. Stadium
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CALENDAR

ACADEMIC YEAR 1930-31

FIRST SEMESTER

Sept. 15, 16	Monday, Tuesday	Examinations for admission
Sept. 17-23	Wednesday-Tuesday	Freshman Period (attendance required)
Sept. 19-23	Friday-Tuesday noon	Registration days for other new students
Sept. 20-23	Saturday-Tuesday noon	Registration days for old students
Sept. 24	Wednesday	Instruction begins
Sept. 27	Saturday	Special examinations for removal of conditions
Nov. 27	Thursday	Thanksgiving Day; legal holiday (one day only)
Dec. 19	Friday noon	Christmas recess commences
Jan. 6	Tuesday 8 a. m.	Instruction resumed
Jan. 17	Saturday	Examinations for removal of conditions
Jan. 26-Feb. 4	Monday-Wednesday	Final examinations

SECOND SEMESTER

Feb. 2, 3	Monday, Tuesday	Examinations for admission
Feb. 5	Thursday	Registration day for new and re-entered students
Feb. 9	Monday	Instruction begins
Feb. (22) 23	(Sunday) Monday	Washington's Birthday; legal holiday
April 7	Tuesday, after last class	Spring recess commences
April 15	Wednesday 8 a. m.	Instruction resumed
April 18	Saturday	Examinations for removal of conditions
May 30	Saturday	Memorial Day; legal holiday
June 8-16	Monday-Tuesday	Final examinations
June 15, 16	Monday, Tuesday	Examinations for admission
June 20	Saturday	Alumni day
June 21	Sunday	Baccalaureate day
June 22	Monday	Commencement day

SUMMER SESSION 1931

June 22	Monday	Law School opens
June 29	Monday	Registration day, University at large
June 30	Tuesday	Instruction begins, University at large
July 4	Saturday	Independence Day; legal holiday
August 7	Friday	Six-week session closes
August 28	Friday	Nine-week session and Law School close

CALENDAR

ACADEMIC YEAR 1931-32

FIRST SEMESTER

Sept. 11, 12	Friday, Saturday	Examinations for admission
Sept. 16-22	Wednesday-Tuesday	Freshman Period (attendance required)
Sept. 18-22	Friday-Tuesday (noon)	Registration days for other new students
Sept. 19-22	Saturday-Tuesday noon	Registration days for old students
Sept. 23	Wednesday	Instruction begins
Sept. 26	Saturday	Special examinations for removal of conditions
Nov. 11	Wednesday	Armistice Day; legal holiday
Nov. 26	Thursday	Thanksgiving Day; legal holiday (one day only)
Dec. 18	Friday (noon)	Christmas recess commences
Jan. 5	Tuesday (8 a.m.)	Instruction resumed
Jan. 16	Saturday	Examinations for removal of conditions
Jan. 25-Feb. 3	Monday-Wednesday	Final examinations

SECOND SEMESTER

Feb. 1, 2	Monday, Tuesday	Examinations for admission
Feb. 4	Thursday	Registration day for new and re-entered students
Feb. 8	Monday	Instruction begins
Feb. 22	Monday	Washington's Birthday; legal holiday
April 5	Tuesday, after last class	Spring recess commences
April 13	Wednesday (8 a.m.)	Instruction resumed
April 16	Saturday	Examinations for removal of conditions
May 30	Monday	Memorial Day; legal holiday
June 6-14	Monday-Tuesday	Final examinations
June 13, 14	Monday, Tuesday	Examinations for admission
June 18	Saturday	Alumni day
June 19	Sunday	Baccalaureate day
June 20	Monday	Commencement day

SUMMER SESSION 1932

June 20	Monday	Law School opens
June 27	Monday	Registration day, University at large
June 28	Tuesday	Instruction begins, University at large
July 4	Monday	Independence Day; legal holiday
August 5	Friday	Six-week session closes
August 26	Friday	Nine-week session and Law School close

ACADEMIC YEAR 1932-33

Sept. 21	Wednesday	Instruction begins
Jan. 23-Feb. 1	Monday-Wednesday	Final examinations
Feb. 6	Monday	Instruction begins
June 5-13	Monday-Tuesday	Final examinations
June 19	Monday	Commencement day

THE REGENTS OF THE UNIVERSITY

	Term expires
State-at-large—Carl Drexler, Menasha	1936
State-at-Large—Gunnar Gundersen, La Crosse	1937
State-at-Large—John C. Schmidtmann, Manitowoc	1932
State-at-Large—Arthur Sholts, Oregon	1935
First District—Victor P. Richardson, Janesville	1937
Second District—Fred H. Clausen, Horicon	1936
Third District—Harold M. Wilkie, Madison	1937
Fourth District—Mrs. Meta Berger, Milwaukee	1934
Fifth District—Judge A. C. Backus, Milwaukee	1933
Sixth District—Miss Elizabeth A. Waters, Fond du Lac	1933
Seventh District—Mrs. Clara T. Runge, Baraboo	1932
Eighth District—George W. Mead, Wisconsin Rapids	1934
Ninth District—Herman W. Ullsperger, Sturgeon Bay	1936
Tenth District—Ben F. Faast, Eau Claire	1932
Eleventh District—Peter Eimon, Superior	1935

Glenn Frank, President of the University, *ex-officio.*
John Callahan, State Superintendent of Public Instruction, *ex-officio.*

OFFICERS OF THE REGENTS

Ben F. Faast, President
Miss Elizabeth A. Waters, Vice President
Solomon Levitan, State Treasurer, *ex-officio* Treasurer
James D. Phillips, Business Manager
Maurice E. McCaffrey, Secretary

THE BOARD OF VISITORS

Appointed by the Regents

	Term expires
George P. Hambrecht, Madison	1931
Loyal Durand, Milwaukee	1932
H. W. Kircher, Sheboygan	1933
Mrs. Charles R. Carpenter, Madison	1934

Appointed by the Alumni

Charles L. Byron, Chicago	1931
B. E. McCormick, Madison	1932
Mrs. Lucy M. Johnson, Madison	1933
B. A. Kiekhofer, Milwaukee	1934

Appointed by the Governor

Dr. W. C. Sullivan, Kaukauna	1930
Mrs. Hattie Tegtmeyer, Milwaukee	1931
Mrs. Allan Classon, Oconto	1932
Carl J. Hesgard, Orfordville	1933

ADMINISTRATIVE OFFICERS

GENERAL

PRESIDENT

GLENN FRANK, *President*
JULIA M. WILKINSON, *Executive Secretary to the President*

DEAN OF MEN

SCOTT H. GOODNIGHT

DEAN OF WOMEN

SUSAN B. DAVIS, *Assistant to the Dean*
MRS. CLARA B. FLETT, *Assistant to the Dean*
ZOE B. BAYLISS, *Assistant to the Dean*

SECRETARY OF THE FACULTY

CHARLES A. SMITH

REGISTRAR

FRANK O. HOLT, *Registrar*
GEORGIA M. MARTIN, *Assistant Registrar*

BUREAU OF GUIDANCE AND RECORDS

FRANK O. HOLT, *Executive Director*
V. A. C. HENMON, *Director of Educational Guidance*
ALANSON H. EDGERTON, *Director of Vocational Guidance*
JOHN L. BERGSTRESSER, *Assistant Director*

UNIVERSITY LIBRARY

WALTER M. SMITH, *University Librarian*
CLARENCE S. HEAN, *Librarian, Agricultural Library*
FREDERICK E. VOLK, *Librarian, Engineering Library*
MRS. SOPHIE M. BRIGGS, *Librarian, Law Library*
FRANCES B. VAN ZANDT, *Librarian, Medical Library*

HIGH-SCHOOL RELATIONS

THOMAS LLOYD JONES, *High-School Visitor*
ROBERT A. WALKER, *Assistant High-School Visitor*

DEPARTMENT OF MILITARY SCIENCE

TOM FOX, Major of Infantry, U. S. A., *Commandant*

PHYSICAL EDUCATION

ARPAD L. MASLEY, *Director of the Men's Gymnasium*
BLANCHE M. TRILLING, *Director of the Women's Gymnasium*

DEPARTMENT OF STUDENT HEALTH

WILLAM A. MOWRY, *Physician in Chief*
SARAH I. MORRIS, *Assistant Physican*

LOANS AND SCHOLARSHIPS

JULIUS E. OLSON, *Chairman*

MEMORIAL UNION

PORTER BUTTS, *House Director*

EDUCATIONAL

COLLEGE OF LETTERS AND SCIENCE
George C. Sellery, *Dean*
Harry Glicksman, *Junior Dean*
Course in Chemistry and Chemistry-Commerce Course
J. Howard Mathews, *Director*
Course in Humanities—Carl Russell Fish, *Chairman*
Course in Pharmacy—Edward Kremers, *Director*
EXPERIMENTAL COLLEGE—Alexander Meiklejohn, *Chairman*
SCHOOL OF COMMERCE—Chester Lloyd Jones, *Director*
SCHOOL OF JOURNALISM—Willard G. Bleyer, *Director*
LIBRARY SCHOOL
Clarence B. Lester, *Director*
Mary Emogene Hazeltine, *Principal*
SCHOOL OF MUSIC—Charles H. Mills, *Director*

COLLEGE OF ENGINEERING
Frederick E. Turneaure, *Dean*
Adam V. Millar, *Assistant Dean*
Course in Chemical Engineering—Otto L. Kowalke, *Chairman*
Course in Civil Engineering—Leslie F. Van Hagan, *Chairman*
Course in Electrical Engineering—Edward Bennett, *Chairman*
Course in Mechanical Engineering—Gustus L. Larson, *Chairman*
Course in Mining and Metallurgy—R. S. McCaffery, *Chairman*

COLLEGE OF AGRICULTURE
Chris L. Christensen, *Dean*
John A. James, *Assistant Dean*
Course in Home Economics—Abby L. Marlatt, *Director*

LAW SCHOOL—Oliver S. Rundell, *Acting Dean*

MEDICAL SCHOOL
Charles R. Bardeen, *Dean*
Walter J. Meek, *Assistant Dean*
SCHOOL OF NURSING—Helen I. Denne, *Director*

SCHOOL OF EDUCATION—C. J. Anderson, *Dean*
Course in Art Education—William H. Varnum, *Chairman*
Course in Physical Education and Athletic Coaching for Men
Guy S. Lowman, *Chairman*
Course in Physical Education for Women
Blanche M. Trilling, *Chairman*
University High School—Heber H. Ryan, *Principal*

GRADUATE SCHOOL—Charles S. Slichter, *Dean*

EXTENSION DIVISON—Chester D. Snell, *Dean*

SUMMER SESSION—Scott H. Goodnight, *Dean*

BUSINESS

BUSINESS OFFICES

JAMES D. PHILLIPS, *Business Manager*
MAURICE E. MCCAFFREY, *Secretary of the Regents*
HERBERT A. BORK, *Comptroller*
GLENN L. GILBERT, *Bursar*
CLARENCE W. VAUGHN, *Accountant*
DONALD L. HALVERSON, *Director of Dormitories and Commons*
WILLIAM H. NEGLEY, *University Editor*

PHYSICAL PLANT

ALBERT F. GALLISTEL, *Superintendent of Buildings and Grounds*
GUSTUS L. LARSON, *Consulting Mechanical Engineer*
WILLIAM S. KINNE, *Consulting Structural Engineer*
JOHN J. NOVOTNY, *Chief Operating Engineer*
FRED R. CUTCHEON, *Chief Operating Electrical Engineer*

STANDING COMMITTEES OF THE UNIVERSITY FACULTY

1930-31

The President is, ex officio, a member of all standing committees, and the Secretary of the Faculty of each administrative committee.

ADMINISTRATIVE—The President, deans, and secretary of the faculty.

APPEALS—Professor Kommers, chairman; the deans and advisers of students concerned; Professors Feinsinger, Otto, W. Taylor, Twenhofel, Witzemann; the Dean of Men in cases relating to men; and the Dean of Women in cases relating to women.

CARDINAL ADVISORY—Professor Hyde, chairman; Professors Fellows and Philip Fox.

CATALOG—Professor C. A. Smith, chairman; Assistant Deans James and Millar; Registrar Holt.

DISCIPLINE—Professor A. T. Weaver, chairman; the deans in cases relating to students in their respective colleges; Professors Adkins, Philip Fox, Ingersoll, Meek; the Dean of Men in cases relating to men; the Dean of Women in cases relating to women; the student's adviser, ex-officio and without vote.

EDITORS OF UNIVERSITY OF WISCONSIN STUDIES—Professor Young, chairman; Professor Laird, editor for Language and Literature; Professor Marshall, editor for Science; Professor Knaplund, editor for Social Sciences and History; the University Editor, Secretary.

FRESHMAN—Junior Dean Glicksman, chairman; Assistant Deans James and Millar; Professor Lowman.

GRADUATE SCHOOL—Dean of the Graduate School, chairman; Professors Anderson, Commons, Duggar, Hohlfeld, Keitt, and Paxson.

HIGH-SCHOOL RELATIONS—Thomas Lloyd Jones, chairman; Professors Chase, Cheydleur, Edgerton, Elwell, Gilbert, W. W. Hart, Henmon, James, Millar, C. A. Smith, and Willing; Registrar Holt.

HONORARY DEGREES—Professor Paxson, chairman; the deans; Professors Fred, C. L. Jones, Kolb, Ross.

LECTURES AND CONVOCATIONS—Professor W. Weaver, chairman; Dean of the College of Letters and Science; Dean Slichter; Professors Fulcher, Gaus, C. L. Jones, and Otto.

LIBRARY—The President and the University Librarian; (elected) Professors Fish, Henmon, Page, Roe, Sevringhaus, and Watson.

LOANS AND UNDERGRADUATE SCHOLARSHIPS—Professor J. E. Olson, chairman; Professors B. F. Dodge, Gillen, Goodnight, James, Millar, Wales; and Mrs. Flett.

NOMINATIONS—(Elected) Professors Chase, Hohlfeld, and Kinne.

PUBLIC FUNCTIONS—Professor Ewbank, chairman; Professors Gordon, G. Koehler, G. L. Larson, Sumner, and Withey; Mr. Chandler, Secretary.

REGENT—FACULTY CONFERENCE COMMITTEE—The President of the University, ex-officio;

Regents: Backus, Berger, Clausen, Callahan, Schmidtman, Sholts, and Waters.

Faculty: (Elected) Bascom, R. A. Brown, Guyer, Hohlfeld, Kiekhofer, Kirk, W. Mead, Rundell, Sellery, Wagner, Walton, Whitbeck, and White. Chairman of the University Committee, ex-officio.

RELATIONS WITH TEACHERS' COLLEGES OF STATE—Dean Anderson, chairman; Deans Sellery and Slichter; Professors T. L. Jones, Kivlin, and C. A. Smith.

RESEARCH—Dean Slichter, chairman; Professors Fred, Glaeser, Hisaw, Knaplund, and Sevringhaus.

ROOMS AND TIME-TABLE—Professor C. A. Smith, chairman; Professors R. H. Denniston, H. L. Hall, Hyland, James, Kiekhofer, Kowalke, Krauskopf, March, Meek, Mills, Roebuck, and Twenhofel.

STUDENT CONDUCT—Professor Ray Brown chairman; Professors Aurner, Gillin, Lorenz; and Registrar Holt; the deans of the University.

STUDENT LIFE AND INTERESTS—Dean Goodnight. chairman.

Athletics: Professor Pyre, chairman; Professor Little, secretary; Professor Phillips, business manager; Professors J. G. Moore, Kowalke, and E. R. Schmidt; Professor Trilling in cases relating to women; Walter Alexander, H. C. Marks, and J. P. Riordan, alumni members; William Henke, student member.

Intramural and Recreational Athletics: Professor Pyre, chairman; Professors L. B. Johnson and G. L. Larson, faculty members; Donald Meiklejohn and Gertrude Buss, student members.

Living Conditions and Hygiene: Professor Hastings, chairman; Professors P. F. Clark, Morris, Woy; and Mrs. Flett.

Musical Organizations: Professor Mills, chairman; Professors Iltis and Gordon.

Oratory and Dramatics: Professor A. T. Weaver, chairman; Professors Cool and Troutman.

Publications: Professor Bleyer, chairman; Professors Aurner and Hyde.

Society, Fraternities, and Politics: Professor C. E. Allen, chairman; Professors Fellows, Noland; and Miss Bayliss.

UNIVERSITY—(Elected) Professors Paxson, Rundell, E. R. Schmidt, Trumbower, Twenhofel, and Withey.

INSTRUCTIONAL AND ADMINISTRATIVE STAFFS

1930-31

I indicates first semester; II, second semester.

UNIVERSITY FACULTY

FRANK, GLENN, *M.A., Litt.D., L.H.D., LL.D.*, President of the University
BIRGE, EDWARD ASAHEL, *Ph.D., Sc.D., LL.D.*, President Emeritus

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ADKINS, HOMER BURTON, *Ph.D.*, Professor of Chemistry
AGARD, WALTER RAYMOND, *B.Litt.*, Professor of Greek, Adviser in Experimental College
ALBERT, ARTHUR ROBERT, *M.S.*, Assistant Professor of Soils; in charge of Hancock and Coddington Branch Experiment Stations
ALEXANDER, ALEXANDER SEPTIMUS, *F.H.A.S., M.D.C.*, Professor of Veterinary Science
ALLEN, CHARLES ELMER, *Ph.D.*, Professor of Botany
ALLEN, CHESTER, Director of Field Organization, Extension Division
ALLEN, KATHARINE, *Ph.D.*, Assistant Professor of Latin, Emeritus
ALLISON, LEONARD BLAINE, *B.S.*, Associate Professor of Physical Education (to March 10)
ALTMEYER, ARTHUR JOSEPH, *M.A.*, Lecturer in Economics
ANDERSON, C. J., *Ph.M.*, Dean of the School of Education, Professor of Education
APPELT, EWALD PAUL, *Ph.D.*, Assistant Professor of German
AURNER, ROBERT RAY, *Ph.D.*, Professor of Business Administration
AUST, FRANZ AUGUST, *M.S., M.L.D.*, Associate Professor of Horticulture
AUSTIN, RUSSELL HAYDEN, *Ph.D.*, Assistant Professor of Soils
AVEY, HARRY THOMPSON, *M.E.*, Assistant Professor of Mechanical Engineering, Milwaukee Extension Center
AYRES, EDMUND DALE, *B.A., M.S.*, Assistant Professor of Electrical Engineering

BABCOCK, STEPHEN MOULTON, *Ph.D., LL.D., Sc.D.*, Professor of Agricultural Chemistry, Emeritus
BAIRD, PARKER KARNS, *M.A.*, Lecturer in Forest Products
BAKKEN, HENRY HARRISON, *M.A.*, Assistant Professor of Agricultural Economics
BALDWIN, IRA LAWRENCE, *Ph.D.*, Associate Professor of Agricultural Bacteriology
BALDWIN, LEO STARR, *B.S.*, Assistant Professor of Drawing, Milwaukee Extension Center
BARDEEN, CHARLES RUSSELL, *B.A., M.D.*, Dean of the Medical School, Professor of Anatomy
BARKER, GEORGE JOHN, *E.M.*, Assistant Professor of Mining and Metallurgy
BARR, ARVIL SYLVESTER, *Ph.D.*, Professor of Education
BASCOM, LELIA, *M.A.*, Associate Professor of English, Extension Division

BASSETT, GLADYS BARTON, *M.A.*, Associate Professor of Physical Education
BAST, THEODORE HIERONYMUS, *Ph.D.*, Associate Professor of Anatomy
BATEMAN, ERNEST, *Ph.B.*, Lecturer in Forest Products
BAUMGARTEN, EDWARD, *Ph.D.*, Assistant Professor of Philosophy (on leave 1930-31)
BEACH, BURR ABRAHAM, *D.V.M.*, Associate Professor of Veterinary Science
BEATTY, ARTHUR, *Ph.D.*, Professor of English
BENNETT, EDWARD, *E.E.*, Professor of Electrical Engineering
BENNETT, HAROLD, *Ph.D.*, Professor of Classics
BENNETT, THEODORE, *Ph.D.*, Assistant Professor of Mathematics
BERKOWITZ, HYMAN CHONON, *Ph.D.*, Assistant Professor of Spanish (on leave 1930-31)
BEWICK, THOMAS LYMAN, *M.S.*, State Leader of Boys' and Girls' Agricultural Clubs
BLANKINSHIP, RAY CARRINGTON, *M.D.*, Associate Professor of Clinical Medicine
BLECKWENN, WILLIAM JEFFERSON, *B.S., M.D.*, Associate Professor of Neuropsychiatry
BLEYER, WILLARD GROSVENOR, *Ph.D.*, Director of the School of Journalism, Professor of Journalism
BOESEL, FRANK TILDEN, *Ph.B., LL.B.*, Lecturer in Law
BÖGHOLT, CARL MÖLLER, *B.S.*, Assistant Professor of Philosophy, Adviser in Experimental College
BOHSTEDT, GUSTAV, *Ph.D.*, Professor of Animal Husbandry
BORCHERS, GLADYS LOUISE, *Ph.D.*, Assistant Professor of Speech
BRADLEY, HAROLD CORNELIUS, *Ph.D.*, Professor of Physiological Chemistry
BRADLEY, ROBERT FOSTER, JR., *M.A.*, Assistant Professor of French
BRANN, JOHN WILLIAM, *M.S.*, Assistant Professor of Horticulture and Plant Pathology
BRAY, MARK WILDER, *M.S.*, Lecturer in Forest Products
BRIGGS, GEORGE MCSPADDEN, *B.S.*, Assistant State Leader of County Agricultural Representatives, Associate Professor of Agronomy
BRINK, ROYAL ALEXANDER, *Sc.D.*, Associate Professor of Genetics
BROWN, GEORGE VAN INGEN, *D.D.S., M.D., F.A.C.S.*, Professor of Oral and Plastic Surgery
BROWN, RAY ANDREWS, *B.A., LL.B., S.J.D.*, Professor of Law
BROWNE, FREDERICK LINCOLN, *Ph.D.*, Lecture in Forest Products
BRUNS, FRIEDRICH, *Ph.D.*, Professor of German
BRYAN GEORGE SMITH, *Ph.D.*, Professor of Botany
BUCK, PHILO MELVIN, JR., *M.A.*, Professor of Comparative Literature (on leave November to April)
BUERKI, ROBIN CARL, *B.S., M.D.*, Superintendent of Wisconsin General Hospital
BUNTING, CHARLES HENRY, *B.S., M.D.*, Professor of Pathology
BURKE, LAURENCE CHARLES, *B.L.*, Assistant Librarian
BURLEIGH, CECIL EDWARD, Professor of Music
BURNETT, DONALD CHARLES, *LL.B.*, Captain of Infantry, U. S. A., Assistant Professor of Military Science
BURNS, ROBERT EMMETT, *B.S., M.D.*, Associate Professor of Orthopedic Surgery
BUSH, CHILTON ROWLETTE, *M.A.*, Associate Professor of Journalism
BYRNE, EUGENE HUGH, *Ph.D.*, Professor of History

CAIRNS, WILLIAM B.,*Ph.D.*, Associate Professor of American Literature
CALDERWOOD, HOWARD NEWTON, JR., *Ph.D.*, Assistant Professor of Chemistry
CAMERON, NORMAN, *Ph.D.*, Lecturer in Philosophy—I

CAMPBELL, RALPH EMERSON, *B.S., M.D.*, Assistant Professor of Obstetrics and Gynecology
CAMPBELL, RICHARD VALENTINE, *B.A., LL.B., S.J.D.*, Assistant Professor of Law
CAMPBELL, RUTH, *B.A.*, Hostess of Chadbourne Hall
CARPENTER, MRS. LOUISE LOCKWOOD, *B.M.*, Associate Professor of Music
CASE, CLINTON DEWAYNE, *B.S.*, Assistant Professor of Mechanical Engineering, Extension Division
CASON, HULSEY, *Ph.D.*, Professor of Psychology
CHAPMAN, CLINTON JOSEPH, *B.S.*, Professor of Soils
CHASE, SAMUEL HAMILTON, *D.D.S., F.A.C.D.*, Lecturer in Dental Surgery
CHASE, WAYLAND JOHNSON, *M.A.*, Professor of Education
CHEYDLEUR, FREDERIC DANIEL, *Ph.D.*, Professor of French
CHRISTENSEN, CHRISTIAN LAURITHS, *B.S.*, Dean of the College of Agriculture (beginning March 23)
CLAPP, FRANK LESLIE, *Ph.D.*, Professor of Education
CLARK, HARRY HAYDEN, *M.A.*, Assistant Professor of English
CLARK, NOBLE, *M.S.*, Assistant to the Dean, College of Agriculture; Assistant Director of Agricultural Experiment Station
CLARK, PAUL FRANKLIN, *Ph.D.*, Professor of Medical Bacteriology
CLARK, WARREN WILLIAM, *B.S.*, Assistant State Leader of County Agricultural Representatives
CLARK, HELEN ISABEL, *M.A.*, Assistant Professor of Sociology
CODDINGTON, HESTER, Assistant Librarian, Emeritus
COLBERT, ROY JEFFERSON, *M.A.*, Chief of the Bureau of Economics and Sociology and Assistant Professor of Economics, Extension Division
COLE, LEON JACOB, *Ph.D.*, Professor of Genetics
COMMONS, JOHN ROGERS, *M.A., LL.D.*, Professor of Economics
COMSTOCK, GEORGE CARY, *Sc.D., LL.D.*, Professor of Astronomy, Emeritus
COOL, CHARLES DEAN, *Ph.D.*, Associate Professor of Spanish
COON, LELAND AVERY, *B.A.*, Associate Professor of Music
COWLES, MAY LOUISE, *Ph.D.*, Assistant Professor of Home Economics
CRANE, FRANK DOUGALL, *Ph.D.*, Assistant Professor of English, Extension Division
CREAMER, JOHN JOSEPH, *B.A., LL.B.*, Assistant Professor of English, Milwaukee Extension Center
CRONIN, KATHERINE LUCILE, *M.A.*, Associate Professor of Physical Education
CURRAN, CARLETON EDGAR, *Ph.D.*, Lecturer in Forest Products

DALLEY, ORIEN EMEAL, *B.M., M.A.*, Assistant Professor of Music
DALTON, WILLIAM FRANCIS, Captain of Infantry, U. S. A., Assistant Professor of Military Science (beginning December 1)
DANIELS, FARRINGTON, *Ph.D.*, Professor of Chemistry
DAVIS, FREDERICK ALLISON, *M.D.*, Professor of Ophthalmology
DAVIS, IRA CLEVELAND, *B.A.*, Assistant Professor in the Teaching of Science
DAVIS, JOHN JEFFERSON, *B.S., M.D.*, Curator of the Herbarium
DAVIS, MRS. WINIFRED LEMON, *M.A.*, Assistant Professor of Library Science
DAWSON, FRANCIS MURRAY, *M.C.E.*, Professor of Hydraulic Engineering
DAWSON, PERCY MILLARD, *B.A., M.D.*, Associate Professor of Physiology (on leave 1930-31)
DEAN, CHARLES LYMAN, *B.S.*, Assistant Professor of Mechanical Engineering, Extension Division
DE LANCEY, DE VAUX, *M.A.*, Lecturer in French
DELWICHE, EDMOND JOSEPH, *M.S.*, Professor of Agronomy, in charge of Ashland, Spooner, and Peninsular Branch Experiment Stations

DENNE, HELEN IRENE, *B.A., R.N.*, Director of the School of Nursing, Professor of Nursing
DENNISTON, MRS. HELEN DOBSON, *M.D.*, Associate Professor of Physical Education
DENNISTON, ROLLIN HENRY, *Ph.D.*, Assistant Professor of Botany
DICKSON, JAMES GEERE, *Ph.D.*, Professor of Plant Pathology
DODGE, BERNICE FRANCES, *M.S.*, Associate Professor of Home Economics
DODGE, ROBERT ELKIN NEIL, *M.A.*, Professor of English
DOERING, HELMUTH REINHOLD, *B.A., M.B.A.*, Assistant Professor of Business Administration, Extension Division
DONALD, JOHN SWEET, *B.S., D.D.S.*, Assistant Professor of Agricultural Economics
DORRANS, JAMES MORGAN, Superintendent of Machine Shops, Assistant Professor of Mechanical Practice
DOWNER, GEORGE FORD, *B.L.*, Associate Professor of Physical Education, Director of Athletic Publicity
DUDLEY, WILLIAM HENRY, *B.A.*, Assistant Librarian
DUFFEE, FLOYD WALDO, *B.S.*, Professor of Agricultural Engineering
DUGGAR, BENJAMIN MINGE, *Ph.D.*, Professor of Botany and Plant Pathology
DURAND, LOYAL, JR., *Ph.D.*, Assistant Professor of Geography

EASTMAN, IRENE BELLE, *B.M.*, Assistant Professor of Music
EASUM, CHESTER VERNE, *Ph.D.*, Assistant Professor of History
EDGERTON, ALANSON HARRISON, *Ph.D.*, Professor of Guidance, Director of Vocational Guidance
EDSALL, BESSIE EVA, *Ph.M.*, Assistant Professor of History, Extension Division
ELLINGWOOD, RICHARD EVERETT, *M.S.*, Assistant Dean, Extension Division
ELLIOTT, BENJAMIN GEORGE, *M.S.*, Professor of Mechanical Engineering, Extension Division and College of Engineering
ELSOM, JAMES CLAUDE, *M.D.*, Professor of Physical Education, Associate Professor of Physical Therapy
ELVEHJEM, CONRAD ARNOLD, *Ph.D.*, Assistant Professor of Agricultural Chemistry
ELWELL, FAYETTE HERBERT, *B.A., C.P.A.*, Professor of Accounting
EMMONS, RICHARD CONRAD, *Ph.D.*, Associate Professor of Geology
ENGLISH, HENRY ROWLAND, *M.A.*, Chief of the Bureau of Business Information and Associate Professor of Business Administration, Extension Division
ERNST, ADOLPHINE BIANCA, *Ph.D.*, Associate Professor of German, Extension Division and College of Letters and Science
EVANS, HERBERT PULSE, *Ph.D.*, Assistant Professor of Mathematics
EVANS, JOSEPH SPRAGG, *B.A., M.D.*, Professor of Medicine
EWBANK, HENRY LEE, *M.A.*, Associate Professor of Speech
EYSTER, JOHN AUGUSTINE ENGLISH, *B.S., M.D.*, Professor of Physiology

FARGO, JOHN MERRILL, *M.S.*, Assistant Professor of Animal Husbandry
FARRINGTON, EDWARD HOLYOKE, *M.S.*, Professor of Dairy Husbandry, Emeritus
FASSETT, NORMAN CARTER, *Ph.D.*, Assistant Professor of Botany
FAY, IVAN GLENN, *B.S.*, Assistant Professor of Agricultural Education
FEINSINGER, NATHAN PAUL, *B.A., J.D.*, Assistant Professor of Law
FELLOWS, DONALD ROSS, *M.A.*, Associate Professor of Business Administration
FIEDLER, ERNEST C., *LL.B.*, Lecturer in Law—II
FINCH, VERNOR CLIFFORD, *Ph.D.*, Professor of Geography
FINGARSON, GEORGE EDWIN, *B.A.*, Captain of Infantry, U. S. A., Assistant Professor of Military Science
FISCHER, RICHARD, *Ph.D.*, Professor of Chemistry
FISH, CARL RUSSELL, *Ph.D.*, Professor of History (on leave II)

FISK, EMMA LUELLA, *Ph.D.*, Assistant Professor of Botany
FLETCHER, LILA BELLE, *R.N.*, Associate Professor of Nursing
FLUKE, CHARLES LEWIS, JR., *Ph.D.*, Associate Professor of Economic Entomolgy
FOERSTER, HARRY ROBERT, *B.S., M.D.*, Assistant Professor of Dermatology
FOERSTER, OTTO HOTTINGER, *M.D.*, Professor of Dermatology
FOWLER, RUSSELL WINSLOW, *M.S.*, Assistant Professor of Drawing, Extension Division
FOWLKES, JOHN GUY, *Ph.D.*, Professor of Education
FOX, PHILIP GORDER, *M.A.*, Associate Professor of Business Administration and Philosophy
FOX, TOM W., Major of Infantry, U. S. A., Commandant and Professor of Military Science
FRED, EDWIN BROWN, *Ph.D.*, Professor of Agricultural Bacteriology
FREUDENBERG, CARL JOHN, *Ph.D.*, Carl Schurz Professor of Chemistry—II
FRIESE, JOHN FRANK, *M.S.*, Assistant Professor of Industrial Education
FROKER, RUDOLPH KNUGAARD, *M.A.*, Assistant Professor of Agricultural Economics
FROST, WILLIAM DODGE, *Ph.D., D.P.H.*, Professor of Agricultural Bacteriology
FULCHER, PAUL MILTON, *Ph.D.*, Associate Professor of English
FULLER, JAMES GARFIELD, *M.S.*, Professor of Animal Husbandry
FULLER, WILLIAM JOHN, *B.A.*, Associate Professor of Civil and Structural Engineering, Milwaukee Extension Center

GAENSLEN, FREDERICK JULIUS, *B.S., M.D.*, Professor of Orthopedic Surgery
GALE, JOSEPH WASSON, *M.A., M.D.*, Associate Professor of General Surgery
GANGSTAD, IDA MARIE, *B.A.*, Assistant Professor of Library Methods, Extension Division
GAUS, JOHN MERRIMAN, *Ph.D.*, Professor of Political Science, Adviser in Experimental College
GAUSEWITZ, ALFRED LEROY, *B.A., LL.B.*, Assistant Professor of Law
GAY, LUCY MARIA, *B.L.*, Associate Professor of French
GEIST, FREDERICK DENKMAR, *M.D.*, Assistant Professor of Anatomy
GERRY, ELOISE, *Ph.D.*, Lecturer in Forest Products
GIBSON, JOHN CURRIE, *B.A., C.P.A.*, Assistant Professor of Accounting
GIESE, WILLIAM FREDERICK, *M.A.*, Professor of French, Emeritus
GILBERT, EDWARD MARTINUS, *Ph.D.*, Professor of Botany and Plant Pathology
GILLEN, CHARLES FREDERICK, *Ph.D.*, Associate Professor of French
GILLIN, JOHN LEWIS, *Ph.D., LL.D.*, Professor of Sociology
GLAESER, MARTIN GUSTAVE, *Ph.D.*, Professor of Economics
GLASSOW, RUTH BERTHA, *M.A.*, Associate Professor of Physical Education
GLICKSMAN, HARRY, *LL.B., Ph.D.*, Junior Dean of the College of Letters and Science, Lecturer in English
GONCE, JOHN EUGENE, JR., *B.A., M.D.*, Associate Professor of Pediatrics
GOODNIGHT, SCOTT HOLLAND, *Ph.D., LL.D.*, Dean of Men, Dean of the Summer Session
GORDON, EDGAR BERNARD, Professor of Music
GOWER, CHARLOTTE DAY, *Ph.D.*, Assistant Professor of Physical Anthropology
GRABER, LAURENCE FREDERICK, *Ph.D.*, Professor of Agronomy
GRAFF, MARSHALL CONANT, *M.A.*, Assistant Professor and District Representative, Appleton District, Extension Division
GRAUL, EDWARD JOHN, *M.S.*, Associate Professor of Soils
GREEN, MORTON KAY, *M.D.*, Clinical Associate in Neuropsychiatry
GREENE, PHILLIPS FOSTER, *B.A., M.D., F.A.C.S.*, Associate Professor of General Surgery

GREENLEAF, MRS. JEANNE HAROUEL, *B.L.*, Assistant Professor of French (on leave 1930-31)
GRIEBSCH, MAX, *Ph.D.*, Professor of German
GROVER, ARLENE EDNA, *B.L.*, Assistant Librarian
GROVES, HAROLD MARTIN, *Ph.D.*, Assistant Professor of Economics
GUYER, MICHAEL FREDERIC, *Ph.D., LL.D.*, Professor of Zoology
GUYLES, CALLA ARATHUSA, *Ph.B.*, Assistant Professor in the Teaching of Latin

HADLEY, FREDERICK BROWN, *D.V.M.*, Professor of Veterinary Science
HAENTZSCHEL, ADOLPH THEODORE, *Ph.D.*, Lecturer in Philosophy
HAGEN, OSKAR FRANK LEONARD, *Ph.D.*, Professor of the History and Criticism of Art
HALE, WEALTHY MARIA, *B.S.*, Assistant Professor of Home Economics
HALL, HOWARD LEWIS, *B.A., LL.B.*, Assistant Professor of Law
HALL, ISAAC FULTS, *Ph.D.*, Assistant Professor of Agricultural Economics
HALL, NORRIS FOLGER, *Ph.D.*, Associate Professor of Chemistry
HALLAM, ARTHUR WOOD, *B.A.*, Assistant Professor of Business Administration, Extension Division
HALPIN, JAMES GARFIELD, *B.S.*, Professor of Poultry Husbandry
HANLEY, MILES LAWRENCE, *M.A.*, Associate Professor of English
HARPER, CARL SAMUEL, *B.S., M.D.*, Clinical Assistant Professor of Obstetrics and Gynecology
HARLOW, HARRY FREDERICK, *Ph.D.*, Assistant Professor of Psychology
HARRIS, JOHN WARTON, *M.A., M.D.*, Professor of Obstetrics and Gynecology
HARRIS, JULIAN EARLE, *Ph.D.*, Assistant Professor of French
HART, EDWIN BRET, *B.S.*, Professor of Agricultural Chemistry
HART, JAMES HENRY, *M.A.*, Lecturer in Experimental College—I
HART, WALTER WILSON, *B.A.*, Associate Professor in the Teaching of Mathematics
HASTINGS, EDWIN GEORGE, *M.S.*, Professor of Agricultural Bacteriology
HATCH, KIRK LESTER, *B.S.*, Associate Director of Agricultural Extension
HAVIGHURST, ROBERT JAMES, *Ph.D.*, Assistant Professor of Physics, Adviser in Experimental College
HAWLEY, LEE FRED, *Ph.D.*, Lecturer in Forest Products
HAYES, JOHN BARRY, *B.S.*, Associate Professor of Poultry Husbandry
HAZELTINE, MARY EMOGENE, *B.S.*, Principal of the Library School, Associate Professor of Bibliography
H'DOUBLER, MARGARET NEWELL, *M.A.*, Associate Professor of Physical Education
HEAN, CLARENCE SCOTT, *B.A.*, Librarian, College of Agriculture
HELLEBRANDT, FRANCES ANNA, *B.S., M.D.*, Assistant Professor of Physiology
HENDERSON, RUTH ADELE, *B.S., M.A.*, Assistant Professor of Home Economics
HENMON, VIVIAN ALLEN CHARLES, *Ph.D.*, Professor of Psychology, Director of Educational Guidance
HENRY, WILLIAM ARNON, *Sc.D., D. Agr.*, Professor of Agriculture, Emeritus
HENSEY, IRENE ANITA, *M.S.*, Assistant Professor of Accounting
HERRICK, CHESTER ALBERN, *Sc.D.*, Assistant Professor of Zoology
HERRIOTT, JAMES HOMER, *Ph.D.*, Assistant Professor of Spanish
HIBBARD, BENJAMIN HORACE, *Ph.D.*, Professor of Agricultural Economics
HIGBY, CHESTER PENN, *Ph.D.*, Professor of History
HILLSTROM, ELLEN GUNIMA, *M.A.*, Associate Professor of Home Economics
HISAW, FREDERICK LEE, *Ph.D.*, Professor of Zoology
HOFFMAN, AUSTIN CLAIR, *M.S.*, Assistant Professor of Agricultural Economics
HOHLFELD, ALEXANDER RUDOLF, *Ph.D.*, Professor of German
HOLDEN, EUGENE DAVENPORT, *M.S.*, Assistant Professor of Agronomy

HOLT, FRANK OSCAR, *Ph.M.*, Registrar, Executive Director of the Bureau of Guidance and Records
HOLT, HARRIETTE GRACE, *M.A.*, Assistant Professor of Mathematics, Extension Division
HOPKINS, ANDREW WINKLE, *B.L.*, Professor of Argicultural Journalism, Agricultural Editor
HOUGEN, OLAF ANDREAS, *Ch.E., Ph.D.*, Associate Professor of Chemical Engineering
HOYT, MRS. EDITH EVANS, *M.A.*, Assistant Professor of Education, Extension Division
HUFFER, CHARLES MORES, *Ph.D.*, Assistant Professor of Astronomy, Assistant Astronomer
HUMPHREY, GEORGE COLVIN, *B.S.*, Professor of Animal Husbandry
HUNT, GEORGE MCMONIES, *B.S.*, Lecturer in Forest Products
HUSBAND, RICHARD WELLINGTON, *Ph.D.*, Assistant Professor of Psychology
HYDE, GRANT MILNOR, *M.A.*, Professor of Journalism
HYLAND, PATRICK HENRY, *M.E.*, Associate Professor of Machine Design

ILTIS, LEON LEONARD, *B.M.*, Assistant Professor of Music
INGERSOLL, LEONARD ROSE, *Ph.D.*, Professor of Physics
INGRAHAM, MARK HOYT, *Ph.D.*, Professor of Mathematics
IRWIN, MALCOLM ROBERT, *Ph.D.*, Assistant Professor of Agricultural Bacteriology and Genetics

JACKSON, HOWARD CAMPBELL, *Ph.D.*, Professor of Dairy Husbandry
JAMES, JOHN AMBROSE, *B.S.*, Assistant Dean of the College of Agriculture, Professor of Agricultural Education
JANDA, HAROLD FREDERICK, *C.E.*, Professor of Highway Engineering and City Planning
JANSKY, CYRIL METHODIUS, *B.A.*, Professor of Electrical Engineering, Extension Division and College of Engineering
JASTROW, JOSEPH, *Ph.D., LL.D.*, Professor of Psychology, Emeritus
JEROME, HARRY, *Ph.D.*, Professor of Economics
JOHNSON, GERTRUDE ELIZABETH, *B.A.*, Associate Professor of Speech
JOHNSON, JAMES, *Ph.D.*, Professor of Horticulture
JOHNSON, LAURA BUTLER, *M.A.*, Assistant Professor of French (School of Education)
JONES, CHESTER LLOYD, *Ph.D.*, Professor of Economics and Political Science, Director of the School of Commerce
JONES, EDWARD RICHARD, *M.S.*, Professor of Agricultural Engineering
JONES, LEWIS RALPH, *Ph.D., Sc.D.*, Professor of Plant Pathology
JONES, MRS. NELLIE KEDZIE, *M.S., LL.D.*, State Leader of Home Demonstration Agents, Associate Professor of Home Economics
JONES, THOMAS EDWARD, *B.A., P.P.E.*, Professor of Physical Education
JONES, THOMAS LLOYD, *B.S.*, High-School Visitor, Associate Professor of Education
JUDAY, CHANCEY, *M.A.*, Lecturer in Zoology

KAHLENBERG, LOUIS, *Ph.D.*, Professor of Chemistry
KAY, HARRY MAXWELL, *M.D.*, Clinical Associate in Medicine
KEITT, GEORGE WANNAMAKER, *Ph.D.*, Professor of Plant Pathology
KELLY, FREDERICK THOMAS, *Ph. D.*, Assistant Professor of Semitic Languages
KELSO, LESLIE ERSKINE ALLEN, *B.S.*, Assistant Professor of Electrical Engineering
KESSLER, LEWIS HANFORD, *M.S., C.E.*, Assistant Professor of Hydraulic Engineering (on leave 1930-31)

KIEKHOFER, WILLIAM HENRY, *Ph.D.*, Professor of Economics (on leave II)
KING, AGNES, *M.A.*, Assistant Professor of Library Science
KINNE, WILLIAM SPAULDING, *B.S.*, Professor of Structural Engineering; Consulting Engineer, Physical Plant
KIRK, GRAYSON LOUIS, *Ph.D.*, Assistant Professor of Political Science
KIRKPATRICK, ELLIS LORE, *Ph.D.*, Associate Professor of Rural Sociology
KIVLIN, VINCENT EARL, *M.S.*, Assistant Professor of Agricultural Education; Director of the Short Course in Agriculture
KNAPLUND, PAUL ALEXANDER, *Ph.D.*, Professor of History
KOEHLER, ARTHUR, *M.S.*, Lecturer in Forest Products
KOEHLER, GLENN, *M.S.*, Assistant Professor of Electrical Engineering
KOLB, JOHN HARRISON, *Ph.D.*, Professor of Rural Sociology
KOMMERS, JESSE BENJAMIN, *M.E.*, Professor of Mechanics
KOWALKE, OTTO LOUIS, *Ch.E.*, Professor of Chemical Engineering
KRAUSKOPF, FRANCIS CRAIG, *Ph.D.*, Professor of Chemistry
KREMERS, EDWARD, *Pharm.M., Ph.D., Sc.D.*, Director of the Course in Pharmacy and of the Pharmaceutical Experiment Station, Professor of Pharmaceutial Chemistry (on leave I)
KUEHNER, CONRAD LOUIS, *B.S.*, Assistant Professor of Horticulture

LAFOLLETTE, PHILIP FOX, *B.A., LL.B.*, Lecturer in Law—I
LAIRD, ARTHUR GORDON, *Ph.D.*, Professor of Greek
LAMB, ELIZA, *B.A.*, Assistant Librarian
LANGER, RUDOLPH ERNEST, *Ph. D.*, Professor of Mathematics
LARSON, GUSTUS LUDWIG, *M.E.*, Professor of Steam and Gas Engineering; Consulting Engineer, Physical Plant
LATHROP, HENRY BURROWES, *B.A.*, Professor of English (on leave 1930-31)
LEHMAN, SARAH KATHERINE, *M.A.*, Assistant Professor of English, Milwaukee Extension Center
LEITH, BENJAMIN DONALD, *B.S.*, Professor of Agronomy
LEITH, CHARLES KENNETH, *Ph.D., LL.D.*, Professor of Geology
LEONARD, STERLING ANDRUS, *Ph.D.*, Associate Professor in the Teaching of English (deceased May 15, 1931)
LEONARD, WILLIAM ELLERY, Ph.D., Professor of English
LESCOHIER, DON DIVANCE *Ph.D.* Professor of Economics (on leave 1930-31)
LESTER, CLARENCE BROWN, *M.A.*, Director of the Library School, Lecturer in Library Science
LEVIS, GEORGE WYNDEN, *B.A.*, Associate Professor of Physical Education; Business Manager of Athletics
LIGHTY, WILLIAM HENRY, *Ph.B.*, Director of Extension Teaching, Extension Division
LINK, KARL PAUL, *Ph.D.*, Associate Professor of Agricultural Chemistry
LINTON, RALPH, *Ph.D.*, Professor of Social Anthropology
LITTIG, LAWRENCE, *B.S., M.D.*, Lecturer in Radiology—II
LITTLE, GEORGE EDKIN, *B.S.*, Director and Professor of Physical Education
LITTLE, MALCOLM GILES, *M.A.*, Assistant Director of the Milwaukee Extension Center
LIVERMORE, JOSEPH DOW, *B.S.*, Assistant Professor of Drawing and Descriptive Geometry
LORENZ, WILLIAM FREDERICK, *M.D.*, Professor of Neuropsychiatry, Director of the Wisconsin Psychiatric Institute
LOWMAN, GUY SUMNER, *B.Di., B.P.E.*, Professor of Physical Education, Chairman of the Course in Physical Education and Athletic Coaching for Men

LUTHER, ERNEST LEONARD, *B.A., B.S.*, Superintendent of the Farmers' Institutes; Assistant State Leader of County Agricultural Representatives
LYGHT, CHARGES EVERARD, *M.D., C.M.*, Assistant Professor of Clinical Medicine; Assistant Physician, Department of Student Health
LYON, ALBERT EDDY, *Ph.D.*, Assistant Professor of Spanish

MCCAFFERY, RICHARD STANISLAUS, *E.M.*, Professor of Mining and Metallurgy
MCCOY, BRUCE RIEGE, *B.A.*, Lecturer in Journalism
MCCOY, ELIZABETH FLORENCE, *Ph.D.*, Assistant Professor of Agricultural Bacteriology
MCELVAIN, SAMUEL MARION, *Ph.D.*, Associate Professor of Chemistry
MCGILVARY, EVANDER BRADLEY, *Ph.D.*, Professor of Philosophy
MACGREGOR, FORD HERBERT, *M.A.*, Chief of the Municipal Information Bureau and Associate Professor of Political Science, Extension Division
MCGUIRE, PETER STEPHEN, *Ph.D.*, Assistant Professor of History, Milwaukee Extension Center
MCINTOSH, ROSCOE LYLE., *B.S., M.D.*, Assistant Professor of Dermatology
MACLEAN, MALCOLM SHAW, *Ph.D.*, Professor of English, Milwaukee Extension Center
MCNALL, PRESTON ESSEX, *M.S.*, Professor of Agricultural Economics
MCNAUL, JAMES WILBUR, *B.S.*, Assistant Professor of Machine Design
MCNEEL, WAKELIN, *B.S.*, Assistant State Leader of Boys' and Girls' Agricultural Clubs
MACK, JULIAN ELLIS, *Ph.D.*, Assistant Professor of Physics
MACKAY, SCOTT, *M.S.*, Associate Professor of Metallurgy
MANNING, HAZEL, *M.S.*, Professor of Home Economics
MARCH, HERMAN WILLIAM, *Ph.D.*, Professor of Mathematics
MARDEN, MORRIS, *Ph.D.*, Assistant Professor of Mathematics, Milwaukee Extension Center
MARKWARDT, LORRAINE JOSEPH, *C.E.*, Lecturer in Forest Products
MARLATT, ABBY LILLIAN, *M.S., Sc.D.*, Director of the Course in Home Economics, Professor of Home Economics
MARSHALL, WILLIAM STANLEY, *Ph.D.*, Associate Professor of Zoology
MARTIN, MILES J., *Ph.D.*, Assistant Professor of Physics, Milwaukee Extension Center
MARTIN, THOMAS LEROY, *B.Ed., M.B.A., C.P.A.*, Assistant Professor of Accounting, Extension Division
MASLEY, ARPAD LOUIS, *G.G.*, Associate Professor of Physical Education; Director of the Men's Gymnasium
MASTEN, MABEL GARDEN, *B.S., M.D.*, Assistant Professor of Neuropsychiatry
MATHEWS, JOSEPH HOWARD, *Ph.D.*, Director of the Course in Chemistry and the Chemistry-Commerce Course, Professor of Chemistry
MAURER, EDWARD ROSE, *B.C.E.*, Professor of Mechanics
MEAD, DANIEL WEBSTER, *C.E.*, Professor of Hydraulic and Sanitary Engineering
MEAD, WARREN JUDSON, *Ph.D.*, Professor of Geology
MEADE, FRANK CELESTINE, First Lieutenant Signal Corps, U. S. A., Assistant Professor of Military Science
MEANWELL, WALTER ERNEST, *M.D., D.P.H.*, Professor of Physical Education
MEEK, WALTER JOSEPH, *Ph. D.*, Assistant Dean of the Medical School, Professor of Physiology
MEIKLEJOHN, ALEXANDER, *Ph.D., LL.D.*, Chairman of the Experimental College, Brittingham Professor of Philosophy
MELOCHE, GLADYS LOUISE, *M.S.*, Extension Specialist in Home Economics
MELOCHE, VILLIERS WILLSON, *Ph.D.*, Assistant Professor of Chemistry

MENDENHALL, CHARLES ELWOOD, *Ph.D.*, Professor of Physics
MENDENHALL, MRS. DOROTHY REED, *B.A., M.D., Sc.D.*, Lecturer in Home Economics
MERRIMAN, CURTIS, *Ph.D.*, Professor of Education
MICHELL, ROBERT BELL, *Ph.D.*, Assistant Professor of French (on leave II)
MIDDLETON, WILLIAM SHAINLINE, *M.D.*, Associate Professor of Medicine
MILLAR, ADAM VAUSE, *M.S.*, Assistant Dean of the College of Enginering, Professor of Drawing and Descriptive Geometry
MILLER, ERIC REXFORD, *M.S.*, Lecture in Meteorology
MILLER, WILLIAM SNOW, *M.D., Sc.D.*, Professor of Anatomy, Emeritus
MILLS, CHARLES HENRY, *D.Mus., F.R.C.O.*, Director of the School of Music, Professor of Music
MILWARD, JAMES GARFIELD, *M.S.*, Professor of Horticulture
MOORE, JAMES GARFIELD, *M.S.*, Professor of Horticulture
MOORE, RANSON ASA, Professor of Agronomy
MORGAN, BAYARD QUINCY, *Ph.D.*, Professor of German (on leave 1930-31)
MORPHY, EDSON WILFRED, Associate Professor of Music
MORRIS, SARAH ISABELLE, *M.D.*, Associate Professor of Clinical Medicine (on leave II)
MORTENSON, WILLIAM PETER, *Ph.D.*, Assistant Professor of Agricultural Economics
MORTIMER, GEORGE BYRON, *B.S.*, Professor of Agronomy
MORTON, WALTER ALBERT, *Ph.D.*, Assistant Professor of Economics
MOSSMAN, HARLAND WINFIELD, *Ph.D.*, Assistant Professor of Anatomy
MOULTON, FRANK STILLMAN, *A.I.A.*, Lecturer in Art Education
MOWRY, WILLIAM ATWOOD, *M.D.*, Professor of Clinical Medicine; Physician in Chief, Department of Student Health
MUCKS, ARLIE, MAX, *B.S.*, Associate Professor of Animal Husbandry
MURPHY, GEORGE WILLIAM, Assistant Professor of Physical Education
MUSBACH, FRED LUDWIG, *B.S.*, Professor of Soils, in charge of Marshfield Branch Experiment Station

NAFZIGER, RALPH OTTO, *B.S., M.A.*, Assistant Professor of Journalism
NARDIN, FRANCIS LOUISE, *Ph.D.*, Dean of Women
NEFF, EZRA EUGENE, *B.A., M.D.*, Associate Professor of Ophthalmology
NELSON, DELMAR WOOD, *M.E.*, Assistant Professor of Steam and Gas Engineering
NESBIT, WELLWOOD MACK, *M.D.*, Associate Professor of Ophthalmology
NETTELS, CURTIS PUTNAM, *Ph.D.*, Assistant Professor of History
NEWELL, JANE ISABEL, *Ph.D.*, Lecturer in Sociology—II
NEWLIN, JOHN A., *B.S.*, Lecturer in Forest Products
NICHOLS, MERLE STARR, *Ph.D.*, Chemist, State Laboratory of Hygiene; Assistant Professor of Sanitary Chemistry
NICKERSON, FRANK, Assistant Professor of Physical Education
NOHR, ROBERT, JR., *G.G.*, Associate Professor of Physical Education
NOLAND, LOWELL EVAN, *Ph.D.*, Assistant Professor of Zoology

OESTERLE, JOSEPH FRANCIS, *Ph.D.*, Assistant Professor of Metallurgy
OGG, FREDERICK AUSTIN, *Ph.D., LL.D.*, Professor of Political Science
OLSON, JULIUS EMIL, *B.L.*, Professor of Scandinavian Languages and Literature, Emeritus
ORTEGA, JOAQUIN, *M.A.*, Professor of Spanish
ORTH, HERBERT DENNY, *B.S.*, Associate Professor of Drawing and Descriptive Geometry
O'SHEA, MICHAEL VINCENT, *B.L.*, Professor of Education

OTIS, DELOS SACKETT, *Ph.D.*, Assistant Professor of History; Adviser in the Experimental College
OTTO, MAX CARL, *Ph.D.*, Professor of Philosophy
OVERTON, JAMES BERTRAM, *Ph.D., Sc.D.*, Professor of Plant Physiology
OWEN, EDWARD THOMAS, *Ph.D.*, Professor of French and Linguistics, Emeritus
OWEN, RAY SPRAGUE, *B.S.*, Associate Professor of Topographic Engineering

PAGE, WILLIAM HERBERT, *B.A., LL.M., S.J.D.*, Jackson Professor of Law
PARKINSON, GEORGE AMBROSE, *Ph.D.*, Associate Professor of Mathematics, Milwaukee Extension Center
PARSON, HELEN TRACY, *Ph.D.*, Associate Professor of Home Economics
PATTERSON, HELEN MARGUERITE, *M.A.*, Assistant Professor of Journalism
PATTON, STELLA TROUT, *M.S.*, Assistant Professor of Home Economics
PAXSON, FREDERIC LOGAN, *Ph.D.*, Professor of History
PERLMAN, SELIG, *Ph.D.*, Professor of Economics
PETERSON, WILLIAM HAROLD, *Ph.D.*, Professor of Agricultural Chemistry
PHILLIPS, BURR WENDELL, *M.A.*, Assistant Professor in the Teaching of History
PHILLIPS, JAMES DAVID, *B.S.*, Business Manager
PITMAN, ANNIE MARIA, *Ph.D.*, Associate Professor of Classics, Extension Division
POHLE, ERNST ALBERT, *M.D., Ph.D., F.A.C.R.*, Professor of Radiology
POTTER, PITMAN BENJAMIN, *Ph.D.*, Professor of Political Science (on leave I)
PRICE, JOHN REESE, *B.S.*, Professor of Electrical Engineering
PRICE, WALTER VAN, *Ph.D.*, Professor of Dairy Husbandry
PRYOR, MARGARET, *Ph.D.*, Assistant Professor of Economics
PUERNER, RUSSELL EDWARD, *B.S.*, Assistant Professor of Machine Design
PUESTOW, KARVER LOUIS, *M.S., MD.*, Assistant Professor of Clinical Medicine
PULVER, HARRY E., *C.E.*, Professor of Civil and Structural Engineering, Extension Division
PURIN, CHARLES MALTADOR, *Ph.D.*, Director of the Milwaukee Extension Center, Professor of German
PYRE, JAMES FRANCIS AUGUSTIN, *Ph.D.*, Professor of English, Chairman of the Athletic Council

QUINTANA, RICARDO BECKWITH, *Ph.D.*, Associate Professor of English

RAGATZ, ROLAND ANDREW, *M.S.*, Assistant Professor of Chemical Engineering
RAGSDALE, CLARENCE EDWIN, *Ph.D.*, Assistant Professor of Education
RANDOLPH, MRS. RUTH SACKETT, *B.S.*, Assistant Professor of Home Economics
RAUSHENBUSH, PAUL A., *M.A.*, Assistant Professor of Economics, Adviser in Experimental College, (on leave I)
REBER, LOUIS EHRARD, *M.S., Sc.D.*, Dean of the Extension Division, Emeritus
REELY, MARY KATHARINE, *B.A.*, Assistant Professor of Bibliography
REESE, HANS HEINRICH, *M.D., F.A.C.P.*, Associate Professor of Neuropsychiatry
RICE, WILLIAM GORHAM, JR., *M.A., S.J.D.*, Professor of Law
RICHARDS, CLARICE AUDREY, *Ph.D.*, Lecturer in Forest Products
RICHTMANN, WILLIAM OSCAR, *Ph.G., Ph.D.*, Associate Professor of Pharmacognosy
RIKER, ALBERT JOYCE, *Ph.D.*, Associate Professor of Plant Pathology
RILEY, MILES CHARLES, *LL.B.*, Lecturer in Agricultural Economics
RITTER, GEORGE JOSEPH, *Ph.D.*, Lecturer in Forest Products
ROARK, RAYMOND JEFFERSON, *M.S.*, Associate Professor of Mechanics
ROBERTS, RAY HARLAND, *Ph.D.*, Professor of Horticulture
ROCKWELL, ETHEL THEODORA, *B.A.*, Chief of the Bureau of Dramatic Activities and Assistant Professor of Speech, Extension Division
ROE, FREDERICK WILLIAM, *Ph.D., Litt.D.*, Professor of English (on leave II)

ROEBUCK, JOHN RANSOM, *Ph.D.*, Professor of Physics
ROGERS, HARRY LOVEJOY, JR., First Lieutenant of Infantry, U. S. A., Assistant Professor of Military Science
ROGERS, SAMUEL GREENE ARNOLD, *M.A.*, Associate Professor of French (on leave 1930-31)
ROSS, EDWARD ALSWORTH, *Ph.D., LL.D.*, Professor of Sociology
ROSS, SARAH GRIDLEY, *M.A.*, Hostess of Barnard Hall
ROTH, WILLIAM EDWARD, *Ph.D.*, Assistant Professor of Mathematics, Milwaukee Extension Center
ROWLANDS, WALTER AUGUSTUS, *B.S.*, Associate Professor of Agricultural Engineering, Assistant State Leader of County Agricultural Representatives
RUNDELL, OLIVER SAMUEL, *LL.B.*, Professor of Law, Acting Dean of the Law School
RUPEL, ISAAC WALKER, *M.S.*, Assistant Professor of Animal Husbandry
RUSSELL, HARRY LUMAN, *Ph.D.*, Dean of the College of Agriculture, Director of the Agricultural Experiment Station and of Agricultural Extension (until March 23)
RUSSO, JOSEPH LOUIS, *Ph.D.*, Associate Professor of Italian
RYAN, HERBER HINDS, *M.A.*, Principal of the Wisconsin High School, Associate Professor of Education

SALTER, ELIZABETH M., *B.S.*, Assistant State Leader of Boys' and Girls' Agricultural Clubs
SALTER, JOHN THOMAS, *Ph.D.*, Associate Professor of Political Science
SAMMIS, JOHN LANGLEY, *Ph.D.*, Associate Professor of Dairy Husbandry
SANBORN, JOHN BELL, *Ph.D.*, Lecturer in Law
SAUNDERS, LAURANCE JAMES, *M.A.*, Associate Professor of History
SAUTHOFF, AUGUST, *B.S., M.D.*, Clinical Associate in Neuropsychiatry
SCHINDLER, DOROTHEA RICKABY, *B.S.*, Assistant Professor of Home Economics
SCHLATTER, EDWARD BUNKER, *Ph.D.*, Professor of Romance Languages, Extension Division
SCHLICHER, JOHN JACOB, *Ph.D.*, Assistant Professor of Latin
SCHMIDT, ERWIN RUDOLPH, *B.A., M.D., F.A.C.S.*, Professor of General Surgery
SCHNAITTER, MARION REXFORD, *M.A.*, Associate Porfessor of Economics, Milwaukee Extension Center
SCHUETTE, HENRY AUGUST, *Ph.D.*, Associate Professor of Chemistry
SCHUMM, HERMAN CHARLES, *B.S., M.D., F.A.C.S.*, Associate Professor of Orthopedic Surgery
SCOTT, ALMERE LOUISE, *B.A.*, Director, Department of Debating and Public Discussion, Extension Division
SCOTT, WILLIAM AMASA, *Ph.D., LL.D.*, Professor of Economics
SEARLS, EDWARD MARLBOROUGH, *M.S.*, Assistant Professor of Economic Entomology
SEEVERS, MAURICE HARRISON, *Ph.D.*, Assistant Professor of Pharmacology
SELLERS, JAMES LEE, *Ph.D.*, Assistant Professor of History (on leave 1930-31)
SELLERY, GEORGE CLARK, *Ph.D., LL.D.*, Dean of the College of Letters and Science, Professor of History
SEVRINGHAUS, ELMER LOUIS, *M.A., M.D.*, Associate Professor of Medicine
SHARP, FRANK CHAPMAN, *Ph.D.*, Professor of Philosophy (on leave II)
SHARP, MALCOLM PITMAN, *M.A., LL.B., S.J.D.*, Associate Professor of Law; Adviser in Experimental College (I)
SHARP, WALTER RICE, *Docteur en Droit*, Associate Professor of Political Science (on leave 1930-31)
SHELDON, WILLIAM HERBERT, *Ph.D.*, Lecturer in Psychology
SHERRARD, EARL CHARLES, *Ph.D.*, Lecturer in Forest Products

SHIELS, KENNETH GRINNELL, *M.S.*, Assistant Professor of Drawing and Descriptive Geometry
SHOREY, EDWIN ROY, *E.M.*, Associate Professor of Mining and Metallurgy
SHOWERMAN, GRANT, *Ph.D.*, Professor of Classics
SISK, IRA ROSCOE, *Phar.D., M.D., F.A.C.S.*, Professor of Urology
SISK, JOSEPH NEWTON, *B.S., M.D.*, Lecturer in Radiology—II
SKINNER, ERNEST BROWN, *Ph.D.*, Professor of Mathematics
SLICHTER, CHARLES SUMNER, *Sc.D.*, Dean of the Graduate School, Professor of Applied Mathematics
SMITH, CHARLES AUGUSTUS, *M.A.*, Secretary of the Faculty
SMITH, CHARLES FORSTER, *Ph.D., LL.D.*, Professor of Greek and Classical Philology, Emeritus
SMITH, HOWARD LESLIE, *B.A., LL.B.*, Professor of Law, Emeritus
SMITH, HUGH ALLISON, *M.A.*, Professor of French
SMITH, LEONARD SEWELL, *C.E.*, Professor of Highway Engineering and City Planning, Emeritus
SMITH, WALTER MCMYNN, *B.A.*, University Librarian
SNELL, CHESTER DEFOREST, *B.H., B.S.*, Dean of the Extension Division
SOKOLNIKOFF, IVAN STEPHEN, *E.E.*, Assistant Professor of Mathematics
SOLALINDE, ANTONIO GARCIA, *Litt.D.*, Professor of Spanish
SOMMER, HUGO HENRY, *Ph.D.*, Professor of Dairy Husbandry
SORUM, CLARENCE HARVEY, *Ph.D.*, Assistant Professor of Chemistry
STAMM, ALFRED J., *Ph.D.*, Lecturer in Forest Products
STEBBINS, JOEL, *Ph.D., Sc.D.*, Director of Washburn Observatory, Professor of Astronomy
STEBBINS, ROLAND STEWART, *R.M.A.A.*, Assistant Professor of Art Education
STEENBOCK, HARRY, *Ph.D.*, Professor of Agricultural Chemistry
STEINAUER, JOSEPH CHRISTIAN, Associate Professor of Physical Education
STEINFORT, META MARY, *M.A.*, Assistant Professor of Spanish, Milwaukee Extension Center
STERLING, SUSAN ADELAIDE, *M.L.*, Assistant Professor of German, Emeritus
STEVE, WILLIAM FREDERICK, *M.A.*, Associate Professor of Physics
STILLMAN, GLADYS SARAH, *M.S.*, Assistant Professor of Home Economics
STONE, ALDEN LESCOMBE, Assistant Professor of Agronomy
STOUFFER, SAMUEL ANDREW, *Ph.D.*, Assistant Professor of Social Statistics
STOVALL, WILLIAM DAVIDSON, *M.D.*, Director and Bacteriologist, State Laboratory of Hygiene; Professor of Hygiene
SULLIVAN, WALTER EDWARD, *Ph.D.*, Professor of Anatomy
SUMNER, WILLIAM ALLISON, *B.S.*, Associate Professor of Agricultural Journalism
SUNDT, GUY MERRILL, *B.S.*, Associate Professor of Physical Education
SWAN, FRED HAVISIDE, *B.A.*, Assistant Professor of Physical Education (beginning March 15)
SWINNEY, EDWARD EARLE, *B.A.*, Associate Professor of Music

TATUM, ARTHUR LAWRIE, *Ph.D., M.D.*, Professor of Pharmacology
TAYLOR, CARL, *M.A.*, Assistant Professor of Speech, Milwaukee Extension Center
TAYLOR, WARNER, *M.A.*, Professor of English
TEISBERG, HALVOR ORLANDO, *B.A.*, Assistant Librarian
TENNEY, HORACE KENT, JR., *M.D.*, Assistant Professor of Pediatrics
THAYER, HARRY COULTER, *M.A.*, Lecturer in Industrial Education—II
THISTLETHWAITE, GLENN F., *B.S.*, Professor of Physical Education
THOMAS, CHARLES WRIGHT, *B.S., M.A.*, Assistant Professor of English
THOMSEN, LOUIS CHARLES, *B.S.*, Assistant Professor of Dairy Husbandry

THORNBURY, ETHEL MARGARET, *Ph.D.*, Assistant Professor of English
THWAITES, FREDRIK TURVILLE, *M.A.*, Lecturer in Geology
TIEMANN, HARRY DONALD, *M.E., M.F.*, Lecturer in Forest Products
TOPCHEVSKY, MORRIS, Lecturer in Art, Experimental College—II
TORGERSON, THEODORE L., *Ph.D.*, Lecturer in Education
TOTTINGHAM, WILLIAM EDWARD, *Ph.D.*, Associate Professor of Agricultural Chemistry
TOWN, GEORGE GALLOWAY, *Ph.D.*, Associate Professor of Chemistry, Milwaukee Extension Center
TRACY, GORDON FREDERICK, *M.S.*. Assistant Professor of Electrical Engineering
TREWARTHA, GLENN THOMAS, *Ph.D.*, Associate Professor of Geography
TRILLING, BLANCH MATHILDE, *B.A.*, Chairman of the Course in Physical Education for Women, Professor of Physical Education
TROUTMAN, WILLIAM CHILTON, *M.A.*, Assistant Professor of Speech
TRUAX, THOMAS ROY, *M.S.*, Lecturer in Forest Products
TRUMBOWER, HENRY ROSCOE, *Ph.D.*, Professor of Economics
TRUOG, EMIL, *M.S.*, Professor of Soils
TURNEAURE, FREDERICK EUGENE, *C.E., D.Eng.*, Dean of the College of Engineering
TWENHOFEL, WILLIAM HENRY, *Ph.D.*, Professor of Geology
TYRRELL, BESSIE FLORILLA, *M.A.*, Assistant Professor of Home Economics

UTERITZ, IRWIN CHARLES, *B.A.*, Associate Professor of Physical Education

VAN HAGAN, LESLIE FLANDERS, *C.E.*, Professor of Railway Engineering
VAN VALZAH, ROBERT, *B.A., M.D.*, Professor of Clinical Medicine
VAN VLECK, EDWARD BURR, *Ph.D., LL.D., D.M.*, and *Phys., Sc.D.*, Professor of Mathematics, Emeritus
VAN VLECK, JOHN HASBROUCK, *Ph.D.*, Professor of Physics
VARNEY, VERNE VINCENT, *B.S.*, Assistant State Leader of Boys' and Girls' Clubs
VARNUM, WILLIAM HARRISON, *B.P.*, Professor of Art Education
VASILIEV, ALEXANDER ALEXANDER, *Ph.D.*, Professor of History
VAUGHAN, RICHARD ENGLISH, *M.S.*, Professor of Plant Pathology
VOLK, FREDERICK EUGENE, *B.A., B.S.*, Librarian, College of Engineering
VOSS, ERNEST KARL JOHAN HEINRICK, *Ph.D.*, Professor of Germanic Philology

WAGNER, GEORGE *M.A.*, Associate Professor of Zoology
WAHLIN, HUGO BERNARD, *Ph.D.*, Associate Professor of Physics
WAKEMAN, NELLIE ANTOINETTE, *Ph.D.*, Assistant Professor of Pharmacy
WALES, JULIA GRACE, *Ph.D.*, Assistant Professor of English
WALKER, JOHN CHARLES, *Ph.D.*, Professor of Plant Pathology
WALLERSTEIN, RUTH COONS, *Ph.D.*, Assistant Professor of English
WALTON, JAMES HENRI, *Ph.D.*, Professor of Chemistry
WATERS, RALPH MILTON, *B.A., M.D.*, Associate Professor of Surgery (Anesthesia)
WATSON, JAMES WEBSTER, *B.S.*, Professor of Electrical Engineering
WATSON, KENNETH MERLE, *Ph.D.*, Assistant Professor of Chemical Engineering
WATTS, OLIVER PATTERSON, *Ph.D., Sc.D.*, Associate Professor of Chemical Engineering
WEAR, JOHN BREWSTER, *B.A., M.D.*, Assistant Professor of Urology
WEAVER, ANDREW THOMAS, *Ph.D.*, Professor of Speech
WEAVER, WARREN, *Ph.D.*, Professor of Mathematics
WEBER, LYNDA MARGUERITE, *M.A.*, Assistant Professor in the Teaching of Biology
WEBER, WILLIAM WALLACE, *B.S., M.F.*, Lecturer in Forest Products
WEHRWEIN, GEORGE SIMON, *Ph.D.*, Professor of Agricultural Economics

WESLE, HERBERT WILLIAM, *B.S.*, Assistant Professor of Topographic Engineering, Milwaukee Extension Center
WEST, ROBERT WILLIAM, *Ph.D.*, Professor of Speech Pathology
WHITAKER, JOE RUSSELL, *Ph.D.*, Assistant Professor of Geography
WHITBECK, RAY HUGHES, *B.A.*, Professor of Geography (on leave II)
WHITE, HELEN CONSTANCE, *Ph.D.*, Assistant Professor of English
WHITFORD, ALFRED EDWARD, *M.A.*, Lecturer in Mathematics
WHITSON, ANDREW ROBINSON, *B.S.*, Professor of Soils
WILEDEN, ARTHUR FREDERICK, *M.S.*, Assistant Professor of Rural Sociology
WILLIAMS, FRANKWOOD EARL, *B.A.*, *M.D.*, *Sc.D.*, Lecturer in the Experimental College—II
WILLIAMS, JOHN WARREN, *Ph.D.*, Assistant Professor of Chemistry
WILLIAMS, WILLIAM HOLME, *B.A.*, Professor of Semitic Languages and Hellenistic Greek, Emeritus
WILLING, MATTHEW H., *Ph.D.*, Associate Professor of Education
WILSON, DELLA FORD, *B.S.*, *M.A.*, Assistant Professor of Art Education
WILSON, GROVER, *M.S.*, *M.E.*, Assistant Professor of Steam and Gas Engineering
WILSON, HARLEY FROST, *M.S.*, Professor of Economic Entomology
WILSON, LEROY ALONZO, *M.E.*, *M.M.E.*, Associate Professor of Steam and Gas Engineering
WINANS, JOHN GIBSON, *Ph.D.*, Assistant Professor of Physics
WINCHELL, ALEXANDER NEWTON, *Sc.D.*, Professor of Geology
WINSLOW, CARLILE PATTERSON, *Ph.B.*, Director of the Forest Products Laboratory
WINSPEAR, ALBAN DEWES, *M.A.*, Associate Professor of Classics
WITHEY, MORTON OWEN, *C.E.*, Professor of Mechanics
WITTE, EDWIN EMIL, *Ph.D.*, Lecturer in Economics
WITZEMANN, EDGAR JOHN, *Ph.D.*, Assistant Professor of Physiological Chemistry
WOJTA, JOSEPH FRANK, *M.S.*, State Leader of County Agricultural Representatives
WOY, FRANK PALMER, *B.S.*, Professor of Steam and Gas Engineering
WRIGHT, ANDREW HAMILTON, *M.S.*, Associate Professor of Agronomy

YOUNG, CHARLES EDMUND, *Ph.D.*, Professor of Romance Languages, Milwaukee Extension Center
YOUNG, KIMBALL, *Ph.D.*, Professor of Social Psychology

ZDANOWICZ, CASIMIR DOUGLASS, *Ph.D.*, Professor of French
ZEASMAN, OTTO REINHART, *B.S.*, Associate Professor of Soils and Agricultural Engineering
ZON, RAPHAEL, *B.A.*, *B.S.*, *F.E.*, Non-resident Professor of Forestry

OTHER STAFF MEMBERS

AABERG, E. LINDEMAN, *B.A.*, Assistant in Physiological Chemistry
ABENDROTH, GEORGE HERMAN, *B.S.*, Instructor in Civil and Structural Engineering, Milwaukee Extension Center
ABRY, CECELIA FRANCES, *M.S.*, Instructor in Home Economics
AITKEN, HERBERT MCGREGOR, *B.S.*, *M.D.*, Assistant Resident in Obstetrics and Gynecology, Wisconsin General Hospital
ALEXANDER, CHARLES, *M.A.*, Research Assistant in Economics
ALFONSUS, ERWIN CHARLES, *B.S.*, Instructor in Economic Entomology (beginning March 30)
ALLEN, FLORENCE ELIZA, *Ph.D.*, Instructor in Mathematics
ALLEN, HELEN LOUISE, *M.A.*, Instructor in Home Economics
ALLEN, MARY WINIFRED, *B.A.*, Library Assistant
ALLEN, THOMAS CORT, *M.S.*, Assistant in Economic Entomology
ALTABE, JEANNETTE, *M.A.*, Assistant in Spanish
AMUNDSON, GENEVA LUCILLE, *B.S.*, Assistant State Leader of Boys' and Girls' Clubs
AMUNDSON, ROBERT ANDREW, Assistant State Leader of County Agricultural Representatives
ANDERSON, MRS. MARY BOZARD, *B.A.*, Assistant in French
ANDERSON, MELVIN ELIASON, *M.S.*, Assistant in Plant Pathology
ANDREE, CLARENCE ALOIS, *Ph.D.*, Instructor in Electrical Engineering
ANDREWS, JENNIE BELLE, *B.S.*, Assistant in Agricultural Bacteriology—II
ANNEN, MRS. HELEN WANN, *B.A.*, *B.F.A.*, Instructor in Art Education
ANNIN, GERALD EVERETT, *B.S.*, Instructor in Poultry Husbandry
ARBUTHNOT, MABEL FLORENCE, *M.A.*, Instructor in Classics, Extension Division
ARCHAMBEAULT, ROBLEY CECIL, *B.A.*, Assistant in Chemistry
ARNE, PETER, *Ph.B.*, Assistant in Physical Education (Track)
ARNOLD, ORLAN MCGREW, *B.A.*, Assistant in Chemistry
AUSTIN, ALICE MAY, *M.A.*, *M.S.*, Instructor in Mathematics
AXEN, FORENCE LILLIAN, *M.A.*, Instructor in Mathematics, Milwaukee Extension Center
AYRES, GILBERT HAVEN, *Ph.D.*, Instructor in Chemistry
AZPELL, EDWARD WILLIAM, *M.S.*, Instructor in Steam and Gas Engineering

BACKUS, MERTON LLEWELLYN, *M.A.*, Assistant in English—I
BAERNSTEIN, HARRY DANIEL, *Ph.D.*, Instructor in Physiological Chemistry
BAERNSTEIN, MRS. LAURA NELSON, *M.A.*, Assistant in Psychology
BAHN, EUGENE, *M.A.*, Assistant in Speech; Teacher of Speech, Wisconsin High School—II
BAIER, JOSEPH GEORGE, JR., *M.S.*, Assistant in Zoology
BAILEY, LAWRENCE GARY, *M.A.*, Assistant in Education
BAILEY, RALPH JORDAN, *M.S.*, Assistant in Zoology
BAILLIE, EDWARD CHARLES, *B.S.*, Research Assistant in Botany
BAKKEN, MRS. HELEN BLEEKER, *R.N.*, Instructor in Nursing
BALDWIN, RAYMOND MATHEWS, *B.S.*, *M.D.*, Resident in Orthopedic Surgery, Wisconsin General Hospital
BANGHAM, EDITH, *M.S.*, Home Demonstration Agent, Marathon County
BARKER, RUSSELL HAROLD, *M.A.*, Instructor in English
BARRETT, DENNETT, *B.A.*, Assistant in Psychology
BARRON, JAMES JOSEPH, *B.S.*, Instructor in Mathematics
BARRON, JOSEPH, *M.A.*, Instructor in Art History

BARTLETT, PHYLLIS, *B.Litt.*, Instructor in English
BARTNESS, ADOLPH CONRAD, *B.S.*, County Agricultural Representative, Adams County
BARTON, THOMAS, *B.Ed.*, Assistant in Geography
BATCHELDER, GEORGE WASHINGTON, *M.A.*, Assistant in Chemistry
BATTEN, ALICE EILEEN, *B.S.*, *R.N.*, Director of Social Service, Department of Nursing
BATTIG, LEON, *M.A.*, Instructor in Mathematics, Milwaukee Extension Center
BAUCH, DOROTHY CHRISTINE, *B.A.*, Research Assistant in Botany
BAUER, FRIEDRICH GEORGE, *Ph.D.*, Instructor in German
BAUER, THEODORE WILLIAM, *B.A.*, Assistant in History
BAUER, WALTER HERMAN, *B.S.*, Assistant in Chemistry
BAUGH, RUSSELL HUGH, *M.A.*, Instructor in Economics
BAUMANN, CARL AUGUST, *B.S.*, Assistant in Agricultural Chemistry
BAUMANN, ELDA OTTELIE, *B.A.*, Assistant in English—I
BAUMEISTER, GEORGE FREDERICK, *B.S.*, County Agricultural Representative, Shawano County
BAUMGARTNER, MAXINE ALICE, *B.S.*, *R.N.*, Instructor in Nursing
BAYLEY, WILLIAM EWART GLADSTONE, *M.D.*, Instructor in Clinical Pathology
BAYLISS, ZOE BURREL, *B.S.*, Assistant to the Dean of Women
BEATLEY, CATHARINE BANCROFT, *M.A.*, Instructor in English
BEATTIE, JAMES, *B.S.*, County Agricultural Representative, Walworth County
BECKHAM, LELAND JAMES, *P.E.*, Assistant in Chemistry
BEECHER, JOHN NEWMAN, *M.A.*, Assistant in English, Experimental College
BELL, EARL HOYT, *B.A.*, Assistant in Social Psychology—I
BELL, FRANK NELSON, *B.S.*, *D.V.M.*, Research Assistant in Veterinary Science
BELL, RICHARD REX, Instructor in Mechanical Practice
BENEDICT, REGINALD RALPH, *M.S.*, Instructor in Electrical Engineering
BENNETT, MRS. ETHEL MARY GRANGER, *M.A.*, Assistant in French
BENNETT, GRACE IRENE, *B.S.*, *M.A.*, Instructor in Home Economics
BENTLEY, JOHN EDWARD, *B.S.*, *M.D.*, Instructor in Clinical Medicine—II
BERGENDAHL, FLORENCE, Instructor in Music
BERGSTRESSER, JOHN LOT, *B.A.*, Assistant Director, Bureau of Guidance and Records
BEUSCHER, JACOB HENRY, *LL.B.*, Instructor in Law
BEYER, MRS. ALMA HELEN MEUER, *B.A.*, Library Assistant
BIEBERSTEIN, ADOLPH JOSEPH, *B.A.*, *LL.B.*, Assistant in Physical Education—I
BILSTAD, NELLIE MAE, *M.A.*, Instructor in Zoology
BJORK, KENNETH ORLANDO, *B.A.*, Assistant in History
BLACK, RICHARD GRANGER, *B.A.*, Assistant in Chemistry
BLAKE, REUEL I. KEMBERLING, *M.A.*, Instructor in English, Milwaukee Extension Center
BLANCHARD, PORTER BEVAN, *B.S.*, Assistant in Medicine—II
BLANKINSHIP, REX, *B.S.*, *M.D.*, Assistant in Clinical Medicine; Assistant Physician, Department of Student Health
BLISS, MRS. ERMINIE ANITA, *B.M.*, Assistant in Physical Education—II
BLODGETT, EARLE COMSTOCK, *M.S.*, Research Assistant in Plant Pathology
BOE, DAGNY, *B.A.*, Assistant in French
BOELL, JESSE EDWARD, *M.A.*, Assistant in History
BOGGS, MARGARET ANNI, *B.S.*, Teacher of Physical Education, Wisconsin High School
BOLLINGER, JOHN ROMEO, *B.S.*, County Agricultural Representative, Buffalo County
BONER, ALBERT JAY, *B.S.*, *M.D.*, Instructor in Clinical Medicine
BONING, WILLIAM JONES, *M.A.*, Assistant in French
BOOTS, PAUL HEATH, *B.A.*, Assistant in Physics

BOTTKE, KARL GEORGE, *B.A.*, Assistant in French
BOUGHTON, DONALD CLARK, *M.S.*, Instructor in Zoology, Milwaukee Extension Center
BOYER, ESTHER LYDIA, *M.A.*, Assistant in Zoology
BRADT, REX HALE, *B.A.*, Assistant in Chemistry
BRANDEIS, MRS. ELIZABETH, *Ph.D.*, Instructor in Economics—II
BRENNAN, ELSIE MAY, *M.A.*, Assistant in Latin
BRIDGE, BERT BERNARD, Instructor in Mechanical Practice
BRIDGMAN, ALMA LOUISE, *M.A.*, Instructor in Economics
BRIDGMAN, LOUIS WILLIAM, *B.A.*, Editor, Extension Division
BRIGGS, ELSIE PRENTISS, *B.S.*, *M.A.*, Instructor in Comparative Literature
BRIGGS, MRS. SOPHIE MAY LEWIS, *B.L.*, Librarian, Law School
BRINDLEY, BENJAMEN ISAAC, *B.A.*, *M.D.*, Assistant Resident in Surgery—II
BRINKLEY, MRS. EDNA HARTMAN, *B.A.*, Library Assistant
BROGDON, RUTH ELIZABETH, *B.A.*, Instructor in Physiology
BROOKS, DUDLEY COOKINGHAM, *M.A.*, Instructor in English, Extension Division
BROOME, GEORGE CALVIN, JR., *B.S.*, Assistant in Economic Entomology—II
BROWN, MRS. EMILY KLUETER, *B.A.*, Assistant and Reviser, Library School
BROWN, LAWRENCE WAYNEWORTH, *M.S.*, Assistant in Dairy Husbandry
BRUCKNER, WALTER LOUIS, Assistant in Physical Education—I
BUBOLZ, ANNA AGNES, *M.S.*, Associate Bacteriologist, State Laboratory of Hygiene
BUCK, CHARLES ALFRED, *B.S.*, Instructor in Dairy Husbandry—II
BUELLESBACH, RUTH MAGDALENE, *B.S.*, *R.N.*, Instructor in Surgical Nursing
BULL, GLADYS LUCILLE, *B.A.*, Assistant Librarian, Medical School
BUNGE, HELEN LATHROP, *B A.*, *R.N.*, Instructor in Nursing—II
BURDICK, HAROLD EUGENE, *B.A.*, Assistant in Chemistry
BURDICK, SUSANNE, *B.A.*, Assistant in French
BURKHART, BERNARD ARNDT, *B.S.*, Research Assistant in Agricultural Chemistry
BURNS, MRS. FLORENCE ELEANOR, *B.M.*, Assistant in Physical Education
BURNS, HAZEL FLAVIA, *M.A.*, Assistant in the Teaching of English—II
BURNS, LILLOU, *M.A.*, Assistant in English
BURR, MRS. FRANCES KLEINPELL, *M.A.*, Teacher of Modern Languages, Wisconsin High School
BUTTS, PORTER FREEMAN, *B.A.*, House Director, Memorial Union
BYRNS, ELMER DENNIS, *B.S.*, County Agricultural Representative, Washington County

CABLE, CHESTER HUBBARD, *B.A.*, Assistant in English
CALDWELL, RUTH, *B.S.*, *M.D.*, Assistant in Clincial Medicine; Assistant Physician, Department of Student Health
CALLENBACH, JOHN ANTON, JR., *B.S.*, Assistant in Economic Entomology
CAMERON, MRS. EUGENIA SUE, *B.A.*, Assistant in Zoology
CAMPBELL, FRANCES ALMIRA GRACE, *R.N.*, Instructor in Nursing
CARD, WILLIAM MARTIN, *B.A.*, Instructor in English
CAREW, ALVIN DENNIS, *B.S.*, County Agricultural Representative, Green Lake County
CAREY, GLADYS KATHRYN, *R.N.*, Instructor in Nursing
CARLTON, ALMA OLIVE, *M.A.*, Assistant in Latin
CARMICHAEL, HERBERT KENNETH, *B.A.*, Teacher of Speech, Wisconsin High School—I
CARNS, MARIE LOUISE, *M.A.*, *M.D.*, Instructor in Medicine
CARPENTER, THELMA EDNA, *R.N.*, Assistant in Nursing
CARRANZA, MATILDE, *M.A.*, Instructor in Spanish

CARTER, THYRA, *M.A.*, Teacher of History and Social Studies, Wisconsin High School—II
CARTTER, BRUCE LAMPHER, *B.S.*, County Club Leader, Marinette County
CASE, ELDEN J., Master Sergeant, U. S. A., Retired, Assistant in Military Science
CEAGLSKE, NORMAN HUGO, *M.S.*, Instructor in Chemical Engineering
CHALMERS, WILLIAM ELLISON, *B.A.*, Assistant in Economics—I; Research Assistant in Economics—II
CHANDLER, GEORGE, *B.S.*, Assistant Secretary of the Faculty; Assistant in Philosophy—II
CHRISTENSEN, HOWARD WILLARD, *B.A.*, Assistant in Pathology
CLARK, MRS. ALICE SCHIEDT, *B.A.*, Assistant in Medical Bacteriology
CLARK, JOHN DRURY, *B.S.*, Assistant in Chemistry
CLARK, RALPH WILLIAM, *M.S.*, Instructor in Pharmacy
CLARKE, ALFRED ERNEST, *B.A.*, *M.S.*, Assistant in Genetics
CLAUS, PEARL ELIZABETH, *Ph.D.*, Research Associate in Zoology
CLIFFORD, MRS. EVA BEWICK, *R.N.*, Instructor in Nursing
CLULEY, JOHN BOWIE, *B.S.*, Instructor in Mechanical Practice
COLE, ADRIAN H., *Ph.B.*, Assistant Superintendent of Farmers' Institutes
COLLENTINE, ARTHUR, Instructor in Animal Husbandry
COLLINS, GENEVIEVE VIVIAN, Research Assistant in Economics (to December 1)
COMBS, OVA BEETEM, *B.S.*, Assistant in Horticulture
CONLEY, IRENE GRACE, *M.A.*, Assistant in English
CONNERS, NELSON DAVID, *B.A.*, Instructor and Field Representative, Extension Division
CONNER, RALPH, ALEXANDER, *B.S.*, Research Assistant in Chemistry
COOK, HULET HALL, *M.A.*, Instructor in French
COOPER, DELMAR CLAIRE, *Ph.D.*, Research Assistant in Genetics
COOPER, GEORGE OLDS, *Ph.D.*, Instructor in Botany
COPE, ARTHUR CLAY, *B.S.*, Assistant in Chemistry
CORFMAT, ANNE MARIE, Assistant in French
CORP, MRS. GEORGIA METZGER, Assistant in Debating and Public Discussion, Extension Division
COTTINGHAM, WILLARD SHERWIN, *B.S.*, Instructor in Structural Engineering
COTTON, JULIANA MARIA SOFIA, *M.A.*, Assistant in Italian and in History
COUEY, FAYE MORRISON, *B.A.*, Assistant in Zoology
COVERT, LLOYD WESLEY, *B.S.*, Assistant in Chemistry
COVERT, MARJORIE ANNA, *M.A.*, Instructor in French
COX, RICHARD FRANCIS BUCHANAN, *B.S.*, Research Assistant in Chemistry
COX, ROY FLETCHER, Sergeant, U. S. A., Assistant in Military Science
CRAMER, ALBERT JULIUS, *B.S.*, Supervisor of Cow-Testing Associations
CROFT, ALBERT ERNEST, *M.A.*, Instructor in Economics, Extension Division
CROSS, PAUL CLIFFORD, *M.S.*, Assistant in Chemistry
CROSS, SAMUEL XENOPHON, *B.A.*, Research Assistant in Zoology
CROSSWAIT, MRS. MILDRED KATHRYN, *B.A.*, Assistant Bacteriologist, State Laboratory of Hygiene
CROZIER, RONALD GILPIN, *M.S.*, Assistant in Chemistry
CUFF, OVENS PATTERSON, *B.S.*, County Agricultural Representative, Winnebago County
CUISINIER, FRANCIS XAVIER, *B.A.*, Instructor in Physical Education
CURRAN, DOUGLAS JOSEPH, County Club Agent, Dodge County (beg. March 15)
CURTISS, RUTH LORINE, *B.A.*, Research Assistant in Economics

DAMON, GLENN HERBERT, *M.S.*, Assistant in Chemistry
DAUPLAISE, GEORGE EDWARD, *B.E.*, Assistant in Chemistry, Milwaukee Extension Center

DAVIDSON, FLORA NEIL, *B.L.*, Library Assistant
DAVIDSON, MARGARET ELOISE, *B.S.*, Assistant in Agricultural Bacteriology
DAVIES, WINSLOW, *B.A.*, Assistant in French
DAVIS, MRS. ANNA CAMPBELL, *Ph.D.*, Research Associate in Economics
DAVIS, ERWIN FREDERICK, *B.S.*, County Agricultural Representative, Iowa County
DAVIS, HELEN PRATT, *B.A., M.S., M.D.*, Assistant in Clinical Medicine; Assistant Physician, Department of Student Health
DAVIS, SUSAN BURDICK, *M.A., Litt.D.*, Assistant to the Dean of Women
DAVY, LEITA, *M.S.*, Research Assistant in Clinical Medicine
DEDRICK, CALVERT LEMPERT, *B.A.*, Research Assistant in Sociology
DE MORA, MANUELA, *M.A.*, Instructor in Spanish
DEOBALD, HAROLD JOHN, *B.S.*, Assistant in Animal Husbandry
DE VOE, CHARLES FREEMAN, *Ph.B.*, Research Assistant in Physics
DEXTER, STEPHEN TORREY, *M.S.*, Assistant in Agronomy—I
DIETZ, EUGENE FRANK, *B.S.*, County Agricultural Representative, Iron County
DILLON, JOHN HENRY, *M.A.*, Research Assistant in Physics
DIMOND, WALDO BANCROFT, *B.S., M.D.*, Clinical Assistant in Surgery
DISSINGER, IRA THORNE-CLEMENT, *M.A.*, Instructor in English
DIVAN, EDWARD LEWIS, County Club Leader, Green County
DOERING, EFFIE ALENE, *M.A.*, Assistant in Geography—I
DOKE, HOWARD BAILEY, Instructor in Drawing and Descriptive Geometry
DOWNES, ALFRED WINSHIP, *M.A.*. Assistant in Chemistry
DRAKE, WRAY VERNON, *M.S.*, Research Assistant in Botany—II
DRAPER, LUCILE, *B.A.*, Assistant in Spanish
DREWRY, CHARLES BEMROSE, *B.S.*, County Agricultural Representative, Marinette County
DRISCHEL, FRANK GORDON, *M.D.*, Resident in Radiology and Physical Therapy, Wisconsin General Hospital
DRIVER, HELEN IRENE, *B.A.*, Instructor in Physical Education
DROSDOFF, MATTHEW, *B.S.*, Research Assistant in Soils
DROUGHT, ALICE, *B.S., M.A.*, Research Assistant in Psychology
DUEHR, PETER ALEXANDER, *M.A., M.D.*, Assistant in Clinical Medicine; Assistant Physician, Department of Student Health
DUFF, JAMES, *M.A.*, Instructor in English
DUFFIELD, EUGENE SCHULTE, *B.A.*, Assistant in History, Experimental College
DUFFY, WALTER ALOYSIUS, *B.S.*, County Agricultural Representative, Douglas County
DUNCAN, ALLEN GRANT, *M.A., M.P.*, Curator, Medical Extension Library
DUNCAN, MARY MAGDALEN, *M.A.*, Assistant in English
DUNCAN, ROBERT BURNS, Chief, Bureau of Lectures and Short Courses, Extension Division
DYNES, JOHN JOSEPH, *M.A.*, Assistant in Education

EARLS, LESTER THOMAS, *B.A., M.S.*, Instructor in Physics and in Mathematics, Milwaukee Extension Center
EGNER, MRS. DOROTHY, *B.A.*, Library Assistant
EHMANN, MARIE, County Club Agent, Ozaukee County (beginning April 1)
EHRLICH, GODFREY MAX, *M.A.*, Assistant in German
EIEL, MERRILL ORION, *B.S., M.D.*, Instructor in Clinical Medicine and Assistant Physician, Department of Student Health—I; Resident in Surgery—II
EISING, LUCILE MINELLA, *B.A.*, Assistant in Anatomy—II
ELLSWORTH, MRS. DELLA, Assistant Librarian, Law School
ELY, STEPHEN LEE, *M.A.*, Assistant in Philosophy—II

ENGELBRECHT, MILDRED AMANDA, *B.A., M.S.*, Instructor in Agricultural Bacteriology
ENGELKE, WALTER WILLIAM, M.A., Assistant to the Junior Dean, College of Letters and Science
EPPSON, HAROLD FIELDING, *B.S.*, Research Assistant in Pharmacy—II
ERDMANN, HERBERT HENSLEY, *B.S.*, Assistant in Agricultural Economics—I
ERICKSON, ROBERT, *M.S.*, Assistant in Mathematics
ETHERIDGE, JESSE IRVING, *M.S.*, County Agricultural Representative, Oconto County
EVANS, RICHARD IRVING, *M.S.*, Instructor in Botany
EVERSON, FRANK HENRY, County Club Agent, Jefferson County (beginning April 1)
EVINGER, HUBERT HAROLD, *B.S.*, Assistant in Electrical Engineering—II
EWING, JOHN BERTWELL, *M.A.*, Assistant in Economics

FALLON, WILLIAM JAMES, Assistant in Physical Education (Trainer)
FARRELL, MARY KATHERINE, *B.A., B.M.*, Instructor and Field Representative, Extension Division
FEDDERSEN, ESTHER CAROLYN, *B.A.*, Instructor in German
FEHLANDT, PHILIP RAYMER, *M.A.*, Assistant in Chemistry
FEVOLD, HARRY LEONARD, *Ph.D.*, Chemist in Zoology
FIEDLER, FLORENCE NORA, *R.N.*, Instructor in Nursing
FIELD, HOWARD MYERS, *B.A.*, Assistant in Zoology
FISH, JEAN MARY, *B.A.*, Assistant in Psychology—II
FISHER, NORMAN GAIL, *B.S.*, Assistant in Chemistry
FITZ, KATHLEEN, *M.A.*, Assistant in Education
FLETT, MRS. CLARA BAKER, *M.A.*, Assistant to the Dean of Women
FOCKE, WILLIAM JOHN, *B.S., M.D.*, Assistant in Surgery
FOLLETT, ALBERT OSCAR, *B.S.*, County Agricultural Representative, Polk County
FOLTS, DAVID K., *B.A.*, Assistant in Chemistry
FOOTE, MARIAN ESTHER, *M.S.*, Assistant Chemist, State Laboratory of Hygiene
FORD, KEITH KARL, *B.S.*, Assistant in Medical Bacteriology
FOSS, ROBERT HENRY, *B.A.*, Assistant in Journalism
FRANCKE, ELOISE, *M.A.*, Instructor in German
FRANK, AMELIA, *B.A.*, Assistant in Physics
FREEMAN, MAXWELL MOSS, *M.A.*, Instructor in English
FRENCH, HELENE, *B.S.*, Home Demonstration Agent, Milwaukee County
FURSE, GEORGE DOUGLAS, *B.S., M.A.*, Research Assistant in Geology

GADDY, JUDGE WILLIAM, JR., *B.A.*, Assistant in Chemistry
GALLISTEL, ALBERT FRANZ, Superintendent of Buildings and Grounds
GAMBLE, LUCY BELLE, *M.A.*, Assistant in English
GANONG, CAREY KIERSTEAD, *M.A.*, Instructor in Economics
GAPEN, KENNETH MANNING, *B.S.*, Assistant in Agricultural Journalism
GAREY, DORIS BATES, *B.A.*, Assistant in English
GARRISON, JESSE JANES, *M.A.*, Instructor in Art History and Criticism (on leave 1930-31)
GEBHARDT, HANS THEODORE, *Ph.D.*, Research Assistant in Dairy Husbandry (until April 1)
GERHARDT, WAIDA GERTRUDE, *B.S.*, Instructor in Agricultural Journalism
GERIG, DANIEL SABIN, JR., *M.A.*, Assistant in Economics
GIANGROSSO, MARY ROSE, *M.A.*, Assistant in Spanish
GIBSON, DELBERT L., *M.A.*, Assistant in French
GIBSON, EARLE ARTHUR, *M.S.*, Assistant in Plant Pathology—I
GIBSON, ELLEN BERNICE, *B.A.*, Assistant and Reviser, Library School

GIESSEL, MRS. HELEN BROWN, *B.S.*, Instructor in Dietetics, School of Nursing
GILES, HERMANN HARRY, *B.A.*, Instructor in English; Adviser in the Experimental College
GILMAN, CARL CALLOW, *B.S.*, County Agricultural Representative, Pepin County
GLASOE, G. NORRIS, *Ph.D.*, Instructor in Physics
GLASS, CHARLES ROBERT, *M.S.*, Assistant in Chemistry
GLASSCO, ROY THOMAS, *B.S.*, County Agricultural Representative, Rock County
GLOVER, WILBUR HILLMAN, *M.A.*, Assistant in History
GOBLE, ALFRED THEODORE, *B.A.*, Assistant in Physics
GOJDICS, MARY, *B.S.*, Assistant in Zoology
GOODING, RALPH URBAN, *B.S.*, Assistant in Chemistry
GORCICA, HENRY JAN, *B.S.*, Research Assistant in Agricultural Bacteriology and in Agricultural Chemistry
GORDON, RUTH, Research Assistant in Economics
GORROW, EDWARD MILTON, Instructor and Field Representative, Extension Division
GRAHAM, KATHERINE, *M.S.*, Assistant in Pharmaceutical and Plant Chemistry
GRANT, THEODORE JAMES, *B.S.*, Research Assistant in Horticulture
GRAY, LOUISE FLORENCE, *B.A.*, *M.S.*, Instructor in Physical Education
GRAY, NINA ESTELLA, *M.A.*, Assistant in Zoology
GREEN, ALPHEUS, *B.A.*, Assistant in French
GREENE, ERNEST WILFRED, *B.S.*, Assistant in Chemistry
GREENE, HENRY CAMPBELL, *M.S.*, Research Assistant in Agricultural Bacteriology
GREENE, HENRY LEWIS, *B.A.*, *M.D.*, Resident in Orthopedic Surgery, Wisconsin General Hospital
GREENLEAF, CHARLES HUNT, *M.A.*, Instructor in French (on leave 1930-31)
GREEP, ROY ORVAL, *B.S.*, Assistant in Zoology
GREER, BARRET ANGEL, *M.A.*, Assistant in History
GRIFFITH, FULLER ORVILLE, JR., *B.S.*, Instructor in Drawing and Descriptive Geometry
GRONEWALD, ROBERT GOURLEY, *M.A.*, Assistant in Sociology
GRUMMANN, KATHARYN ANN, *B.A.*, Assistant in History
GUNN, EVELYN MARY, *M.A.*, Assistant in Education, Supervisory Service Bureau
GWIN, CLARENCE MARTIN, *M.S.*, Assistant in Economic Entomology

HAAS, ALFRED JOHN, Executive Secretary, College of Agriculture
HALE, CHAUNCEY CLAYTON, *B.A.*, *M.S.*, Instructor in Chemistry, Milwaukee Extension Center
HALES, GUY SMITHERS, *B.S.*, County Agricultural Representative, Ozaukee County
HALL, MARGARET WINSLOW, *M.A.*, Assistant in History
HALL, ODELL LEROY, *B.S.*, Assistant in Physical Education (beginning December 1)
HALL, WALTER HAYNES, *B.S.*, Instructor in Machine Design
HALLINE, ALLAN GATES, *M.A.*, Instructor in English
HALVERSON, DONALD LITTLEJOHN, *M.A.*, Director of Dormitories and Commons; Steward of the Wisconsin Union
HAMAN, ROBERT WALKER, *B.S.*, Research Assistant in Agricultural Chemistry
HANEY, HANCE FRANCIS, *M.A.*, Instructor in Physiology
HANSEN, EINAR THEODORE, *M.S.*, Instructor in Steam and Gas Engineering
HANSEN, JOHN ELMORE, *Ph.B.*, Chief, Bureau of Visual Instruction, Extension Division
HANSEN, LESTER ARNOLD, *M.S.*, Assistant in Chemistry
HANSON, LORING OUTHIER, *B.S.*, Instructor in Mechanics
HARING, ROBERT CLINTON, *B.S.*, Research Assistant in Chemistry
HARRIMAN, CELIA JANE, *B.A.*, Instructor, Municipal Information Bureau, Extension Division

HARRINGTON, MARY, *B.A.*, Instructor in Physical Education
HARRIS, MRS. ANNA MAGDALENE, *B.A.*, Research Assistant in Education
HARRIS, LYMNA HENSON, JR., *M.A.*, Assistant in History
HARRIS, MARION REINOEHL, *M.S.*, Assistant in Plant Pathology
HARRIS, ROY THEODORE, Supervisor in Charge of Dairy Tests
HARTENBURG, RICHARD SCHEUNEMANN, *B.S.*, Instructor in Mechanics
HARTRIDGE, THEODORE LIVINGSTON, Assistant in Anatomy
HARTUNG, MAURICE LESLIE, *M.A.*, Teacher of Mathematics, Wisconsin High School
HARTZELL, WARD, *M.A.*, Assistant in Economics
HASKELL, HARRIET, *M.A.*, Assistant in English
HAUSER, EDWIN BENJAMIN, County Club Leader, Milwaukee County
HAVENS, GLENN GEORGE, *M.S.*, Assistant in Physics
HAWKINS, FRANCES MILNER, *B.S.*, Assistant Physiotherapist, Wisconsin General Hospital
HAWORTH, LELAND JOHN, *M.A.*, Instructor in Physics
HAYAKAWA, SAMUEL ICHIYÉ, *M.A.*, Assistant in English
HAYDEN, MARGERY, *B.A.*, Assistant in Psychology
HAZEL, JAMES FRED, *B.A.*, Assistant in Chemistry
HEAL, GAROLD WILLIAM, *M.S.*, County Agricultural Representative, Vilas County
HEALEY, LENORE LOUISE, *B.S.*, Assistant in Nursing
HEATH, MERLE ALFRED, *B.A.*, Assistant in Chemistry
HEFLER, ALDEN RICHARDSON, *M.A.*, Instructor in French
HEIRONIMUS, JOHN PAUL, *M.A.*, Instructor in Latin
HELGESON, EARL ADRIAN, *Ph.D.*, Instructor in Botany
HELLBAUM, ARTHUR ALFRED, *B.A.*, Assistant in Zoology
HENDERSON, JAMES LEWIS, *B.S.*, Assistant in Agricultural Administration
HENDRICKSON, ADOLPH ALEXANDER, *M.S.*, Research Assistant in Plant Pathology—I
HENIKA, FRANKLIN SINCLAIR, *Ph.D.*, Assistant in Horticulture
HENNING, WILLIAM LEWIS, *M.S.*, Assistant in Animal Husbandry
HENRY, LAWRENCE JACOB, County Agricultural Reperesentative, Kewaunee County
HERGENHAN, MILDRED, *B.A.*, Assistant in English
HERRIN, RAYMOND CLYDE, *Ph.D.*, Instructor in Physiology
HERWICK, ROBERT PORT, *Ph.D.*, State Toxicologist; Instructor in Toxicology
HESTON, BERNARD OBERDON, *M.S.*, Assistant in Chemistry
HICKS, EARL VINCENT, *B.S.*, Assistant in Physiology
HILL, HENRY BERTRAM *B.A.* Assistant in History
HILL, NELS ALFRED, *M.S.*, *M.D.*, Assistant Resident in Medicine, Wisconsin General Hospital
HILLIS, LEONARD FOLSOM, *B.S.*, Instructor in Civil and Structural Engineering, Extension Division
HINDERMAN, ROY AARON, *M.S.*, Instructor in Industrial Education; Teacher of Manual Arts, Wisconsin High School
HINZ, STELLA M., *Ph.D.*, Instructor in German
HITCHCOCK, GEORGE DAVID, Instructor in Mechanical Practice and in Physical Education
HOARD, MARJORIE JEAN, *B.A.*, Teacher of English, Wisconsin High School
HOCKING, CHARLES HENRY, *B.S.*, Assistant in Dairy Husbandry
HOELZ, ROBERT CHRISTOPHER, Research Assistant in Anatomy
HOFER, ALVIN WILLIAM, *M.S.*, Assistant in Agricultural Bacteriology
HOFFMAN, ROBERT MICHAEL, *B.S.*, Assistant in Chemistry
HOGGAN, ISMÉ ALDYTH, *Ph.D.*, Assistant in Horticulture
HOLFORD, FRANCES ELIZABETH, *Ph.D.*, Instructor in Medical Bacteriology

HOLLAENDER, ALEXANDER, *M.A.*, Research Assistant in Chemistry
HOLLANDER, NICHOLAS FRANCIS, Instructor in Mechanical Practice
HOLMES, ALICE ISABEL, *B.A.*, Assistant in English
HOLMES, CLAYTON ERNEST, *B.S.*, Instructor in Poultry Husbandry
HOLMES, MRS. ELISABETH KATZ, *B.A.*, Instructor in English, Milwaukee Extension Center
HOLMES, HARRISON HOWARD, *B.S.*, Research Assistant in Chemistry
HOLT, MATTHEW LESLIE, *Ph.D.*, Instructor in Chemistry
HOLVENSTOT, ROY JAY, County Agricultural Representative, Bayfield County
HOUTZ, RAY CLYDE, *B.S.*, Assistant in Chemistry
HOVDE, HAROLD ARTHUR, *B.S.*, County Agricultural Representative, Columbia County
HOWARD, T. LEVRON, *M.A.*, State Associate and Assistant in Economics
HOWK, BEN WILSON, *B.S.*, Assistant in Chemistry
HUBER, MILTON GEORGE, *B.S.*, Assistant in Agricultural Engineering
HULL, CORNELIA LOOMIS, *B.A.*, Assistant in Occupational Therapy, Wisconsin General Hospital
HULL, HAROLD HAIGHT, *M.S.*, Instructor in Soils
HULTEN, CHARLES MORRIS, *B.A.*, Assistant, Press Bureau—I; Assistant to the Junior Dean—II
HUNTZICKER, HARRY NOBLE, *B.A., M.S.*, Assistant in Chemistry
HURD, LOREN CURTIS, *Ph.D.*, Instructor in Chemistry
HURLEY, ROBERT VERNON, *B.A.*, County Agricultural Representative, LaFayette County
HUSSEMANN, DOROTHY LILLIAN, *M.S.*, Instructor in Home Economics
HUSTON, JOHN, *M.A., M.D.*, Supervisor of Extra-Mural Teaching in Medicine
HUTTER, HARRY KENNEDY, *M.A.*, Assistant in Geography
HYSLOP, VOLNEY BUTMAN, *M.S., M.D.*, Instructor in Oral and Plastic Surgery

JAAP, ROBERT GEORGE, *B.A., M.S.*, Assistant in Genetics
JACKSON, JAMES ERNEST *B.S., M.A.*, Assistant in Political Science
JACOBSON, ALVIN MYRON, *B.S.*, County Agricultural Representative, Price County
JACOBSON, JACOB MARK, *Ph.D.*, Instructor in Political Science
JACOBSON, JOHN HOWARD, *M.A.*, Instructor in English, Milwaukee Extension Center
JAECK, ELSA LAURA, *B.A.*, Librarian, Milwaukee Extension Center
JAMES, NEVIN SHULAR, *M.A.*, Assistant in English—II
JENKINS, WARREN GARD, *B.A.*, Assistant in History
JENSON, CLARA AGNES, *M.A.*, Assistant in German
JOHNSON, BURT PARKER, *B.A.*, Research Assistant in Botany
JOHNSON, CARL EMANUEL, *M.A.*, Assistant in Education
JOHNSON, CHARLES MELBOURNE, *B.S.*, Instructor in Pharmacy
JOHNSON, GEORGE CARL, *M.A.*, Instructor in English
JOHNSON, GEORGE OLAF, *B.A.*, Assistant in Chemistry
JOHNSON, LORIS MELIKOFF, *M.A.*, Assistant in English
JOHNSON, MARVIN JOYCE, *B.A., M.S.*, Research Assistant in Agricultural Chemistry
JOHNSON, ROYCE EVERETT, *B.S.*, Instructor in Electrical Engineering
JOHNSON, RUTH MARGARET, *Ph.M.*, Teacher of History, Wisconsin High School
JOHNSON, SAMUEL AUGUSTUS, *M.A.*, Assistant in History
JONES, DONALD ADAMS, *B.A.*, Assistant to the Junior Dean
JONES, KATHERINE, *B.S., M.A.*, Instructor in Home Economics; Teacher of Domestic Science and Art, Wisconsin High School
JONES, MYRTLE EDITH, *B.A.*, Assistant in Agricultural Economics
JONES, PAUL GEORGE, *B.M.*, Instructor in Music

JORDAHL, OLAF MELVIN, *B.A., M.S.*, Assistant in Physics
JORGENSEN, EMIL AUSTIN, *B.S.*, County Agricultural Representative, Waushara County
JORGENSON, CHESTER EUGENE, *B.A.*, Assistant in English
JUAIRE, MARION ABBIE, *M.S.*, Instructor in Home Economics
JUSTICE, MRS. MARY FIELDING, *B.A.*, Assistant in History

KANTNER, CLAUDE EDGAR, *M.A.*, Assistant in Speech
KARJALA, SULO ARTHUR, *B.S.*, Research Assistant in Chemistry
KASTEN, LLOYD AUGUST WILLIAM, *M.A.*, Instructor in Spanish
KAVANAUGH, JAMES NICHOLAS, County Agricultural Representative, Brown County
KECK, ESTHER RUTHERFORD, *M.A.*, Assistant in English
KEELEY, JOHN LEMUEL, *B.S., M.D.*, Assistant in Clinical Medicine and Assistant Physician, Department of Student Health—II
KEENAN, JOHN ARTHUR, *B.A.*, Assistant in Agricultural Chemistry
KEENAN, JOHN BAXTER, County Agricultural Representative, Grant County
KEITH, GEORGE MASON, *B.A.*, Assistant in Economics
KELLOCK, GRACE JEAN, *B.S., R.N.*, Instructor in Nursing
KELLOGG, EWART RUTH, *B.A.*, Assistant in History
KELLY, EUNICE EMILY, *B.S.*, Assistant in Home Economics
KEMMERER, ARTHUR RUSSELL, *M.S.*, Research Assistant in Agricultural Chemistry
KIDDLE, LAWRENCE BAYARD, *M.A.*, Assistant in Spanish
KIMBALL, NORMA, *B.S.*, Research Assistant in Agricultural Bacteriology
KINDT, ARTHUR JACKSON, *B.S.*, Assistant in Agricultural Economics—II
KING, ALICE VAN PATTON, *B.A.*, Superintendent of Student Employment Office
KING, GEORGE BROOKS, *B.S.*, Assistant in Chemistry
KING, ROLF EGMONT, PERCIVAL, *M.A.*, Instructor in German
KINGERY, WILLIAM RAY, *M.A.*, Instructor in Spanish
KINSEY, MAURICE EVERETT, *B.S.*, Assistant in Chemistry
KITTEL, PAULA MARGARATHA, *M.A.*, Instructor in German
KITTINGER, MARY ALICE, *M.A.*, Assistant in Sociology
KLEIN, MICHAEL, WILLIAM, *Ph.D.*, Instructor in Chemistry
KLINE, ORAL LEE, *B.S.*, Assistant in Agricultural Chemistry
KNAPP, EDWIN JOHN, *Ph.B.*, Instructor in Mathematics—I; Assistant in Mathematics—II
KNOTT, JOSEPH PROCTOR, *M.A.*, Instructor in French
KOCH, FERDINAND LEONARD PHILIP, *M.A.*, Assistant in Pathology
KOCH, KARL LEE, *M.S.*, Research Assistant in Economic Entomology
KOCH, LUCIEN, Assistant in Economics, Experimental College
KOEHLER, FRIEDRICH WALTER, *B.A.*, Assistant in Field Organization, Extension Division
KOHL, MARTHA, *B.A., M.D.*, Resident in Anesthesia, Wisconsin General Hospital (beginning April 1)
KOHLBAUGH, PAUL BENJAMIN, Sergeant, U. S. A., Assistant in Military Science
KOPP, GEORGE ADAMS, *M.S.*, Research Assistant in Speech—I; Instructor in Speech—II
KOTZ, SAMUEL ELWIN, *B.S.*, Instructor in Hydraulic Engineering
KRAFFT, GERTRUDE, *M.A.*, Instructor in German
KRAMER, EDWARD NOBLE, *M.S.*, Instructor in Chemistry, Milwaukee Extension Center
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KRASSELT, OTTO LOUIS, *B.A.*, Instructor and Field Representative, Extension Division
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KROC, ROBERT LOUIS, *B.A.*, Assistant in Zoology
KROMBHOLZ, ALOIS JOHN, *M.S.*, Instructor in Chemical Engineering
KROTZER, FRED WILLIAMS, *B.S.*, Assistant in Electrical Engineering—II
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KUBASTA, ROBERT WILLIAM, *B.S.*, Instructor in Steam and Gas Engineering
KUBIAK, HENRY JOSEPH, *B.S.*, Instructor in Electrical Engineering
KUBLY, HAROLD EDWARD, *B.A.*, Assistant in Philosophy
KUELLING, MARIAN ESTHER, Research Assistant in French
KUENNING, LEROY GEORGE, County Agricultural Representative, Monroe County
KUENZI, ERNEST GOTTFRIED, B.S., Pharmacist, Wisconsin General Hospital
KUICK, LEO FRANK, *B.S.*, Assistant in Chemistry
KUNDERT, FRED WILLIAM, *M.D.*, Clinical Assistant in Surgery
KUNEY, MRS. BERNICE DONNELLY, *M.A.*, Instructor in English, Extension Division
KUNZE, HARRY LEWIS, *M.A.*, Instructor in Accounting, Milwaukee Extension Center
KURTZ, CHESTER MOTT, *M.S.*, *M.D.*, Instructor in Medicine

LACEY, JAMES JEROME, Instructor in Animal Husbandry
LAMB, MRS. FRANCIS, *M.A.*, Assistant in Home Economics—II
LAMPERT, GLADYS, Library Assistant
LANDER, CAROLINE ABIGAIL, *B.A.*, *M.S.*, Assistant in Botany
LANDRY, WALLACE JOSEPH, *M.S.*, County Agricultural Representative, Clark County
LANE, JAMES RUSSELL, *B.S.*, Instructor in Speech, Manager Bascom Theater
LANGDON, GRACE, *M.A.*, Instructor in Agricultural Journalism
LANGORD, LEONARD ROGER, *B.S.*, Assistant in Horticulture
LANGWILL, MRS. IRENE ETTA, *B.A.*, Recorder, Milwaukee Extension Center
LARSEN, HARALD CHRISTIAN, *M.S.*, Assistant in Agricultural Economics
LARSEN, HAROLD DANIEL, *M.A.*, Instructor in Mathematics
LARSON, LUDVIG CONRAD, *B.S.*, Instructor in Electrical Engineering
LARSON, RUSSELL HAROLD, *Ph.B.*, *M.S.*, Research Assistant in Botany
LATHROPE, HOWARD ROSWELL, *B.S.*, County Agricultural Representative, Wood County
LEFFLER, GEORGE LELAND, *M.A.*, Instructor in Economics, Milwaukee Extension Center
LENZ, ARNO THOMAS, *M.S.*, Instructor in Hydraulic and Sanitary Engineering
LEONARD, SAMUEL LEESON, *M.S.*, Research Assistant in Zoology
LÉVÉQUE, ANDRÉ CAMILLE, *Licence en Droit*, Instructor in French
LEWIS, JOHN DONALD, *M.A.*, Instructor in Political Science
LEWIS, MARTHA ELLEN, *B.A.*, Instructor in Physical Therapy—II
LI, BING HUA, *M.A.*, Assistant in Economics—II
LIESCH, WILLIAM HENRY H., Instructor and Field Representative, Extension Division
LINDERMAN, MRS. LENORE LUENZEMAN, *B.S.*, Assistant in Physical Education—II
LINS, ANGELINE GENEVIEVE, *B.A.*, Assistant in Economics
LITTLE, THERESA, *M.A.*, Teacher of History, Wisconsin High School—I
LIVINGSTON, LUZERN GOULD, *B.A.*, Assistant in Botany
LONGENECKER, GEORGE WILLIAM, *B.A.*, *M.S.*, Instructor in Horticulture
LOOMIS, ROBERT MORTON, *B.A.*, Assistant in Political Science
LORD, GEORGE WILLIAM, *B.S.*, County Agricultural Representative, Florence County
LOWE, JAMES TEMPLETON, *B.A.*, Assistant in Agricultural Chemistry
LOWNEY, ROBERT EDWARD, *M.A.*, Instructor in Mathematics
LUND, CURTIS JOSEPH, *M.S.*, Research Assistant in Zoology
LUND, RICHARD JACOB, *Ph.D.*, Instructor in Geology
LYCAN, GLEN WINFRED, *B.S.*, County Agricultural Representative, St. Croix County

LYMAN, STUART ALLEN, *M.A.*, Assistant in Music
LYON, VERGIL EUGENE, *B.E.*, *Ph.M.*, Research Assistant in Education
LYONS, JOHN JACOB, *M.A.*, Instructor in English

MCALEAVY, CHARLES JOSEPH, *B.S.*, County Club Leader, Marathon County
MCCANSE, RALPH ALAN, *M.A.*, Instructor in English
MCCARTER, JANET RUTH, *B.S.*, Assistant in Agricultural Bacteriology
MCCARTNEY, GARNET CHESTER, *B.A.*, *M.S.*, Assistant in Geology
MCCARTY, HAROLD BERKLEY, *B.S.*, *M.A.*, Instructor in Speech—I
MCCAY, FRANCES GRACE, Assistant in Agricultural Journalism
MCCLEARY, JOHN WILLIAM, *M.A.*, Assistant in History
MCCORDIC, MRS. MARGARET PIPER, *B.S.*, Instructor in Home Economics
MCCUBBIN, ROBERT JOHN, *Ph.D.*, Instructor in Chemistry
MCCUTCHEON, LEONA ESSIE FREDERICA, *M.A.*, Instructor in Debating and Public Discussion, Extension Division
MACDONALD, GORDON, *B.A.*, Assistant in Sociology
MCFARLAND, GLADYS MAE, *B.A.*, Library Assistant
MCGRATH, HARRY, *Ch.B.*, *M.B.*, Assistant Resident in Surgery, Wisconsin General Hospital—I
MCGRATH HENRY JOSEPH, Sergeant, U. S. A., Assistant in Military Science
MCKINNEY, LILLIAN ELISABETH, *B.A.*, Assistant Librarian, Medical School
MCKITRICK, KATHLEEN ANN, *B.M.*, Instructor in Music
MCLAUGHLIN, WILLARD THOMAS, *M.A.*, Assistant in Botany
MCMULLEN, KATHERINE WAY, *M.A.*, Instructor in English
MCMURRAY, ROBERT LAUGHLIN, *B.S.*, Assistant in Pharmacognosy
MCNAIR, JAMES STUART, *M.S.*, Instructor in Mathematics
MCNAMARA, WILLIAM ALBINUS, *B.A.*, Assistant in Economics
MCNEIR, WALDO FOREST, *B.A.*, Assistant in English
MCQUEEN, DAVID MALCOLM, *B.A.*, Assistant in Chemistry
MCQUILLAN, LETITIA HELEN, *B.A.*, Teacher-Librarian, Wisconsin High School
MADDOX, JAMES GRAY, *M.S.*, Research Assistant in Economics
MADSON, WILLARD HEGLAND, *B.A.*, *M.S.*, Assistant in Chemistry
MAGIE, ROBERT OGDEN, *M.S.*, Assistant in Plant Pathology
MAHONY, KENNETH LEES, *Ph.B.*, Assistant in Botany
MALEC, ETHEL, *B.A.*, Library Assistant
MANCHESTER, EDWARD WILBUR, *B.A.*, Assistant in English
MAPLE, KATHERINE NORRIS, *M.S.*, Instructor in Physical Education
MARCHAND, ERNEST LEROY, *M.A.*, Instructor in English
MARESH, FRANK, *M.A.*, Assistant in Physiology
MARHOFER, ESTHER FRANCES, *M.A.*, Instructor in French and Italian
MARICK, LOUIS, *E.M.*, *M.S.*, Assistant in Physics
MARQUIS, RALPH WILLIAM, *M.A.*, Assistant in Economics
MARTIN, GEORGIA MORRISON, Assistant Registrar
MARTIN, STEVENS JOHN, *Ph.D.*, Assistant in Physiology
MARVIN, GEORGE EUGENE, *M.S.*, Instructor in Economic Entomology—I
MASLOW, ABRAHAM HAROLD, *B.A.*, Assistant in Psychology
MASSEY, GEORGE FREDERICK, *B.S.*, County Agricultural Representative, Marquette County
MATHEWSON, ELIZABETH TAYLOR, *B.A.*, Assistant in Clinical Medicine
MATHISEN, SIDNEY STUART, *B.S.*, County Agricultural Representative, Sheboygan County
MATTESON. LYNN, *B.S.*, County Agricultural Representative, Sawyer County
MATTHIAS, FRANKLIN THOMPSON, Assistant in Topographic Engineering
MATTHUSEN, CARL HENRY, *B.S.*, Assistant in Physical Education (Basketball)

MATTSON, AGNES VIOLA, *R.N.*, Instructor in Nursing—I
MAY, ALBERT EMIL, *B.S., M.A.*, Assistant in Mathematics
MAYER, PERRY ELLSWORTH, *B.S.*, Assistant in Chemistry
MAYOR, JOHN ROBERTS, *B.S., M.A.*, Instructor in Mathematics
MEIKELJOHN, DONALD, *B.A.*, Assistant in Philosophy, Experimental College
MELCHER, WILLIAM, *M.A.*, Assistant in Economics
MERCIER, GERMAINE EUGENIE, *B.S., M.A.*, Instructor in French
MERRIAM, LESLIE JOSEPH, *B.S.*, County Agricultural Representative, Dane County
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MEYER, MARGARET HINKEL, *M.S.*, Instructor in Physical Education
MEYER, ROLLAND KENNETH, *M.A.*, Research Assistant in Zoology
MEYER, SELINA, *M.A.*, Instructor in German
MEYERS, MRS. IONE BIRD, Assistant in Debating and Public Discussion, Extension Division
MILLER, BERTHA JOSEPHINE, Assistant in Plant Pathology
MILLER, JOHN LESTER, *B.A., Ph.M.*, Instructor in Economics, Extension Division
MILLIGAN, EDWARD ELGIN, *B.A.*, Instructor in French
MINER, OLIVER H., *LL.B.*, Assistant in Law—I; Instructor in Law—II
MINER, RUTH PAULINE, *B.A., B.L.S.*, Library Assistant
MINNE, NELS, *M.S.*, Assistant in Chemistry
MITCHELL, DONALD RICHARDS, *M.S.*, Assistant in Agricultural Economics
MOERSCHEL, HENRY ERVIN, *B.A.*, Teacher of History, Wisconsin High School
MOODY, RICHARD ERIC, *B.S.*, Assistant in Economics—II
MOORE, ALICE LOUISE, *B.A.*, Assistant in English
MOORE, MARILYN, *B.S.*, Assistant in Dietetics, Wisconsin General Hospital
MORELL, SAM, *B.A.*, Research Assistant in Horticulture
MORGAN, EDWARD JAMES DAVID, *Ph. M.*, Assistant in History
MORRIS, LLOYD WALLACE, *M.A.*, Assistant in Physics
MORRIS, NORMAN ARTHUR, *B.S.*, Instructor in Horticulture
MORRISON, JOHN TAYLOR, *M.S., M.D.*, Chief Resident, Wisconsin General Hospital
MORRISON, JOSEPH PAUL ELDRED, *M.S.*, Instructor in Zoology
MORTENSEN, MRS. LUELLA SHERMAN, *B.S.*, Instructor in Home Economics
MORTENSON, OTTO AXEL, *M.S., M.D.*, Instructor in Anatomy
MUELDER, HERMANN RICHARD, *B.S., M.A.*, Assistant in History
MUELLER, BERTHA, *M.A.*, Assistant in German
MULLEN, IVA MANILLA, *M.S.*, Assistant in Home Economics
MURAT, SIDNEY PARKMAN, *B.S.*, County Agricultural Representative, Fond du Lac County
MURRAY, HUGO ANDREW, *B.S.*, County Agricultural Representative, Washburn County—I
MYERHOFF, MARIAN MARGARET, *M.A.*, Assistant in History
MYGDAL, ELNA, *B.S.*, Instructor in Physical Education

NEAL, NORMAN PERCY, *M.S.*, Assistant in Genetics
NEALE-SILVA, EDUARDO, *M.A.*, Instructor in Spanish
NEGLEY, WILLIAM HENRY, *B.S.*, University Editor
NELSON, GEORGE BALSER, *Ph.B.*, Instructor in Physical Education
NESBIT, MARK EDWIN, *M.D.*, Clinical Assistant in Surgery—II
NETTELS, MRS. ELSIE PATTERSON, *M.A.*, Assistant in History, Extension Division
NEUSE, WERNER, *Ph.D.*, Instructor in German
NEWELL, JANE ISABEL, *Ph.D.*, Assistant in Sociology and Research Assistant in History—I
NOBLE, HARRISON ROBERT, *B.S.*, County Agricultural Representative, Portage County

NOCK, FRANCIS JAY, *M.A.*, Instructor in German
NOON, MRS. ESTELLE CHAPIRIS, *B.A.*, Assistant in English
NORTH, GERALD CHARLES, *M.S.*, Research Assistant in Dairy Husbandry
NORTH, MACK OMER, *B.S.*, Assistant in Poultry Husbandry
NUSBAUM, CHARLES JOSEPH, *B.S.*, Assistant in Plant Pathology
NYGAARD, KAARE KRISTIAN, *M.D.*, Assistant in Surgery

OAKEY, JOHN ARTHUR, *B.S.*, Instructor in Hydraulic Engineering
OATWAY, WILLIAM HANLON, *B.S., M.D.*, Resident in Medicine, Wisconsin General Hospital
OESTREICH, CARL RALPH, *B.S.*, Instructor in Structural Engineering, Milwaukee Extension Center—I
OGDEN, WILLIAM BUTLER, *M.S.*, Instructor in Horticulture
OLSON, ASTRID, *R.N.*, Instructor in Nursing—II
OMERNIK, JOHN THOMAS, *M.S.*, County Agricultural Representative, Langlade ford County
ONCLEY, JOHN LAWRENCE, *B.A.*, Assistant in Chemistry
O'NEAL, MILDRED MAE, *B.A.*, Assistant in Botany
ORTH, FRANKLIN LEWIS, *B.A.*, Assistant in Physical Education (Crew)
ORTON, OLIVER SMALL, *B.S.*, Assistant in Botany
OSBORN, EIGHMY-BELL, *B.A.*, Library Assistant
OSBORNE, KENNETH BOND, *M.S.*, Research Assistant in Chemistry
OSTERBERG, HAROLD, *B.A.*, Research Assistant in Physics
OSTERBIND, HELEN, *B.A.*, Instructor, Bureau of Visual Instruction, Extension Division
OSTRANDER, MARJORIE AMANDA, Assistant Librarian, Medical Library Service
OSTROFSKY, MORRIS, *B.S.*, Assistant in Physics
OZER, SOL DAVID, *M.A.*, Assistant in Sociology

PAINTER, THEOPHILUS SHIKEL, *Ph.D.*, Research Associate in Genetics
PALLETT, RAYMOND BENJAMIN, *B.S.*, County Agricultural Representative, Milwaukee County
PALMITER, DEFOREST HAROLD, *M.S.*, Assistant in Plant Pathology
PARK, JOHN SEYMOUR, *M.S., Ph.M.*, Assistant, Bureau of Guidance and Records
PARKER, MELBOURNE CARROLL, *B.S.*, Assistant in Genetics
PARKER, ROSE ETIOLE, *M.A.*, Assistant in Education
PARKER, THOMAS ALVIN, *B.A., B.S.*, County Agricultural Representative, Craw- County
PARKS, JOHN LOUIS, *B.A.*, Assistant in Physical Education
PARKS, MRS. MARY DEAN SCOTT, *B.A.*, Assistant in Speech—I
PARLER, MARY CELESTIA, M.A., Assistant in English
PATEL, MAGANBHAI DAHRJABHAI, *M.S.*, Research Assistant in Genetics
PAUL, LESTER WARNER, *B.S., M.D.*, Assistant in Radiology
PAULSON, SIGRID, *B.A.*, Assistant in History
PAYNE, WILFRED, *Ph.D.*, Instructor in Philosophy
PEARSON, CARLYLE ROBERTS, *M.D.*, Assistant in Clinical Medicine; Assistant Physician, Department of Student Health
PECK, RUTH AGNES, *B.S.*, Instructor in Home Economics
PELESKE, LEO WILLIAM, *B.S.*, Instructor in Drawing and Descriptive Geometry
PENN, DOROTHY, *B.S., M.A.*, Assistant in French—II
PERKINS, HERBERT ARMAND, *B.A.*, Assistant in Mathematics
PERRY, BRUCE ALLEN, *B.S.*, Assistant in Chemistry
PESSIN, JOSEPH, *M.A.*, Assistant in Psychology
PETERS, CHARLES FREDERICK, Instructor in Mechanical Practice

PETERSON, JAMES MARVIN, *M.A.*, Assistant in Economics
PETERSON, LEROY, *M.A.*, State Associate in Education
PFEIFER, MRS. LILLIAN TWENHOFEL, *B.A.*, Teacher of Modern Languages, Wisconsin High School
PHEMISTER, JOHN, *M.A.*, Instructor in German
PHILLIPS, RICHARD MALCOLM, *B.A.*, Assistant in Speech
PIERCE, WALTER HOWARD, *M.S.*, Assistant in Plant Pathology
PINCKARD, JOSEPH ALEXANDER, *B.S.*, Assistant in Plant Pathology—II
PIORE, EMANUEL RUVIN, *B.A.*, Assistant in Physics
POPE, MARGARET ISABEL, *M.A.*, Instructor in English
POPE, MINNIE HENRIETTA, *B.A.*, Instructor in Debating and Public Discussion, Extension Division
PORTER, EDITH DARLINE, *B.S.*, *R.N.*, Instructor in Nursing (to May 1)
POST, FREDERICK WILLIAM, First Sergeant, U. S. A., Retired, Assistant to the Commandant
POWELL, JOHN WALKER, *B.A.*, Instructor in Philosophy, Experimental College
PRESTON, WILLIAM SAMUEL, *M.A.*, Assistant in Medical Bacteriology
PRIEN, EDWIN, LOUIS, *M.A.*, *M.D.*, Assistant in Pathology
PRILL, EDWARD ALBERT, *B.A.*, Assistant in Chemistry
PRUESS, LOUIS MARTIN, *Ph.D.*, Research Assistant in Agricultural Bacteriology
PRUETT, EUGENE FRANCIS, *B.S.*, County Agricultural Representative, Ashland County
PUDDESTER, THOMAS, Instructor in Mechanical Practice
PURCELL, MARY ELIZABETH, *B.S.*, Instructor in Home Economics
PYRE, AMELIA FRANCE, *B.L.*, Library Assistant

QUINTANA, MRS. JANET MACQUEARY, *B.A.*, Instructor, Department of Extension Teaching and Bureau of Visual Instruction

RAASCH, GILBERT, *B.A.*, Curator, Geology Museum
RABE, NAOMI FRANCES, *M.A.*, Assistant in English
RALYA, LYNN LOUIS, *M.S.*, Assistant in Education
RAMRAS, HERMAN, *M.A.*, Assistant in German
RAMSAY, HAZEL GRACE, *M.A.*, Assistant in History
RAMSELL, MRS. WINIFRED BEATRICE, *M.A.*, Assistant in History—I
RAMSPERGER, ALBERT GUSTAV, *Ph.D.*, Instructor in Philosophy
RAMSPERGER, MRS. HELEN MARGARET, *M.A.*, Instructor in English
RANDALL, JOHN REED, *M.A.*, Assistant in Geography
RASMUSSEN, RUPERT HENRY, *B.S.*, Instructor in Agricultural Journalism
RECTOR, EDWARD STANLEY, *B.S.*, *M.A.*, Assistant in Economics
RECTOR, MRS. HELEN MARKEY, *B.S.*, Teacher of Music, Wisconsin High School
REES, OLIVE LUCILE, *B.A.*, Assistant in Botany
REINDERS, VICTOR AMBROSE, *M.A.*, Insructor in Chemistry, Milwaukee Extension Center
REINKING, ERNA CAROLINA, *B.A.*, Library Assistant
REITZ, MRS. HELENA WOLF, Assistant in German
REITZ, WILHELM, *Ph.D.*, Research Assistant, Bureau of Educational Research
RIGGS, HELEN OLIVE, *M.A.*, Assistant in the Teaching of English—I
RIISING, BLANCHE MARIE, *B.S.*, Instructor in Agricultural Chemistry
RIKER, MRS. REGINA STOCKHAUSEN, *Ph.D.*, Assistant in Plant Pathology
RIMSKY-KORSAKOFF, VLADIMIR NICHOLAS, *M.S.*, Assistant in Zoology
RINEHART, GEORGE RAYMOND, *B.A.*, Assistant, Press Bureau—II
RINGE, ELMER MARTIN, *B.A.*, Assistant in Geography

RIPPE, RUSSELL, *Ph.B.*, Assistant in Physical Education; Teacher of Physical Education, Wisconsin High School
RITCHIE, GORTON, *B.A., M.D.*, Instructor in Pathology
ROACH, CARROLL EWART, *M.D.*, Resident in Pediatrics, Wisconsin General Hospital
ROBBINS, JOHN HOLDEN, *B.S., M.D.*, Instructor in Anatomy
ROBERTS, DAVID JOHN, *B.S.*, Assistant in Medical Bacteriology
ROBERTS, FRANCES ELIZABETH, *B.S.*, Instructor in Home Economics
ROBERTS, WILLARD LEWIS, *B.A.*, Assistant in Chemistry
ROBINSON, SELBY LEMLEY, *M.S.*, Instructor in Mathematics
ROCHE, BENJAMIN HAMILTON, *M.S.*, Instructor in Animal Husbandry
RODEE, CARLTON CLYMER, *B.A.*, Assistant in Political Science
RODINE, MILWARD THEODORE, *M.A.*, Assistant in Mathematics—I
ROGAN, WILLIAM JAMES, County Agricultural Representative, Marathon County
ROLLEFSON, RAGNAR, *Ph.D.*, Instructor in Physics
ROSE, REED ALDEN, *M.S.*, Instructor in Steam and Gas Engineering
ROSENBERG, RALPH PHILIP, *B.S., M.A.*, Instructor in German
ROSENSTINE, EMERY ANDREW, *B.A., M.D.*, Resident in Anesthesia, Wisconsin General Hospital (beginning March 1)
Hospital, (beginning March 1)
ROSEVEARE, WILLIAM EARL, *Ph.D.*, Instructor in Chemistry
ROSSI, JOSEPH, *B.S., M.A.*, Instructor in Italian
ROTHERMEL, ARLOW WILLIAM, *B.S.*, Assistant in Soils
ROTHLISBERGER, HELEN, *R.N.*, Instructor in Nursing
ROUSE, THEODORE ALTON, *M.A.*, Assistant in Physics
ROWLAND, RUTH MARY, Instructor in Debating and Public Discussion, Extension Division
ROY, FRANCIS ALBERT, *B.A.*, Instructor in French
RUF, HAROLD WILLIAM, *M.S.*, Instructor in Hydraulic Engineering
RUNGE, ALMA MATILDA, *B.A.*, Instructor in Library Science
RUSY, BEN FRANKLIN, *B.S.*, County Agricultural Representative, Door County
RUTH, ELBERT BRESEE, *M.A.*, Instructor in Zoology
RYALL, ERNEST VAN, *B.S.*, County Agricultural Representative, Kenosha County
RYAN, JOHN J., Assistant in Physical Education (Football)—I

SAGEN, HARRY EDWIN, *M.S.*, Instructor in Agricultural Bacteriology
SAMMET, MRS. ANITA REINKING, *B.A.*, Research Assistant in Plant Pathology
SAMUELSON, EMIL EMANUEL, *M.A.*, Assistant in Education
SANDERS, MAMIE AMELIA, *B.A.*, Instructor in Debating and Public Discussion, Extension Division
SANDY, CAROL JOSEPHINE, *M.A.*, Instructor in French and Spanish, Milwaukee Extension Center
SANFORD, DELIA CLEORA, *B.L.S.*, Library Assistant
SAPPINGTON, NEWTON OWEN, *M.A.*, Assistant in History
SAWYER, CLAIR NATHAN, *B.S.*, Instructor in Chemistry, Milwaukee Extension Center
SAYRE, H. MELVILLE, *M.A.*, Instructor in English
SCHAARS, MARVIN ARNOLD, *M.S.*, Instructor in Agricultural Economics
SCHAEFER, HAZEL BEATRICE, Assistant in Library Science
SCHAEFER, WALTER HERBERT, *B.A.*, Assistant in Zoology
SCHEID, EMERALD AMELIA, *B.S.*, Associate Bacteriologist, State Laboratory of Hygiene
SCHELLING, EDWARD WILLIAM, *B.S.*, County Agricultural Representative, Vernon County
SCHILLING, EUNICE EMELIA, *B.A.*, Library Assistant

SCHLUETER, RUDOLPH JOHN, *M.A.*, Instructor in German
SCHMECKEBIER, LAURENCE, *Ph.D.*, Instructor in Art History and Criticism—II
SCHMIDT, EUNICE, *B.A.*, Assistant in Journalism—I
SCHNEBERGER, EDWARD, *M.S.*, Assistant in Zoology
SCHOBEL, MARJORIE KATHERINE, *B.M.*, Instructor in Music
SCHOECHERT, GRACE VICTORIA, *B.A., B.L.S.*, Library Assistant
SCHRANKEL, FLORA, *R.N.*, Instructor in Nursing (beginning April 1)
SCHUMANN, ROBERT NICHOLAS, Instructor in Mechanical Practice
SCHUTTER, NANCY CLARE, *B.A.*, Assistant in French—II
SCHWID, NATHAN, *B.A.*, Assistant in Mathematics
SCOTT, RALPH WALKER, *M.A.*, Instructor in French—I
SCOTT, MRS. ROSE FERRARIS, *B.A.*, Assistant in French—I
SEARS, VERLYN FRED, *B.S.*, County Agricultural Representative, Eau Claire County—I; Rusk County—II
SECRIST, DULBERT LYLE, *B.S.*, Assistant in Physical Education
SEEDORF, EVERETT EMIL, *B.A.*, Research Assistant in Radiology
SELL, GUSTAV ADOLPH, *B.S.*, County Agricultural Representative, Outagomie County
SERBER, ROBERT, *B.S.*, Assistant in Physics
SEYFORTH, HARLAN GUY, *B.S.*, County Agricultural Representative, Pierce County
SHAFER, MRS. EMILY MARINE, *B.A.*, Instructor in English, Extension Division
SHAFER, JOSEPH ERNEST, *M.A.*, Assistant in Economics
SHAFFER, DAN ALBERT, *B.S.*, County Agricultural Representative, Taylor County
SHANDS, HAZEL LEE, *B.S.*, Assistant in Agronomy
SHANNON, ALBERT MELVIN, *B.A.*, Assistant in Chemistry
SHARP, MRS. DOROTHY R., *B.A.*, Assistant in Physical Education
SHARP, MANLY, *B.S.*, County Agricultural Representative, Chippewa County
SHARPE, JOSEPH AUDLEY, *B.S.*, Assistant in Physics
SHAW, REGINALD MATHISON, *B.A., M.S.*, Assistant in Geography
SHEALY, MRS. JOSEPHINE, Library Assistant, College of Agriculture
SHOEMAKER, ALICE, *M.A.*, Executive Secretary, Summer School for Workers in Industry
SHPELLER, MAX, *M.A.*, Assistant in English
SHROCK, ROBERT RAKES, *Ph.D.*, Instructor in Geology
SILER, KENNETH ANDREW, *B.A.*, Assistant in Zoology
SILLEN, SAMUEL, *B.A.*, Assistant in English
SILVEUS, MARIAN, *M.A.*, Assistant in History
SINGLETON, MACK HENDRICKS, *M.A.*, Assistant in Spanish
SKEWES, GEORGE JESSOP, *M.A.*, Teacher of Science, Wisconsin High School
SKINNER, JOHN TAYLOR, *M.S.*, Assistant in Agricultural Chemistry
SLOAT, CHESTER HERBERT, *B.A.*, Assistant in English
SMITH, MRS. AMY HOYT, *M.A.*, Recorder, Extension Division
SMITH, CORNELIUS WALTER, *M.A.*, Assistant in History
SMITH, FRANK HERSCHEL, *M.S.*, Assistant in Botany
SMITH, NINA GRACE, *M.A.*, Instructor in English, Extension Division—I
SMITH, OLIVER FUHRIMAN, *B.S.*, Assistant in Agronomy
SMITH, WILBUR RAY, *B.S.*, Assistant in Geography
SNEAD, SAM, Instructor in Radio, Milwaukee Extension Center—II
SNELL, JOHN MORPHY, *B.S.*, Assistant in Chemistry
SNYDER, NEWELL, *B.A.*, Assistant in English
SNYDER, WILLIAM COWPERTHWAITE, *B.S.*, Assistant in Plant Pathology
SONDERGAARD, HANS TJELLESEN, Instructor in Dairy Husbandry
SORDEN, LELAND G., *B.S.*, County Agricultural Representative, Oneida County
SORONEN. ARTHUR NIKOLAI, *B.A.*, Assistant in Journalism
SOUTHCOTT, ELEANOR MARGARET, *B.S.*, Home Demonstration Agent, Wood County

SPARKMAN, REUBEN HAYNES, *M.A.*, Research Associate in Economics
SPRAGUE, JAMES MAURICE, *B.A.*, Assistant in Chemistry
SPRAGUE, LINDLEY VINCENT, *M.D.*, Instructor in Clinical Medicine
SPREITER, WALTER EMIL, County Agricultural Representative, LaCrosse County
SPRINGHORN, RITA KATHERINE, *Ph.B.*, Teacher of English, Wisconsin High School
SPRINKLE, MARSHALL ROSEBORO, *M.A.*, Research Assistant in Chemistry
SPROULL, WAYNE TREBER, *M.S.*, Assistant in Physics
STAATS, J. RILEY, *B.Ed.*, Assistant in Geography
STADEL, ERNEST VERNON, *M.D.*, Resident in Urology, Wisconsin General Hospital
STAGNER, ROSS, *M.A.*, Assistant in Psychology—II
STALEY, RUTH, *B.S.*, *M.A.*, Instructor in German
STAM, IRA WEBSTER, *Ph.B.*, *M.A.*, Teacher of Music, Wisconsin High School
STANFORD, CHARLES EDWARD, Assistant in Anatomy
STARK, MARIAN ESTHER, *B.A.*, Research Assistant in Clinical Medicine
STATEN, FRANCIS ANGEVIN, *Ph.D.*, Research Associate in Economics (to May 1)
STAUDT, CATHERINE MARGARET, *M.A.*, Assistant in French
STAUFFER, JOHN FRITZ, JR., *M.S.*, Research Assistant in Botany
STEBBINS, GEORGE GRISWOLD, *M.A.*, *M.D.*, Assistant in Clinical Medicine; Assistant Physician, Department of Student Health
STEFFEN, ADELINE ELIZABETH, *B.A.*, Library Assistant
STEHN, MRS. FLORENCE CLARK, *M.A.*, Instructor in French and Adviser of Women, Milwaukee Extension Center
STEHN, JOHN RICHARD, *B.A.*, Assistant in Physics
STEIN, HAROLD, *B.A.*, Instructor in English
STEINER, JOHN FRANKLIN, *B.S.*, Assistant in Chemistry
STEVENS, RALPH WILLARD, *B.A.*, Assistant in Physiological Chemistry
STILL, BAYRD, *M.A.*, Assistant in History
STILLMAN, ROSE, *B.A.*, *R.N.*, Assistant in Nursing
STOLEN, THERESA, *B.S.*, *R.N.*, Assistant in Nursing
STONE, THOMAS S., *B.A.*, Assistant to the Junior Dean, College of Letters and Science—I
STOUT, ALBERT WILBER, *B.S.*, Assistant in Chemistry
STOUT, CYRIL LYNN, *B.S.*, Assistant in Geography
STRAIN, WARREN THOBURN, *B.A.*, *M.S.*, Assistant in Geography
STRANGE, CHARLES ROY, *D.V.M.*, Instructor in Veterinary Science
STRATMAN-THOMAS, MARGARET HELENE, *B.M.*, *M.A.*, Instructor in Music
STRONG, FRANK MORGAN, *M.A.*, Assistant in Chemistry
STRUBLE, GEORGE GOODELL, *M.S.*, Assistant in English
STUART, FRANCES, Instructor in Occupational Therapy, School of Nursing
SULLIVAN, JOHN MICHAEL, *M.A.*, Instructor in French
SUMNER, CHARLES BUCHANAN, *B.A.*, *M.S.*, Assistant in Plant Pathology
SUTHERLAND, GLADYS, *B.A.*, Library Assistant, College of Agriculture

TACKE, WALTER HENRY, *B.S.*, Instructor in Railway Engineering
TAEUBER, CONRAD FERDINAND, *M.A.*, Instructor in Rural Sociology
TALLEY, PAUL JUDSON, *B.A.*, *M.S.*, Assistant in Botany
TANNER, GUY WELDON, Assistant in Journalism
TATUM, EDWARD LAWRIE, Research Assistant in Agricultural Bacteriology
TAYLOR, ARTHUR CHANDLER, *M.A.*, *M.D.*, Chief Resident in Surgery, Wis. General Hospital
TAYLOR, FRANCES HELEN, *B.S.*, Assistant in Nursing—II
TERRY, MELVIN CARHART, *B.A.*, Assistant in Physics
TESAR, FRANKLIN OTTO, *B.A.*, Assistant in English

THATCHER, PAUL ALEXANDER, *B.S.*, County Agricultural Representative, Trempealeau County
THAUER, MARION HENRIETTA, *M.A.*, Assistant in Agricultural Bacteriology
THEWLIS, ETHEL WATERHOUSE, Research Assistant in Anatomy
THEXTON, RICHARD HENRY, *B.S.*, Assistant in Agricultural Bacteriology—I
THOMAS, J. FRED, *B.A.*, County Agricultural Representative, Waukesha County
THOMAS, MACKLIN CAREY, *M.A.*, Instructor in English
THOMAS, RALPH WASHINGTON, *B.A., M.S.*, Assistant in Chemistry
THOMAS, WILLIAM BENJAMIN, *B.S.*, Assistant in Chemistry
THOMPSON, HARRIET ADELIA, *B.S.*, Home Demonstration Agent, Outagamie County
THORNTON, MADELINE JOSEPHINE, *B.A., M.D.*, Resident in Obstetrics and Gynecology
TITUS, LESLIE, *B.A.*, Research Assistant in Limnology
TORBET, VIRGINIA, *B.A.*, Research Assistant in Physiological Chemistry
TORINUS, GRACIA ELIZABETH, *B.S., M.A.*, Instructor in English, Milwaukee Extension Center
TORMEY, KATHRYN MARIE, *B.A.*, Library Assistant
TOUGH, EVELYN GRANT, *B.A.*, Assistant in Rural Sociology
TOWNSEND, MARY GENEVIEVE, *B.R.Ed.*, Research Assistant in Economics (beginning December 1)
TRANMAL, HENRY, *B.S.*, Assistant in Agricultural Bacteriology
TRENHOLME, ARTHUR KINGSLEY, JR., *M.A.*, Assistant in History—I
TRENK, FRED BENJAMIN, *M.S.*, Instructor in Agricultural Engineering—II
TREWEEK, DAVID NICHOLAS, *M.A., M.D.*, Resident in Anesthesia—I; Instructor—II
TRUMAN, HARRY VERY, *M.A.*, Assistant in Botany
TRUMP, PAUL LEROY, *B.A., M.S.*, Instructor in Mathematics
TRUMP, MRS. MARY AYERS, *B.A.*, Assistant in Physical Education
TUFTS, KATHRIN MARIE, *M.A.*, Instructor in Spanish
TURNER, MRS. DOROTHEA, *B.A.*, Assistant in Home Economics
TURRITTIN, HUGH LONSDALE, *B.S.*, Instructor in Mathematics
TUTTLE, ALVA MAURICE, *B.A., M.S.*, Instructor in Mathematics
TWADDELL, WILLIAM FREEMAN, *Ph.D.*, Instructor in German
TYLER, GEORGE ALEXANDER, *Ph.B.*, Instructor and Field Representative, Extension Division

UHL, ARTHUR, HOYT, *Ph.D.*, Research Associate in Pharmacy
ULLSTRUP, ARNOLD JOHN, *B.S.*, Assistant in Plant Pathology—II

VANCE, AMOS MILTON, *B.E., M.A.*, Assistant in Economics
VAN HORN, WILLIS MARTIN, *M.A.*, Assistant in Zoology
VAN LONE, ELDYN EVERETT, *M.S.*, Assistant in Genetics
VAN ZANDT, FRANCES BRYCE, *B.S.*, Librarian, Medical School and Medical Extension Library
VASS, JOHN ISAAC, *M.A.*, Instructor in Mathematics, Milwaukee Extension Center
VAUGHN, CLARENCE W., University Accountant
VEDELER, HAROLD CLOUS, *B.A.*, Assistant in History
VERDUIN, ARNOLD ROBERT, *M.A.*, Assistant in History
VERGERONT, GLEN WALLACE, *B.A.*, County Agricultural Representative, Barron County
VERHOEK, FRANK HENRY, *M.S.*, Assistant in Chemistry
VERNON, ELVIN LEONIDAS, *B.S.*, Assistant in Chemistry
VERRIER, MLLE SIMONE ANDREE, *Licenciée ès Lettres*, Instructor in French
VILJOEN, MRS. HELEN GILL, *Ph.D.*, Instructor in English, Extension Division—II
VINCENT, VERA ELIZABERH, *B.A.*, Assistant Chemist, State Laboratory of Hygiene

VINSON, GRACE ESTHER, *M.A.*, Teacher of English, Wisconsin High School
VIVAS, ELISEO, *M.S.*, Instructor in Philosophy
VOELKER, ALICE, Assistant in Biology, Milwaukee Extension Center—II
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VON GRUENINGEN, JOHN PAUL, *M.A.*, Instructor in German
VOSS, MRS. AURIE HEDRICK, Teacher of Mathematics, Wisconsin High School

WADLEIGH, BEATRICE BERNICE, *B.A.*, Assistant in French
WAGNER, RUBE EDWIN, *B.S.*, Instructor in Physical Education
WAITT, RUSSELL EDSON, *M.A.*, Assistant in Sociology—II
WALDELAND, CONRAD RAYMOND, *B.A.*, *M.S.*, Assistant in Chemistry
WALHUS, BESSIE VIENNA, *R.N.*, Assistant in Nursing
WALKER, ROBERT ARLO, Assistant High-School Visitor
WALKER, RUTH IRENE, *Ph.D.*, Instructor in Botany
WALTER, LEWIS ALDRO, *B.A.*, Assistant in Chemistry
WASHA, GEORGE WILLIAM, *B.S.*, Instructor in Mechanics
WASHBURNE, ANNETTE CLARKE, *B.S.*, *M.D.*, Resident in Neuropsychiatry, Wis. General Hospital
WEAVERS, HARVEY J., *B.S.*, County Agricultural Representative, Manitowoc County
WEBB, DOROTHY ELIZABETH, *M.A.*, Assistant in English
WEBB, MARY, *M.A.*, Assistant in Spanish
WEBER, MRS. NELLE MURPHY, *B.A.*, Assistant in Spanish—I
WEBSTER, DAVID HUME, *M.A.*, Instructor in English
WEEKS, FRANK DANA, *B.A.*, *M.D.*, Assistant Resident in Surgery, Wisconsin General Hospital
WEGNER, KENNETH WARREN, *B.A.*, Assistant in Mathematics
WEHRWEIN, CARL FREDERICK, *Ph.D.*, Assistant in Agricultural Economics
WEIGHTMAN, ESTHER, *B.S.*, *M.A.*, Teacher of Latin, Wisconsin High School
WEIR, EARL FOSTER, *M.A.*, Assistant in Pharmacology
WEISS, HARRY, *B.A.*, Assistant in Economics
WENDT, KURT FRANK, *B.S.*, Instructor in Mechanics
WERRELL, MRS. PATRICIA MCGARTY, *B.A.*, Instructor in Electrocardiography
WERRELL, WILLIAM ALEXANDER, *M.D.*, Resident in Surgery, Wisconsin General Hospital—I
WESSON, CYNTHIA MARIA, *M.A.*, Instructor in Physical Education
WESTERFIELD, EVERETT COMMODORE, *M.A.*, Instructor in Mathematics
WESTON, FRANK LAURANCE, *B.S.*, *M.D.*, Instructor in Clinical Medicine
WESTOVER, EDWIN FRANK, *D.D.S.*, Instructor in Dental Surgery
WETZEL, WALTON ERNEST, *B.A.*, Assistant in Education—I
WEYKER, LAWRENCE MICHAEL, *M.S.*, Assistant in Soils
WHEELER, ARTHUR LLOYD, *M.A.*, Instructor in Comparative Literature
WHEELER, FLOYD ERNEST, *B.A.*, Assistant to the Junior Dean, College of Letters and Science
WHEELER, MRS. HELEN BENNET, *B.A.Sc.*, *R.N.*, Instructor in Nursing
WHITELAW, NEILL GORDON, *M.A.*, Assistant in Physics
WHITNEY, LESTER VINCENT, *Ph.B.*, Assistant in Physics
WILCOX, BENTON HARRIS, *M.A.*, Assistant in History
WILDER, MALCOLM LOWNSBURY, *Ph.D.*, Instructor in English
WILGUS, WALLACE LAFETRA, *B.A.*, *M.S.*, Assistant in Geology
WILKINSON, CLARENCE ROBERT, *B.A.*, Assistant in French—II
WILKINSON, JULIA MARY, Executive Secretary to the President
WILLIAMS, RAMOND HENDRY, *B.S.*, Instructor in Art Education
WILSON, LEONARD RICHARD, *Ph.B.*, Assistant in Botany

WILTON, OCRA CHRISTINE, *B.S.*, Research Assistant in Horticulture
WINANS, CHARLES FRANCIS, *B.S.*, Assistant in Chemistry
WINCH, RALPH PHILIP, *M.A.*, Assistant in Physics
WINNING, CLARENCE HERMAN, *B.A.*, Research Assistant in Chemistry
WITZEL, STANLEY ARTHUR, *M.S.*, Instructor in Agricultural Engineering
WOJCIK, BRUNO HENRY, *B.S.*, Assistant in Chemistry
WOLF, LORELLE ARTHUR, *M.A.*, Library Assistant
WOLFE, HAROLD RECLUS, *M.S.*, Assistant in Zoology
WOOD, CHARLOTTE ROBERTSON, *M.A.*, Instructor in English
WORSENCROFT, ROBERT ROCKWOOD, *B.S.*, Instructor in Drawing and Descriptive Geometry

YORAN, CALVIN, *B.A.*, *M.D.*, Assistant Resident in Medicine, Wisconsin General Hospital
YOUNG, CHUN CHIEH, *M.S.*, Assistant in Medical Bacteriology
YOUNG, GEORGE FRANCIS, Instructor in Mechanical Practice

ZARTMAN, WALTER HAMMOND, *B.S.*, Assistant in Chemistry
ZEIMET, AGNES LILLIAN, *M.A.*, Instructor in Genetics
ZELLMER, LUTHER AUGUST, *B. Ed.*, Assistant in Geography
ZEMPEL, ARNOLD LLOYD, *M.A.*, Assistant in Economics
ZERAN, FRANKLIN ROYALTON, *B.A.*, Assistant to the Junior Dean, College of Letters and Science
ZILLEY, MARION LUCILE, *B.A.*, *R.N.*, Instructor in Nursing
ZINN, ZEA, *M.A.*, Instructor in English
ZOZZORA, FRANK, *B.A.*, Instructor in Art Education
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FELLOWS AND SCHOLARS

ALLYN, WILLIAM PRESTON, *M.S.*, Fellow in Agricultural Bacteriolgy
ALMON, LOIS, *M.A.*, Fellow in Agricultural Bacteroiology
AMBROSE, ALICE LOMAN, *M.A.*, Fellow in Philosophy
ANDERSON, ALICE EMERENCE, *M.A.*, Fellow in Comparative Literature

BACKUS, MYRON PORT, *M.A.*, Fellow in Botany
BECK, PHILIP GARRETT, *M.S.*, Social Science Research Council Fellow in Sociology
BECKER, HANS, *Ph.D.*, Rockefeller Foundation Fellow in Geology
BERENDSOHN, RUTH, Honorary Scholar in German
BERRETT, DONALD S., *B.A.*, Gund Scholar in German
BERRY, MILDRED FREBURG, *M.A.*, Harriet Remington Laird Fellow in Speech
BLACKENBURG, HOWARD, *M.A.*, Fellow in European History
BLACKMAN, THANE MILLER, JR., *B.A.*, Fellow in Economics
BRADY, MARY AGNES, Industrial Fellow in Home Economics
BROWN, GEORGE HAROLD, *B.S.*, Industrial Fellow in Electrical Engineering
BURPEE, GEORGE, *B.S.*, Beloit College Scholar in Geology
BUTTERWORTH, THERON HERVEY, *M.S.*, Fellow in Agricultural Bacteriology

CAVE, HARRY WINFIELD, *M.S.*, Honorary Fellow in Animal Husbandry
CHAPIN, ELIZABETH, *M.A.*, Fellow in History
CHAPMAN, BERLIN BASIL, *M.A.*, Honorary Fellow in Economics
CHECHIK, SAMUEL, *B.S.*, Scholar in Pharmacy
CLOUGH, WILSON OBER, *M.A.*, Honorary Fellow in English
COON, ERNEST DAVID, *M.S.*, Honorary Fellow in Chemistry
COWART, ROLAND, *M.S.*, Industrial Fellow in Soils—I
COWLEY, MILFORD ALTON, *Ph.B.*, Scholar in Chemistry
CRALLEY, ELZA MONROE, *B.S.*, Fellow in Botany
CROMER, ORVILLE CHARLES, *B.S.*, Fellow in Mechanical Engineering
CUNNINGHAM, EARL CHARLES, *B.Ed.*, Research Fellow in Metallurgy

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DORN, HAROLD FRED, *M.S.*, Fellow in Sociology

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EISENACH, GEORGE, *B.A.*, Fellow in German
ELWELL, JOHN AMBROSE, *B.S.*, Industrial Fellow in Soils—I
ENZ, WALTER WILLIAM FRED, *M.S.*, Fritzche Brothers Fellow in Pharmacy
ERRINGTON, PAUL LESTER, *B.S.*, Industrial Fellow in Conservation
EVANS, EDWARD HUMPHREY, *M.A.*, Fellow in History

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FITCH, RICHARD HOMER, *M.A.*, Research Fellow in Pharmacology
FOGELBERG, JOHN MARSHALL, *B.S.*, Fellow in Chemistry
FOLKERS, KARL AUGUST, *B.S.*, Fellow in Chemistry
FRANK, BERTHA EVELYN, *M.A.*, Scholar in Mathematics
FRANK, JULIA MOTTIER, *B.A.*, *M.S.*, Fellow in Education
FRITSCHE, OSCAR OTTO, *B.A.*, *M.S.*, Research Fellow in Metallurgy
FURMAN, ANASTASIA, *B.A.*, Ripon College Scholar in English

GEIGER, BEATRICE JANE, *M.S.*, Fellow in Home Economics

GEORGI, CARL EDWARD, *B.S.*, Industrial Fellow in Agricultural Bacteriology and in Agricultural Chemistry
GEWEKE, LENORE HILDA, *M.A.*, Fellow in Latin
GIBBON, ALICE BARBARA, *B.A.*, Commonwealth Fund Fellow in Economics
GILCHRIST, PHILIPPA GARTH, *B.A.*, *M.S.*, Fellow in Chemistry
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GROTH, EDGAR ARTHUR, *B.A.*, Carroll College Scholar in English
GRUBER, RUTH, *B.A.*, Ferdinand LaFrentz Fellow in German
GUNDERSON, HOWARD, *B.S.*, Industrial Scholar in Industrial Education

HAGBERG, LORETTA, *B.A.*, Milwaukee Downer College in Spanish
HALL, FRANKLIN P., *B.A.*, Scholar in Economics
HAMMERBERG, DONALD ODEEN, *M.S.*, Social Science Research Council Fellow in Agricultural Economics
HANKINSON, HAZEL, *B.A.*, Industrial Fellow in Agricultural Bacteriology
HANSON, FRANK EDWIN, *B.S.*, Scholar in Dairy Husbandry
HARDY, FREDERICK KNOWLTON, *M.B.A.*, Fellow in Economics
HARRISON, ROBERT SOLON, *M.S.*, Industrial Fellow in Horticulture—I
HARVEY, CLIFFORD WELTON, *M.S.*, Honorary Scholar in Animal Husbandry
HAUCK, HAZEL MARIE, *B.S.*, *M.A.*, Fellow in Home Economics
HAYDAK, MYKOLA, *M.S.*, Scholar in Economic Entomology
HEINEMAN, ELLIS RICHARD, *M.A.*, Fellow in Mathematics
HELD, CHESTER JOHN, *B.S.*, Fellow in Mechanical Engineering
HELZ, RUTH AGNES, *B.S.*, Industrial Fellow in Agricultural Bacteriology
HILL, WILLIAM WALTER, *B.S.*, Industrail Fellow in Soils
HITCHNER, ELMER REEVE, *M.S.*, Honorary Fellow in Agricultural Bacteriology
HOCKING, ELTON CAPPER, *Ph.D.*, Albert Markham Memorial Traveling Fellow in French
HOPKINS, ERVIN WILLIAM, *M.S.*, Industrial Fellow in Agricultural Bacteriology and in Agricultural Chemistry
HUMMON, ORMOND JOHN, *D.V.M.*, Industrial Fellow in Veterinary Science—II
HUNTER, CHARLES AXTELL, *M.S.*, Honorary Fellow in Agricultural Bacteriology—II

IRELAND, EDWARD JOSEPH, *M.A.*, Hollister Fellow in Pharmacy
ISBELL, ROBERT NEVILL, *B.A.*, Honorary Fellow in Chemistry
IVANOFF, SPAS SIM, *M.S.*, Industrial Fellow in Plant Pathology

JANTZ, HAROLD, *M.A.*, Milwaukee Seminary Traveling Fellow in German
JEFFRIS, RUTH BARBARA, *M.A.*, Fellow in American History
JOHANSEN, JOHN PETER, *M.A.*, Social Science Research Council Fellow in Sociology
JOHNSON, VAN LORAN, *B.A.*, Fellow in Greek
JONES, FRANK, *M.A.*, Mary M. Adams Fellow in Greek

KAMMERER, GLADYS MARIE, *B.A.*, Scholar in Political Science
KATONA, ARTHUR, *B.A.*, Scholar in Sociology
KEIPPER, CHARLES HOMER, *M.S.*, Industrial Fellow in Agricultural Bacteriology
KELLERMAN, JACOBUS HENDRIK, *M.S.*, Industrial Fellow in Agricultural Chemistry
KELSO, MAURICE MAYTUM, *M.S.*, Social Science Research Council Fellow in Agricultural Economics
KICK, CHARLES HOLL, *M.S.*, Fellow in Animal Husbandry

KIMBLE, ELLIS, *M.S.*, Scholar in Economics—II
KING, RONALD WYETH PERCIVAL, *B.A.*, *M.S.*, Fellow in Electrical Engineering
KLETZIEN, SEYMOUR WILLIAM, *Ph.D.*, Industrial Fellow in Agricultural Chemistry
KLOTSCHE, JOHANNES MARTIN, *M.A.*, President Adams Fellow in Modern History
KNECHTGES, OSWALD JOHN, *B.S.*, Research Fellow in Hydraulic Engineering
KOELSCH, FREDERICK CARL, *B.S.*, Dupont Fellow in Chemistry
KRAUSE, DANIEL EDWARD, *M.S.*, Research Fellow in Metallurgy
KRAUSS, PAUL GERHARDT, *B.A.*, Paul Guenther Fellow in German

LAMB, ALVIN ROMAINE, *Ph.D.*, Industrial Fellow in Animal Husbandry and in Agricultural Chemistry
LARSON, OLAF FREDERICK, Industrial Fellow in Soils
LATHROP, ANDREW WILLIAM, *M.S.*, Industrial Fellow in Animal Husbandry
LAWRENCE, LEE EDWARD, *B.A.*, Scholar in European History
LEAHEY, ALFRED, *M.S.*, Honorary Scholar in Geology
LI, BING HUA, *M.A.*, Scholar in Economics—I
LIU, CHE MING, *M.A.*, Honorary Scholar in Political Science
LOHR, CARLETON ELI, *B.A.*, Scholar in German
LUDBROOK, WALLIS VERCO, *B.S.*, Honorary Scholar in Plant Pathology

MCCULLOCH, ERNEST CARR, *M.A.*, Industrial Fellow in Veterinary Science and in Agricultural Bacteriology
MACNAUGHTON, JACQUELINE, *B.A.*, Seminary Endowment Fellow in German
MAGERS, HELMUT HANS, *Ph.D.*, Honorary Fellow in Political Science
MALONEY, ARNOLD HAMILTON, *M.A.*, *M.D.*, Honorary Scholar in Pharmacology
MEATING, ELIZABETH GWENDOLYN, *B.A.*, Lawrence College Scholar in Comparative Literature
MEYER, ERIKA, *M.A.*, Julius Zehnter Fellow in German
MITCHELL, JOHN, *M.S.*, Fellow in Soils
MORGENROTH, ERNEST JOHANNES, *Ph.D.*, Industrial Fellow in Soils—II
MORRIS, ARTHUR JOHN, *M.S.*, Fellow in Dairy Husbandry

NORRIS, LEIGHTON CYRUS, *B.S.*, Lloyd Fellow in Pharmacy

ONSGARD, HENRY ADOLPH, *M.A.*, Honorary Fellow in History

PALMERI, JOSEPH, *B.A.*, Scholar in French
PARKER, MELBOURNE CARROLL, *B.S.*, Industrial Fellow in Genetics
PARLETTE, ZINA IRENE, *B.S.*, Industrial Fellow in Agricultural Bacteriology
PARSONS, KENNETH H., *B.A.*, Fellow in Agricultural Economics
PAULY, RUDOLPH JOHANNES, *M.S.*, Honorary Fellow in Pharmacy
PEARCE, CHARLES ALBERT, *M.A.*, Fellow in Economics

RUDISILL, MABEL FLORENCE, *M.A.*, Fellow in Education
RUNK, BENJAMIN, *M.S.*, Fellow in Sociology

SALINSKY, BEN EDWARD, *B.A.*, Scholar in American History
SAMUEL, GEOFFREY, *M.S.*, Honorary Fellow in Plant Pathology
SCHAAF, DANIEL, *B.S.*, Industrial Fellow in Poultry Husbandry and in Agricultural Chemistry
SCHAENZER, JOSEPH PETER, *B.S.*, Industrial Fellow in Agricultural Engineering
SCHMIDT, GERTRUDE, *B.A.*, Fellow in Economics
SCHROEDER, GUSTAV EMIL, *B.A.*, Honorary Scholar in Classics—II

SCHWARZTRAUBER, ERNEST EDWARD, *M.A.*, Fellow in Economics
SCHWERIN, LEHNER, *M.S.*, Research Fellow in Metallurgy
SELL, OTTO EDWIN, *B.S.*, Industrial Fellow in Animal Husbandry
SEVERY, JOSEPH, *M.A.*, Honorary Fellow in Botany
SHAW, LUTHER, *M.S.*, Fellow in Plant Pathology
SHERMAN, ALMA, *M.A.*, Scholar in Zoology
SHORT, FRED, *B.S.*, Industrial Scholar in Industrial Education
SIMLEY, OLE ANDREW, *M.A.*, Fellow in Psychology
SIRELSCHIKOV, INNOKENTY ALEXANDER, *B.S.*, Research Fellow in Metallurgy
SMITH, ALBERT LORENZO, *M.S.*, Fellow in Plant Pathology
SMITH, CHARLES WILLIAM, JR., *M.A.*, Fellow in Political Science
SNIESZKO, STANISLAW, *Ph.D.*, Rockefeller Foundation Fellow in Agricultural Bacteriology
SORONEN, ARTHUR NIKOLAI, *B.A.*, Scholar in Journalism
SPERLING, JEROME WILLIAM, *M.A.*, Charles Kendall Adams Fellow in Greek
SPILMAN, ROBERT FREDERICK, *B.S.*, Anna Morris Ely Scholar in Economics
STEPHENS, HENRY LEROY, *M.S.*, Research Fellow in Agricultural Chemistry
SWINGLE, DEANE BRET, *M.S.*, Honorary Scholar in Botany

TEMPLETON, HUGH LANGWILL, *Ph.D.*, Industrial Fellow in Dairy Husbandry
TEMPLIN, VERA MAY, *M.A.*, Industrial Fellow in Agricultural Chemistry
THARP, WILLIAM HARDY, *B.S.*, Industrial Fellow in Plant Pathology
THIBODEAU, ADA MONTALBETTI, *B.A.*, Fellow in Spanish
THOMSON, JAMES EDGAR, *M.A.*, Fellow in Geology
TIBBALS, MARJORIE, *B.A.*, Scholar in Classics
TOBEY, ELMER ROBERT, *M.S.*, Honorary Scholar in Soils
TODD, WILBERT REMINGTON, *B.S.*, Fellow in Agricultural Chemistry
TOWNSEND, MILDRED, *B.A.*, Milton College Scholar in French

VAN DONK, EVELYN CARL, *B.S.*, Industrial Fellow in Agricultural Chemistry
VOLK, HORMAN JAMES, *M.S.*, Industrial Fellow in Soils

WAITT, RUSSELL EDSON, *S.T.B.*, *M.A.*, Honorary Scholar in Sociology—I
WALKER, MARY JOSEPHINE, *M.A.*, Fellow in Education
WELSH, WILLIAM EDWARD, *D.V.M.*, Industrial Fellow in Veterinary Science—I
WENCK, PETER RUDOLF, *B.S.*, Industrial Fellow in Agricultural Bacteriology and in Agricultural Chemistry
WEYKER, LAWRENCE MICHAEL, *M.S.*, Industrial Fellow in Soils
WHITE, MILTON CHRISTIAN, *M.A.*, Mary M. Adams Fellow in English Language and Literature
WHITFORD, ALBERT EDWARD, *M.A.*, Fellow in Physics
WHITNEY, WILLIAM PERCY, *M.S.*, Research Fellow in Ceramics
WILKERSON, MARCUS MANLEY, *M.A.*, Annie Gorham Fellow in Journalism
WILMARTH, WILSON ELERY, *M.A.*, Fellow in French
WILSON, JAMES DEAN, *Ph.D.*, Honorary Fellow in Plant Pathology—I
WILSON, LOGAN THODE, *M.S.*, Honorary Scholar in Agricultural Chemistry
WILSON, PERRY WILLIAM, *M.S.*, Industrial Fellow in Agricultural Bacteriology and in Agricultural Chemistry
WISE, CLAUDE MERTON, *M.A.*, Honorary Fellow in Speech
WOO, WILLIAM HUA FUH, *B.S.*, Honorary Scholar in Structural Engineering
WOOD, SYLVAN RUPERT, *M.S.*, Honorary Fellow in Chemistry

FACULTY SUMMARY

Rank	Men	Women	TOTAL
President, Registrar, and Deans	11 (2)	1	12 (2)
Directors of Schools	3	1	4*
Professors	206 (9)	3	209 (9)
Associate Professors	95 (1)	19 (1)	114 (2)
Assistant Professors	139 (4)	45	184 (4)
Lecturers (small part of time)	43 (9)	3	46 (9)
Clinical Associates (small part of time)	3	0	3
Research Associates (includes State Associates)	7	2	9
Instructors	275 (14)	110 (9)	385 (23)
Assistants (mainly half time)	301 (31)	108 (17)	409 (48)
Research Assistants (mainly half time)	51 (3)	15 (1)	66 (4)
Clinical Assistants	3 (1)	0	3 (1)
Totals	1,137 (74)	307 (28)	1,444 (102)

Numbers in parenthesis indicate faculty members who were here for only one semester either by appointment or because of resignation, leave for one semester, or death. These numbers are included in the totals for men and women by ranks. Totals also include members on leave for the year as indicated in table below.

*All professors except the director of the Library School, who is a lecturer.

THE ABOVE TABLE INCLUDES:

a. Members of the instructional and research staffs at Madison.

b. Extension workers throughout the State, including the Milwaukee Center.

c. Administrative officers and librarians having the rank of any member of the instructional staff.

d. The following who were on leave for the entire year:

	Men	Women	Total
Professors	3	0	3
Associate Professors	2	0	2
Assistant Professors	4	1	5
Instructors	2	0	2
Totals	11	1	12

THE TABLE DOES NOT INCLUDE:

a. The following emeritus members of the faculty:

	Men	Women	Total
President	1	0	1
Dean	1	0	1
Professors	14	0	14
Assistant Professors	0	3	3
Totals	16	3	19

b. The following persons without faculty rank:

Administrative staff	18	7	25
Hygienic Laboratory staff	0	5	5
Library staff	1	24	25
Totals	19	36	55

c. Fellows and Scholars

Fellows	110	25	135
Scholars	30	8	38
Totals	140	33	173

d. Undergraduate Assistants 29 4 33

PUBLIC LECTURES

Each year the University arranges a series of public lectures, and brings to Madison for that purpose a number of distinguished speakers. The aim is to provide lectures of general interest and to have them cover a wide range of subjects. The lectures are free to the students and to the public.

ACADEMIC YEAR 1930-31

1930

October 8—George Russell (Æ)—"A Philosophy of Rural Civilization."
October 13—Carl H. Becker—"The Spirit of the German University of Today."
October 16—Frank Lloyd Wright—"The New Architecture."
October 17—Frank Lloyd Wright—"Salvation by Imagination."
October 29—Giorgio Abetti—"Galileo and Astronomy in Florence."
October 31—Thos. H. Dickinson—"Recent Trends in the American Theatre."
November 3—Hjalmar Schacht—"The Economic Side of Reparations."
November 3—Philip B. Whitehead—"The Conversion of Pagan Buildings in Rome into Christian Churches."
November 6—L. Lévy-Bruhl—"Primitive Mentality."
November 13—M. Weinberg—"Anaerobiasis and the Relation of Anaerobic Micro-organisms to Disease."
November 14—M. Weinberg—"Serum Therapy in Diseases due to the Pathogenic Anaerobes."
November 18—James T. Shotwell—"The Nature and Technique of International Politics."
December 3—Alfred Senn—"A New Theory Concerning Germanic-Finnish Relations."
December 5—Karl P. Harrington—"The Archaeological Lure of the East."
December 8—Robert S. Conway—"Virgil's Creative Art."
December 9—Robert S. Conway—"Historian and Emperor: A Study of Livy and Augustus."
December 9—Ross A. Gortner—"Bio-Chemistry and the Problem of Organic Evolution."
December 10—Robert S. Conway—"Octavian, Horace, and Augustus."
December 11—Ross A. Gortner—"The Application of Colloid Chemistry to Biological Problems."
December 15—Alfred G. Pelikan—"Art in Industry."
December 16—Isaac Joslin Cox—"Bequest of Bolivar."
December 16—S. W. Fernberger—"Psychiatrist, Psychologist and Mental Hygiene."
December 20—N. I. Vavilov—"The Origin of Cultivated Plants: North America as a Center."

1931

January 6—Horace W. Wright—"Rome, the City of the Kings."
January 21—W. Kroll—"The Influence of the Ancient Drama upon the Modern Drama."
February 11—Wilhelm Blaschke—"Selected Topics of Differential Geometry."
February 12—Halvdan Koht—"Scandinavian State Builders."
February 13—Halvdan Koht—"The Religious Cleavage of Europe."
February 13—Paul B. Travis—"Beautiful Africa."

March 6—H. C. Carver—"A Résumé of Correlation Theory."
March 12—W. D. Hambly—"Primitive Tribes of Angola, Portuguese West Africa."
March 25—Harold Bohr—"On Almost Periodic Functions."
March 31—Paul Merker—"Das deutsche Drama im 20ten Jahrhundert."
April 1—Paul Merker—"Methoden und Probleme der modernen deutschen Literaturwissenschaft."
April 3—Michael West—"The Teaching of Reading in a Foreign Language."
April 6—Michael West—"The Teaching of Speech Based on the Reading Vocabulary."
April 17—Rachel L. Sargent—"Rustic Life in Ancient and Modern Greece."
April 21—P. W. Bridgman—"The Recent Change of Attitude Toward the Law of Cause and Effect."
April 22—P. W. Bridgman—"Physical Effects of High Pressure."
April 29—Gilbert Gidel—"Critical Examination of Peace Agencies since 1919."
May 14—Marie Ginsberg—"Women and Contemporary International Cooperation."
May 18—H. S. Bennett—"The Mediaeval English Undergraduate."
May 18—Paul Laumonier—"Les Muses de Ronsard" (in French).
May 19—H. S. Bennett—"Women's Life in the Middle Ages."
May 25—José Pijoán—"Correlation of Contemporary Art and Modern Thought."
May 26—K. J. Freudenberg—"The Pigments of Leaves and Flowers."

PART II—GENERAL INFORMATION

HISTORY AND GOVERNMENT

HISTORICAL SKETCH—In the settlement of the pioneer regions of the United States, it very early became the established practice to set apart a share of the unoccupied land for the support of an institution of higher learning. Immigrants were thus assured that the opportunities of an advanced education would not be denied the children of the new community because the founders of it had ventured into the wilderness. This system, conceived in a spirit of statesmanship at once high and prudent, tended to draw an intelligent body of citizens into the region which was being settled, and to set at work forces which would be felt in the permanent elevation of the tone of public education. Thus in 1836, the first year of the territory of Wisconsin, steps toward the establishment of a university were taken by the territorial legislature. In 1839, the National Congress granted to the territory two townships of public land "for the use and support of a university"; and in 1848, when Wisconsin was applying for admission to statehood, provisions for the university were written into the constitution laid before Congress.

The state was admitted May 29, 1848; the necessary legislative acts providing for the organization of the University were approved July 26 of the same year; and the first Board of Regents met at Madison in October. The new state had nothing with which to endow the new institution but the unsettled land already granted to it. The Regents, therefore, had before them the choice of two courses—to sell the lands at low prices in competition with the other wild lands of the state, or to refrain from selling until the increase of population should have raised the value of the university property to a substantial amount. The one course would sacrifice the material endowment; the other would prevent the state from benefitting by the influence of the University in its formative years. The Regents wisely, as the history of the state has proved, determined to open the institution without delay. The financial operations which followed have been severely condemned, but there can be no question that the intelligent bounty of the state legislature has afforded the University a safer and far more generous support than the largest possible endowment that could have been secured by the conservative management of the land of the institution. Moreover, the direct dependence of the University upon the legislature has made it a part of the life of the state in an intimate way, and by making higher education a practical matter for all citizens, has performed a useful service as an element in raising political questions above a merely material plane.

The new institution began instruction in February 1849. It bore the name of a university, but had in operation only a preparatory school of twenty pupils, under the tuition of John W. Sterling, a graduate of Princeton, who bore the title of professor of mathematics. Professor Sterling gave a life of sacrificial devotion to the institution as it added to its academy a little college, and as the little college carried on its struggling and painful life. He was happy enough to live until the University began to assume proportions worthy of its ambitious name. The chancellor, John H. Lathrop, a graduate of Yale, called from the presidency of the University of Missouri, entered upon his duties in the autumn of 1849. He was a man whose plans were genuinely large and at the same time

definite, but which were in the main never realized because of the paucity of funds. He insisted upon maintaining a solid classical course as the nucleus about which all possible future developments were to be gathered but which was never to be sacrificed to any other objects, however plausible they might seem and however much he desired to meet them. Under his administration (1849-1858) the faculty grew to seven members, and some systematic instruction was given in modern languages, English literature, the art of teaching, and agriculture, as well as ancient languages, mathematics, and philosophy. The college was bitterly criticized. There was a feeling abroad, vague but insistent, that the University did not do for the community what it should. A "practical" education was wanted, without any clear idea of what a practical education might be, or how expensive the equipment for it must be. Chancellor Lathrop resigned, and after a few months, during which the well-known educational theorist, Henry Barnard, then in ill health, held the title of chancellor, the administration lapsed into the hands of the faculty, Professor Sterling presiding as vice-chancellor. The dark days of the Civil War followed. The professors lived on half pay. Many of the students took their places in the army, so that in 1864 no commencement exercises were held, only one of the senior class being in residence.

The maintenance of the institution during these days of struggle had its important effect—that a center and tradition were created. The material beginning of the University may fairly be said to be the grant under the Morrill Act (1862) for the support of a college of agriculture and mechanic arts "without excluding other scientific and classical studies." This noble statute bears evidence of the influence of the Civil War in that it made instruction in military tactics a condition of the continuance of the grant. The very smallness of the literary college perhaps made it the more natural to amalgamate the new institutions with the old, and thus give to the University of Wisconsin its peculiar character. In the state all types of highest instruction, whether liberal, professional, or technical are given by the one institution. The University of Wisconsin has accordingly a very great diversity of functions and a very complex organization. In this way unseemly rivalries among institutions of higher learning conducted by the state have been avoided and the conception of instruction within the University has been in some departments liberalized and in others elevated.

The reorganization of the institution after the acceptance of the Morrill grant was carried out under the vigorous presidency of Dr. Paul A. Chadbourne of Williams College (1867-1870). A department of agriculture and a college of law were established in 1868; steps were taken toward the acceptance of women students on an equality with men; and the legislature began, first of all to appropriate moneys to compensate for the impairment of the university fund, later resumed the responsibility of providing necessary buildings, and finally took the step of voting direct taxes for the support of the University. At the same time a system bringing the University into close relations with high schools in the state was organized. The presidency of Dr. John H. Twombly (1871-1874) followed that of Dr. Chadbourne.

The foundation of the University had now been laid, and the policy of including within it a group of technical and professional colleges, as well as a strong college of liberal arts, had been determined upon. During the presidency of Dr. John Bascom (1874-1887), the University was developed into a firmly organized and well equipped teaching institution, was brought into close and orderly relations with other public schools of the state, and was made a moral force in the lives of its students and of the community. Dr. Bascom found the recognition of coeducation halfhearted and ambiguous and made it distinct and complete. He found the income deficient, the buildings, the library, and the

scientific apparatus inadequate, and the faculty too small for the proper division of the departments and the maintenance of high standards. In every point the institution was put on a sound basis. Buildings were erected and satisfactorily equipped, especially for the science departments. The library was enlarged and the faculty became a body of specialists, rather than a group of general teachers. Dr. Bascom more than any other man was responsible for the increase in income which made this progress possible, by the creation of a ratio tax, established in 1876 in the proportion of one-tenth mill to each dollar of the property valuation of the state. The system has been maintained with a few interruptions and with liberal increases ever since. Finally the free high schools, the establishment of which was promoted by the act of 1875, granting state aid to such institutions, were bound to the University by a system of accrediting their graduates on the one hand, and on the other by the recognition of the university degree as a qualification for a certificate to teach in the public schools of the state.

In the administration of Dr. Bascom's successor, Dr. Thomas Chrowder Chamberlin (1887-1892), a graduate of Beloit College, the strong college of Dr. Bascom began to grow into a true university. In all ways graduate work assumed a place as an active part of the institution. Scholars with the ideas of research brought from Johns-Hopkins or from Germany were added to the faculty. The first university fellowships were established. The degree of doctor of philosophy was offered. A reorganization into the Colleges of Letters and Science, Engineering, Agriculture, and Law, effected in 1889, testifies to the growing vigor and more distinctly understood aims of the professional and technical institutions. Intercollegiate debates and athletics and "student activities" began to be heard of, and in brief the tendencies which have resulted in the condition of the present day showed themselves definitely.

During the presidency of Dr. Charles Kendall Adams (1892-1901) these tendencies became dominant. A large armory and gymnasium was built. An athletic field was acquired—Camp Randall, the historic encampment where the Wisconsin troops were concentrated during the Civil War. The University became socially more complex. A dean of women was appointed. A school of music and a choral society were established. In every way the institution developed. The colleges of law and engineering grew rapidly, and had to be provided with new buildings. The fields of political, economic, and social science, and of history were greatly strengthened. The University had become very definitely the recognized culmination of the public instruction of the state, and was resorted to in increasing numbers by graduates of the state normal schools. The institution was cramped for want of room, and though the increases in building and equipment were rapid, they barely kept pace with the enormous growth in the number of students. The crowning achievement of Dr. Adam's administration was the erection on university ground of a building to house, with the university library, the library of the State Historical Society—a reference library of great value, and in some aspects unique. The improvement of the facilities placed at the service of the University by the opening of the library, which took place in 1900, marks an epoch in the history of the institution.

Dr. Adam's health failed in 1900; and from that time to 1903, with but a few weeks of interruption, Dr. Edward Asahel Birge, for many years a member of the faculty and then Dean of the College of Letters and Science was acting president. Throughout the entire period the increase in numbers and the corresponding development of the work of the institution went on uninterruptedly.

Charles Richard Van Hise, professor of geology, was the first alumnus of the University to be called to the presidency, which he assumed in 1903 and occupied until his death on November 19, 1918. The material progress of the

institution continued under his administration. The College of Agriculture became an important college, as well as an institution of research. A course in home economics was created; the first two years of a medical course were given. Courses in journalism, in chemistry, and for the training of teachers were established, while the older similar School of Commerce, now called a course, continued to thrive. Lagging somewhat behind these advances have come the material provisions for them, so that the University remains crowded. The mere enumeration of the newly organized courses illustrates the fact that during the administration of President Van Hise, the tendency of the University to accentuate professional equipment rather than a liberal culture suffered no abatement. At the same time, the work of the department of the humane arts and the pure sciences constituted the largest single part of the activity of the University and the opportunity and the ideal of liberal culture were maintained with energy.

The war made a deep impress upon the life of the University. In such a national crisis an institution of higher learning manifests its ideals mainly through the response of those who have received its training and imbibed its spirit. The University fostered the ability and encouraged the desire of its faculty, alumni, and students to be of directly active use to their country, an ability and a desire which have been abundantly manifested. For the alumni it could do little directly, but it has carefully preserved the record of their service as a memorial to the future. To the members of the faculty called to war work, it granted leave of absence on generous terms. The total number of faculty, alumni, and students in active military service was approximately 10,000 men.

The signing of the armistice did not terminate the University's connection with the war, for many students and not a few of the professors remained in the service in the war zone, or in the army's educational schools, or aided the American Commission in the manifold duties of settling the terms of the Peace of Versailles. In all the labors of war and of the coming peace, President Van Hise was untiringly active, and his death, a few days after the armistice, was in truth another sacrifice which the Great War imposed upon the University.

In January 1919, Edward Asahel Birge, who had been Dean of the College of Letters and Science since 1891, was elected President of the University. The issues which confronted his administration were especially heavy and complicated. They involved numerous scholastic questions and also many difficult financial problems, raised by the phenomenal increase in attendance after the war and by the concurrent increase in the cost of living and building, which came at a time when business of nearly all kinds was beginning to suffer the inevitable check which followed the peace. Partial solutions were found for these problems until a special session of the legislature, in May, 1920, granted the necessary funds for operation and enabled the University to place salaries on a satisfactory basis. Toward the close of President Birge's term and under his inspiration, regents, faculty, legislature, and state had united to ensure the future of the University. Other results of his administration, which helped to initiate the post-war development of the University, were: the securing of a modest but promising annual research fund; the enlargement of the medical course to the full four years; the erection of the Wisconsin General Hospital, which is administered by the Medical School; and the resumption of building operations in the University, made possible by the legislature of 1925.

Glenn Frank, editor of *The Century Magazine,* succeeded Dr. Birge upon the retirement of the latter in 1925.

Place in the Educational System—The University of Wisconsin is the culmination of the free educational system of the state. In the educational policy

of the state, the University is related to the high schools as are the high schools to the primary and grammar schools. It is not expected that all pupils who complete the grammar grade will advance to the high school; nor is it expected that all who complete a high-school course will go forward to the University. But the school system of the state has been so arranged as to make advancement from one step to another as easy and natural as possible. The University encourges in its teachers and advanced students research, including learning, investigation, and the application of scientific knowledge to the arts of life. Its largest work is to disseminate knowledge through the systematic discipline of organized courses to resident students, both in liberal and professional study. In addition, the University, through an extension division organized upon the broadest basis, assists those who for any reason cannot become resident students to enjoy the benefits of its facilities and equipment, with the fewest possible restrictions.

SUPPORT—The University is supported partly by the income of federal grants, partly by taxation of the people of the state, partly by student fees, and to a slight extent by private gifts. There have been several federal grants, namely: The Two-Township Grant of 1848; the Supplementary Two-Township Grant of 1854; the Morrill Grant of 1862; the Supplementary Morrill Grant of 1890, and the Nelson Grant of 1907 for the support of teaching in agriculture and mechanic arts; the Hatch Grant of 1887, the Adams Grant of 1906, and the Purnell Grant of 1925 for the support of agricultural experiment stations; the Smith-Lever Grants of 1914 and 1924, and the Capper-Ketcham Grant of 1928 for the support of extension work in agriculture and home economics.

In addition to numerous and large appropriations for buildings and other scientific purposes, the state of Wisconsin has made a number of continuing grants. The first was the one-tenth mill tax of 1876. The principle of this tax was once temporarily abandoned, but has been recurred to by the legislature, the present ratio being three-eights of a mill on the dollar.

The more important gifts that have come to the University are from Dane County for the purchase of lands for the University farm; from the late Governor C. C. Washburn for the founding of Washburn Observatory; from the late Judge Mortimer M. Jackson for the establishment of the Mortimer M. Jackson professorship of law; from the late Dr. C. K. Adams and Mrs. Adams for the foundation of fellowships; from the late Mrs. Fannie P. Lewis for the foundation of scholarships for women; from the late Anna Marston for the establishment of the Anna Marston Fellowship; from the late Calvin K. Jayne, the residue of whose estate is to be used as a loan fund for agricultural students, or for fellowships in the event that the money is not required for loans; and from Horace S. Oakley, Mrs. Mary Oakley Hawley, and George Walter Oakley, a fund in honor of their mother to be known as the Jane Oakley fund, the income to be used to pay the annual contributions of the University of Wisconsin to the American School of Classical Studies at Athens, Greece.

On August 27, 1908, the entire estate of Colonel William F. Vilas was bequeathed to the University, the income, however, (part, or whole if need be) to go to his wife and daughter during their lives. Half of the income of the estate is to be used for the support of research professorships, fellowships, and scholarships, and the remainder to increase the principal. The residue of the estate of the late Torger Thompson is bequeathed to the University to establish a chair in the Scandinavian languages and to assist Scandinavian students attending the University; the will also provides for a trust fund of $10,000, the income to be paid annually to the Regents for research in clinical medicine. In 1911 the friends of the University created the Carl Schurz Memorial Foundation

with a fund of $30,000 given in trust to the Regents of the University. The unused income from this fund has been transferred to the principal from time to time so that the fund now amounts to $48,000.

The late J. Stephens Tripp, of Prairie du Sac, made the University residuary legatee of his estate of approximately $500,000, free from limitations and restrictions of any kind, which marks it as a remarkable expresssion of confidence in the permanent administration of a great public educational trust. $300,000 of the principal and accumulated income was used to aid in the construction of Tripp Hall, one of the dormitories for men. It is expected that this sum will be returned to the J. Stephens Tripp Fund when the other indebtedness on the dormitories has been amortized. $200,000 was used to aid in the construction of the Memorial Union Building and Tripp Commons. $10,000 was put in the permanent University Trust Funds, the income to be used for a scholarship for students from Sauk County. The remainder is to be used for the acquisition of land for the development of an arboretum in the vicinity of Lake Wingra, already undertaken by the Madison Parks Foundation. The will of the late Mary J. Eichelberger, of Horicon, provided $20,000 for the University; like that of Mr. Tripp, this bequest is free from limitations and restrictions.

The will of the late John M. Olin of Madison provided for the gift to the Regents, in memory of his wife, Helen Remington Olin, of his beautiful home at 130 North Prospect Avenue, and eight lots, to be used as the residence of the president of the University. The premises are now occupied by President Frank and his family.

The will of the late Thomas Evans Brittingham of Madison provided for a "University of Wisconsin Trust Fund," the amount of which has not been reported to the Regents. The trustees are to distribute annually, or from time to time, so much of the net income as they may deem proper to individuals, colleges, or departments of the University. The funds released have been sufficient to maintain the Brittingham Professorship of Philosophy during the past three years.

The will of the late William H. Kipp, of Reedsburg, provides for a permanent trust fund, the amount of which has not yet been determined. The income is to be used for scholarships of $1,000 per year for students from Wisconsin high schools; the first one is to be awarded to a student from Adams County, and thereafter (as rapidly as funds become available) to students from other counties in alphabetical order.

GOVERNMENT—The government of the University is vested in the Regents, who possess all the powers necessary to accomplish the objects of its establishment and to perform the various duties prescribed by law. The Regents, appointed by the Governor of the state, include one member from each of the eleven congressional districts, and four from the state-at-large, of whom two are farmers and two are from the manual trades. At least two of the members are women, and the President of the University and the Superintendent of Public Instruction are *ex-officio* members. The Regents appoint all administrative officers and faculty members, and all faculty rules regarding the government of students are subject to their approval.

The university faculty exercises authority, subject to the approval of the Regents, in all matters relating to educational policy, scholastic standards, and, in general, the relation of students to the University. All members of the staff of instruction with the rank of assistant professor or above constitute the governing faculty; other members of the staff of instruction have a voice but no vote at all meetings of the university faculty, with the exception of executive sessions. The faculty of each college, school, or division is similarly organized for the purpose of administering matters relating solely to its own unit of organization.

PUBLICATIONS OF THE UNIVERSITY

The University of Wisconsin Studies are published quarterly at Madison and contain original papers by persons connected with the University. More detailed information regarding these and other publications may be obtained on application to the University Editor.

The general series of the Bulletin of the University of Wisconsin includes the annual announcements of courses, both general and special. Copies of the special announcements of the various schools and colleges may be obtained upon application to the University Editor; the complete announcement is reserved for institutional distribution and so is not available to prospective students. The University Directory, containing names, classifications, and addresses of students and staff members, is published annually in November; copies are mailed by the Information Office upon receipt of fifty cents in stamps.

The high-school series, comprising a number of manuals designed to assist secondary school teachers in the subjects of the high-school curriculum, is published by the Committee on High-School Relations.

From the Washburn Observatory are issued the Publications of Washburn Observatory; from the Agricultural Experiment Station, bulletins and annual reports; and from the office of the Farmers' Institute, the Wisconsin Farmers' Institute Bulletin.

THE CAMPUS

By the provisions of the Constitution of the state of Wisconsin, the University must be located at or near the state capitol, afterwards fixed at the "village of Madison." The founders of Madison intelligently adapted the original plan of the city of Washington to local conditions, selecting an eminence in the center of the city for the site of the capitol, and laying out radial thoroughfares approaching it so that it closes the vista from every direction. A mile to the west, at the end of one of these radial streets, on a second elevation rising abruptly to a height of more than a hundred feet above the shore of Lake Mendota, the principal building of the University was erected, thus closing the view from the capitol in that direction.

The earliest buildings to be erected on the campus were North and South Halls (1851, 1855), which contained for some years not only all the classrooms and offices of the University, but also the living quarters of both faculty and students. These twin buildings, remodeled in recent years, now house the departments of mathematics, journalism, and political science, and several administrative offices. Rapid increase in enrollment soon resulted in the erection of University Hall (1857), since renamed Bascom Hall, which at once became and has always remained the center of the University. This building, originally constructed in the simple and dignified modification of classical renaissance architecture accepted in America since colonial times, has been twice added to (1900, 1906), and has recently (1927) undergone further enlargement in conformity with farsighted plans for symmetrical expansion. In Bascom Hall are located the principal educational administrative offices of the University and the classrooms and offices of several of the more important departments of instruction in liberal arts subjects.

From Bascom Hall a broad open plaza bordered by elms—the upper campus—sweeps downward in the direction of the capitol. Along one side are North Hall, the Engineering Building (1901, 1910), and Science Hall (1888), back of which, near the lake shore, may be found a number of the special buildings of the College of Engineering; on the opposite side are situated the Biology Building (1910), South Hall, the Law Building (1893), and Music Hall (1879), flanked by the group of women's buildings, including the two dormitories, Chadbourne Hall (1871) and Barnard Hall (1912), and the gymnasium, Lathrop Hall (1909). Back of Bascom Hall, at the base of the hill, are the Chemistry Building (1905, 1912, 1928) and Sterling Hall (1916), in which are housed the departments of physics, economics, and sociology.

The lower campus, a flat area encroaching upon the old residential district of the city, is still in an early stage of development. Here, at the lake's edge, stands the combined men's gymnasium and armory (1894) adjacent to which are the boat houses and an open field used for a parade ground and for certain types of athletic exercises. Close by is situated the most stately of all the buildings on the campus, the Library (1900, 1912), an edifice of Bedford limestone with a colonnade and terrace of great beauty and dignity. In a grove of oaks and elms toward the lake from the library stands the Memorial Union Building (1928), "erected and dedicated to the memory of the men and women of the University of Wisconsin who served in our country's wars." Among the features of this building are a large refectory, several dining rooms, recreation rooms, quarters for student publications and other undergraduate activities, and lodgings for transient alumni. The Y. M. C. A. dormitory, the University Club Building, and the Administration Building, headquarters of the business organization of the University, are also located in the lower campus district.

Westward from the main group of buildings are situated the University Extension and Home Economics Building (1912), Washburn Observatory (1878), the medical group, the Wisconsin High School (1913), and, extending for some distance beyond these, the numerous buildings and experimental plots of the College of Agriculture, including barns, greenhouses, and a large judging pavilion (1908) containing an oval amphitheater with a seating capacity of two thousand. The medical group consists at present of the Wisconsin General Hospital (1924), the Service Memorial Institutes Building (1928), the Bradley Memorial Hospital (1918), the Infirmary (1918, 1931), the Nurses' Dormitory (1925), and the Orthopedic Hospital for Children (1931). On the lake shore back of the principal agricultural buildings is a group of men's dormitories, Adams Hall, Tripp Hall, and the Refectory (1926), near which are located the intramural athletic fields for men.

South of the agricultural campus lies the forty-two acre tract known as Camp Randall, the north portion of which has been set aside as the new site for the College of Engineering; the present buildings include the old Forest Products Laboratory (1909) and the Mechanical Engineering Building (1920, 1931). The south part of the area is dominated by the Men's Field House (1930) and a large concrete stadium, with adjacent playing fields for men. Memorial Park, the women's field house and playing fields, tennis courts, and storehouses occupy the rest of the Camp Randall area.

A new Forest Products Laboratory is now under construction by the Federal Government on a tract of land some distance to the west of the dairy barns of the College of Agriculture; upon completion of this new building, the present laboratory and the old wing of the Soils Building will be available to the University for much needed expansion.

Spread for nearly a mile along the crest and on the slopes of an irregular ridge, bordering the southern shore of the largest of Madison's four lakes, the grounds of the University are of marked natural beauty and afford many rare views out over the broad expanses of water, farm lands, and city dwellings. Of special attraction are the many choice groups of evergreens, the rows of towering elms, and the willow drive fringing the lake-shore. The lake itself provides unexcelled facilities for swimming, boating of all sorts, and, during the late winter, skating, while the hills make possible two other forms of winter sports not everywhere common, skiing and tobogganing.

The grounds have a special archaelogical interest because of the presence of several Indian effigy mounds which are found in abundance in and near Madison. These are small mounds of earth in the form of animal and other totems, made by the Winnebago and allied native tribes in prehistoric periods, unique in being found only in southern Wisconsin and along the boundaries of the states to the west and south.

LIBRARIES

The libraries at Madison, all of which are at the service of members of the University, are six in number, viz., the Library of the University of Wisconsin, the Library of the Historical Society of Wisconsin, the Library of the Wisconsin Academy of Sciences, Arts, and Letters, the State Law Library, the Legislative Reference Library, and the Madison Free Library. These libraries duplicate books only to supply exceptional demands, and have an effective strength approximately equal to the whole number of volumes possessed by them. The total number of bound volumes in all the libraries is about 874,000 and the number of pamphlets exceeds 415,000.

The first three libraries above named are housed on the university campus in the library building of the State Historical Society. In the south half of the first floor are located three department libraries of the Historical Society, viz., documents newspaper files, and maps and manuscripts. In the north end of this floor is a series of six seminary rooms, allotted to American history, European history, economics, political science, mathematics, and Semitic languages. The greater part of the second or main floor is occupied by the general reading room and the periodical room, which are used in common by the two libraries. In open cases in the reading rooms are shelved several thousand general reading reference, and reserved books. To these, as well as to the large collection of general periodicals in the periodical room, all readers have direct access. The main portions of both libraries are stored in the stack wings adjoining the delivery room on the west. University staff members have direct access to the shelves in all parts of the library, and students engaged in advanced work, upon recommendation of their instructors, are allowed access to those parts of the collection dealing with their special subjects.

The administrative rooms of the Historical Society and of the University Library are situated at the south and north ends of the second floor respectively. The north end of the third floor is occupied by six seminary rooms for the subjects of philosophy and education, classics, and modern languages and English. The museum and gallery of the Historical Society occupy the fourth floor. During the academic year, the library is open fourteen and one-quarter hours daily, except on Sundays and legal holidays.

A large reserved book reading room in the basement of Bascom Hall is open at the same hours as the Library during the academic year. The agricultural, engineering, law, medical, and astronomical libraries are located in their respective buildings.

The Library of the University of Wisconsin, including its branches, contains about 422,500 volumes and 68,000 pamphlets. The catalog is the usual dictionary card catalog of authors, subjects, and titles in one alphabetical arrangement. Subject to certain restrictions, books may be drawn by all members of the University. Every student of the University, matriculated for the regular year, is required to make a library deposit of $2.00. This deposit, less charges for fines and damages, is returnable to the student by the Bursar upon graduation or earlier withdrawal from the University.

The Library of the State Historical Society contains 266,500 volumes and 287,000 pamphlets. While strong in all fields of American history and allied subjects, it is especially rich in manuscript and other material for the study of the history of the Mississippi valley. Its collections in English history are among the most extensive in this country.

The Library of the Wisconsin Academy of Sciences, Arts, and Letters, comprising about 5,000 volumes, is a valuable collection of reports and transactions of learned societies. It is located in the library building and constitutes a useful supplement to the other libraries in this special field.

The Legislative Reference Library in the Capitol numbers 60,000 volumes, pamphlets, and collections of clippings. This library collects information on all subjects of legislation, but the material is chiefly in the field of political science and economics. The State Law Library, also in the Capitol, numbers about 88,000 volumes. Students are allowed to draw books from the Madison Free Library, a collection of 92,000 volumes.

GENERAL ACADEMIC REQUIREMENTS

ADVISERS. Upon being admitted to the University, each student is assigned to a member of the faculty, who acts as his adviser. The duties of the adviser are to assist the student in selecting his subjects so as to secure a well-rounded education, as well as to aid him in interpreting the requirements and to oblige him to meet them in their proper sequence. The responsibility for the selection of courses rests, in the final analysis, upon the student and it is not the province of the advisor to refuse approval of a course which the student is entitled to elect. Similarily, it is the primary duty of the student to meet the requirements of his course in their proper order, so that he may not, in his senior year, find himself ineligible for graduation. At the opening of each semester the student is required to consult his adviser concerning his choice of studies, and the adviser must approve the student's elections before he is permitted to enter classes.

EXAMINATION; GRADES. Two-hour examinations are held at the close of each semester, and one-hour examinations are held in all elementary and most advanced courses one to three times during a semester. No special semester examination will be given except by authorization of the faculty. Final grades are made up at the close of each semester, but mid-semester reports are also turned in for all freshmen and for students whose work has been unsatisfactory.

CREDITS AND POINTS. The unit used in computing the amount of work required for graduation is the credit, which represents one hour of class work per week for one semester, together with the necessary preparation. Two or sometimes three hours of laboratory work are considered as the equivalent of one hour of class work. In order to receive a degree, the student must gain not only the number of credits required in the course which he is pursuing, but his studies must reach a certain average of excellence. This standard is fixed by the grade-point system, which requires for graduation from any course as many points as credits. The following table shows the university scale of grading, together with the number of points per credit for each grade:

GRADE	PERCENTAGE	POINTS PER CREDIT
A (Excellent)	93–100	3
B (Good)	85–92	2
C (Fair)	77–84	1
D (Poor)	70–76	0
E (Condition)		0
F (Failure)	Below 70	0

The point-credit ratio of a student is determined by dividing the total number of points he has earned by the total number of credits. If this ratio is less than 1.0, the student is falling behind in the requirements for graduation and may therefore be placed on probation, advised to withdraw, or dropped.

ATTENDANCE. Students are required to be present at the opening of the semester and to remain until the work of the semester is finished. It is expected that every student will be present at all of the classes at which he is due. If at any time a student is absent, he must satisfy his instructors that such absence is for good and sufficient cause. Any student who is absent from recitations immediately preceding or following Thanksgiving day or the Christmas or spring recess without an excuse acceptable to the dean of his college will be excluded from the semester examinations in those subjects from which he was absent and will be required to write special examinations during the following semester. This rule also applies to absences at the opening of the second semester.

AUDITORS. Regular students may enter classes as auditors, subject to the approval of the adviser and of the instructor whose class is visited. Auditors are under no obligations of regular attendance, preparation, recitation, or examination, and receive no credit toward graduation. Others may be admitted as auditors only with the consent of the dean; they are required to register, pay the regular fees, and to have class cards for the courses they elect to attend.

COURSES AND DEGREES

TITLES

GRADUATE IN AGRICULTURE—Two-Year Course in Agriculture
GRADUATE NURSE—Three-and Five-Year Nursing Courses
JUNIOR GRADUATE IN LIBERAL STUDIES—Completion of sophomore year in College of Letters and Science

FIRST DEGREES

BACHELOR OF ARTS—Granted in General Course and Course in Commerce
BACHELOR OF ARTS—(Humanities)
BACHELOR OF ARTS (Journalism)

BACHELOR OF LAWS

BACHELOR OF MUSIC

BACHELOR OF PHILOSOPHY—Granted in General Course and Course in Commerce
BACHELOR OF PHILOSOPHY (Normal Course)—not granted after 1932

BACHELOR OF SCIENCE (Agriculture)—Four-Year Course
BACHELOR OF SCIENCE (Agriculture and Education)—commencing 1932
BACHELOR OF SCIENCE (Art Education)
BACHELOR OF SCIENCE (Chemistry)
BACHELOR OF SCIENCE (Chemistry-Commerce)
BACHELOR OF SCIENCE (Chemical Engineering)
BACHELOR OF SCIENCE (Civil Engineering)
BACHELOR OF SCIENCE (Education)—commencing 1932
BACHELOR OF SCIENCE (Electrical Engineering)
BACHELOR OF SCIENCE (Home Economics)
BACHELOR OF SCIENCE (Home Economics and Education)—commencing 1932
BACHELOR OF SCIENCE (Hygiene)—Five-year Nursing Course
BACHELOR OF SCIENCE (Industrial Education)—not granted after 1931
BACHELOR OF SCIENCE (Mechanical Engineering)
BACHELOR OF SCIENCE (Medical Science)
BACHELOR OF SCIENCE (Metallurgical Engineering)
BACHELOR OF SCIENCE (Mining Engineering)
BACHELOR OF SCIENCE (Pharmacy)—Four-Year Course
BACHELOR OF SCIENCE (Physical Education)

GRADUATE IN PHARMACY—not granted after 1934

A graduate of any course may receive the baccalaureate degree of any other course by completing the additional studies required in that course. Two baccalaureate degrees cannot be taken in one year, and for a second bachelor's degree in the College of Letters and Science there are required one year's additional study and a special thesis.

HIGHER DEGREES

The University confers in course, the degrees of Doctor of Philosophy, Doctor of Medicine, and Doctor of Public Health. The degree of Master of Arts is conferred as a second degree upon candidates who have received the degree of Bachelor of Arts or an equivalent, and the degree of Master of Science upon candidates who have received the corresponding baccalaureate degree. Special Master of Arts degrees in Commerce and in Jounrnalism are also conferred. The degree of Master of Public Health is granted in course to graduates of approved medical colleges for graduate work done here. The degree of Master of Philosophy is conferred upon candidates who have received the degree of Bachelor of Philosophy at the University of Wisconsin; such candidates may receive the degree of Master of Arts or Master of Science by doing supplementary work. Candidates who have taken the degree of Bachelor of Science in one of the engineering courses may receive the degree of Master of Science in the appropriate branch, or the degree of Civil Engineer, Mechanical Engineer, etc. For conditions under which these higher degrees are granted, see "Graduate School."

HONORS AND PRIZES

Sophomore Honors. Sophomore honors and high honors are awarded on the basis of a minimum of two full years' work, not less than 60 credits, completed in residence at the University. A student earning during these two years 135 grade-points, plus 1½ grade-points for each credit above 60 required in his course, will be awarded Sophomore Honors; a student earning during these two years 165 grade-points, plus 2 grade-points for each credit above 60 required in his course, will be awarded Sophomore High Honors.

Senior Honors. Senior honors and high honors are awarded on the basis of the academic requirements for the second half of any four-year course. A student earning 135 grade-points, plus 1½ grade-points for each credit above 60 required in his course for completing the second half, will be awarded Senior Honors; a student earning 165 grade-points, plus 2 grade-points for each credit above 60 required in his course for completing the second half, will be awarded Senior High Honors. Any student who has been permitted to carry more than the minimum number of credits during the first two years of his course and less than the minimum during the last two years, will not thereby be barred from securing senior honors.

Thesis Honors. Senior thesis honors are awarded at commencement to students who have written exceptionally fine or original theses, without reference to their other work.

Bryan Prize Fund. In 1899 William Jennings Bryan presented $250 to the University, the income to be used as a prize for the best essay on *The Science of Government*. Unused income is added annually to the principal. The fund now amounts to $650.

Salmon W. Dalberg Prize. A gift of $1000 was received from Mrs. Julia Dalberg Bower and Miss Frieda Dalberg, to establish a trust fund in memory of their brother, Salmon W. Dalberg, deceased. The income is to be assigned each year to an honor student in the graduating class of the Law School, commencing in 1931.

EDNA KERNGOOD GLICKSMAN PRIZE. "This prize, perpetuating the memory and influence of Edna Kerngood Glicksman and awarded each year to a member of the senior class in recognition of intellectual attainments, high womanhood, and service in the college community," was awarded in 1930 to Miss Marian S. Horr.

THE THEODORE HERFURTH EFFICIENCY PRIZE. Mr. Theodore Herfurth, of Madison, has offered a prize of $100 to a senior male student who shows greatest evidence of initiative and efficiency. In 1930 the award went to Howard I. Suby.

JUBILEE MEDAL. The award of this medal, a reproduction in gold of the medal designed for the University at the time of its fiftieth anniversary, was established by the cooperation of the Departments of Economics, History, and Political Science in recognition of the best senior thesis in those three departments, and is awarded annually at commencement. The Departments of Philosophy and Sociology are now included in the competition.

LEWIS PRIZE. In 1865, Governor James T. Lewis gave $100 and in 1866 another $100 to constitute a fund the income of which was to purchase an annual scholarship medal. In 1873, with the consent of the donor, it was decided to use the income as a prize for the best undergraduate essay. By 1905 the fund had grown to over $300 and the Regents in recognition of this having been the first permanent endowment given to the University, established the "Lewis Prize," consisting of $25 annually. Any deficiency in the income of the fund, which now amounts to about $700, is to be paid from the general account of the University. The prize is awarded to that member of the freshman class taking full work and regularly enrolled in freshman English who shall write the best theme. under conditions determined by a committee of the instructors in English 1. The prize for 1930 was awarded to Karsten K. Flory.

MITCHELL PRIZE. In June, 1921, Mr. William M. Chester of Milwaukee offered a gold medal in memory of John Lendrum Mitchell, a member of the Class of 1917 who lost his life while serving as an aviator in the American Expeditionary Force in the World War, the medal to be awarded annually for the best essay on industrial relations. The medal for 1930 was awarded to Miss Kathryn J. Robertson.

WILLIAM F. VILAS MEDAL AND PRIZE FUND. In 1910-11 and again in 1911-12, Anna M. Vilas gave $125 for medals for intercollegiate debating and oratory. In June, 1912, to make this annual gift permanent, she turned over $4,000 to the Central Wisconsin Trust Company of Madison, the annual income to be used as follows: First: $125 for seven medals in oratory, to be known as the William F. Vilas Medals for Oratory. The Department of Speech has charge of the administration of these prizes. Second: Two cash prizes for essays—one of $50 and one of $25 to be known as the William F. Vilas Prizes for Essays. The English Department annually posts on various bulletin boards the conditions of competition. The prizes for 1930 were awarded to Miss Grace P. Follett and Ivan Rosenthal.

STUDENT EXPENSE

UNIVERSITY CHARGES

The University reserves the right to alter any of these charges without notice.

TUITION. No tuition is charged to residents of Wisconsin, except in the Library School ($25 per semester for residents and $50 for non-residents), and the Wisconsin High School ($8 per quarter for residents and $15 for non-residents); a fee of $100 per semester is charged to students who are non-residents of this state, as defined in the following excerpt from Section 36.16 of the Wisconsin Statutes:

"Any student who shall have been a resident of the state for one year next preceding his first admission to the University, or any minor student whose parents have been bona fide residents of the state for one year next preceding the beginning of any semester for which such student enters the University, shall, while he continues a resident of the state, be entitled to exemption from fees for non-resident tuition, but not from tuition, incidental, or other fees in the University. Any student who shall not have been a resident of the state for one year next preceding his first admission to the University, except as above provided, shall not be exempt from the payment of the non-resident tuition fees until he shall have attended the University for four academic years but if he shall have attended the University and thereafter shall continuously have been a resident of this state for a period of combined attendance at the University and subsequent residence in the state of not less than four years, he shall, while he continues a resident of the state, be entitled to exemption from payment of the non-resident tuition fee upon reentering the University."

FEES AND DEPOSITS. Each student is required to pay a general fee of $21.50 per semester, covering incidentals, infirmary service, and Memorial Union membership. Students who are paid-up life members of the Memorial Union are entitled to a deduction of five dollars from the general fee. See Summer Session and College of Agriculture for special fees charged in these divisions. The laboratory fees and deposits charged in the various subjects are stated in the announcements of the departments of instruction. A library deposit of $2.00 is required of each student when he first matriculates. Fees are not refundable, except as specified below under Refunds; deposits cover loss of or damage to equipment and are refundable in whole or in part.

PAYMENT. All fees must be paid at the beginning of each semester. Until this has been done, the student will not be considered regularly matriculated and cards entitling him to admission to classes will not be issued. A fine of three dollars ($3.00) is charged for late registration, applicable to all students paying fees after regular registration days, with no exemptions for any reason. The Bursar is required not to accept fees from any student who does not pay promptly after his registration card is issued.

Students entering after half a semester or term has elapsed shall pay half of the prescribed fees, excepting that graduate students who enter on May 15 or later may register on the pre-summer session basis, paying the prescribed infirmary and Union fee and the regular weekly rate.

REFUNDS. The Bursar, upon recommendation of the Registrar, is authorized to make partial refunds of semester tuition and fees on the following basis to students withdrawing from the University: withdrawal within two weeks from the first day of instruction, 80% refund; within four weeks, 60%; within six weeks, 40%; within eight weeks, 20%; after eight weeks, no refund. Students entering after regular registration days and withdrawing within eight weeks from the first class day will, upon recommendation of the Registrar, be allowed refunds according to the above schedule based on the time actually in residence.

The full amount of fees paid will be returned to students who for any reason fail of admission to the University. No claim for remission of fees will be considered unless such claim be presented during the fiscal year to which the claim is applicable. No fees are refunded in case a student is suspended for disciplinary reasons.

GRADUATE STUDENTS. In general, graduate students are required during the regular year to pay the same fees as are undergraduates, with the following exceptions: (a) regular graduate fellows and scholars are exempt from the non-resident tuition fee only; (b) honorary fellows and scholars are exempt from the non-resident tuition fee and from that part of the general fee known as the incidental fee ($12.00); (c) instructors and graduate assistants are exempt from the non-resident tuition fee and from laboratory fees in courses taken in the departments in which they hold appointments.

The following classes of graduate students who are candidates for higher degrees shall be entitled to exemption from the non-resident tuition fee but shall pay such other fees as may be required of graduate students who hold no offical appointment: members of the teaching and research staffs of the University, graduate fellows, graduate scholars, members of the State Geological and Natural History Survey, members of the technical staff of the Forest Products Laboratory, staff members of the United States Department of Agriculture stationed at the University and engaged in research, technical experts employed in any department of the state government, and officers of the United Sates Army detailed as students by proper authority. However, when any such person shall have paid to the University as a graduate student seven semester or summer session fees, he shall be exempt from further payment of general fees or summer session fees. In the administration of this rule, one but only one, nine-week summer session fee or its equivalent may be counted as two of the seven fees above mentioned; also, the full amount of any prescribed fee shall be charged.

Graduate students who are not residents of the state and who are not members of the University staff of instruction or research, and who in any semester pursue studies in amount less than half the normal amount, may have their fees prorated in proportion to the amount of such study upon obtaining the recommendation of the Dean of the Graduate School to the Registrar that the case comes under this rule and that he regards it as one of more than common merit. However, the prorated fee shall not be less in amount than the general fee for the semester.

SELF-SUPPORT

The University Student Employment Office is maintained to assist in finding employment for those men and women students who are partly or wholly self-supporting during their attendance at the University.

Students who have good health, reasonable ability, and a real desire for a college education can make part or all of their expenses by saving what can be

earned during the summer vacation and by working part-time during the school year. Students should realize that to do this requires hard work, the sacrifice of some good times, constant application to studies, responsibility in whatever outside work they undertake, close attention to physical fitness, and careful management of funds. Many working students carry a reduced schedule of classes; the number of credits depends upon the ability of the student and the number of hours of outside work.

Students coming to the University for the first time should have enough to pay all necessary expenses for at least the first semester ($225 to $275), exclusive of tuition fees, clothing, and traveling expenses, so that they may have time to get well started with studies and to find the work best suited to their needs and abilities. See also summary of expenses below.

It is not practicable to make definite arrangements for a position before coming to Madison. In the first place, the employer usually requires a personal interview; in the second place, changes may occur in the plans of either student or employer, so that arrangements made in advance often do not materialize and disappointment results. Neither is it a good plan to come a long while in advance with the idea of finding work, as most employers do not know their needs definitely until a week or ten days before the opening of the school.

As several hundred students apply for work at the opening of the school year, competition is keen. It is impossible to place all of the applicants at once, and often many must wait several days or weeks before finding suitable employment. The office is principally called upon to furnish stenographers, typists, students with technical skill, clerks, waiters and waitresses, dishwashers, janitors, choremen, and houseworkers in private families in exchange for room and board. Only those who are willing to do whatever is available can expect to earn their expenses. As far as possible, applications for employment are filled in order; but as the kinds of work available are of a widely varied nature, those students who are best qualified for the work must, in fairness to the employer, be considered first.

Students who desire further information in regard to self-support may write to the University Student Employment Office, 772 Langdon Street, Madison.

SUMMARY OF EXPENSES

Although it is difficult to give a definite set of figures which would be applicable to the "average" student, the following table may suggest the expenses which various classes of individuals might incur during a single academic year, exclusive of clothing, transportation to and from Madison, and non-resident tuition fee.

	Lowest	Average	Highest
Board	$ 200	$ 260	$ 325
Laundry (*if mailed home)	10*	50	75
Sundry personal expenses	50	150	300
Room rent—			
Men's dormitories	130	160	180
Women's dormitories	130	160	160
Double room, per person	90	125	200
Single room	150	175	250
Fees, textbooks, etc.	65	125	200
	$ 415	$ 745	$1150

LOAN FUNDS AND UNDERGRADUATE SCHOLARSHIPS

Information relative to loan funds and scholarships may be obtained from the Chairman of the Committee on Loans and Scholarships, except as specifically noted in the following paragraphs.

SCHOLARSHIPS

LEGISLATIVE SCHOLARSHIPS—Section 36.16 of the Wisconsin Statutes provides that: "The Regents of the University may remit non-resident tuition either in whole or in part, but not other fees, to a number of needy and worthy non-resident students, not exceeding 8 per cent of the number of non-resident students registered in the preceding year, upon the basis of merit, to be shown by suitable tests, examinations, or scholastic records, and continued high standards of scholastic attainment." These scholarships are available for graduates as well as undergraduates; see under the heading Graduate School. The total number of these scholarships is about 235.

WISCONSIN SCHOLARSHIPS—The Regents have appropriated the sum of $5,000 annually for undergraduate scholarships to be known as the Wisconsin Scholarships, consisting of 50 scholarships of $100 each. Applicants for the Wisconsin Scholarships must be first-year students who can register as residents of Wisconsin, who are in need of financial assistance, and who show worth and ability during the first semester. These scholarships are awarded during the second semester by the Regents upon recommendation of the regular faculty committee on undergraduate scholarships, to whom application should be made.

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN SCHOLARSHIPS—In May, 1917, the Madison branch of the American Association of University Women made available a scholarship of $100 for a university girl, preferably one who has finished her junior year. In 1922 the amount was increased to $200 to provide two scholarships.

AMELIA E. H. DOYON SCHOLARSHIPS—The will of Mrs. Amelia E. H. Doyon, late of Madison, provided for a gift to the University of $5,000 to be known as the Amelia E. H. Doyon Student Aid Fund. The income from this fund is divided into two equal parts, designated as the Amelia E. H. Doyon Scholarships, which are to be given to young women in attendance at the University, to be selected by the faculty. In making this selection the scholarship or standing of the persons selected and their need of financial help are both taken into consideration. Neither scholarship is to be bestowed on any young woman who has not been in attendance as a student of the University of Wisconsin for at least one year.

RUDY HOHLFELD MEMORIAL SCHOLARSHIP—In April, 1926, Professor and Mrs. A. R. Hohlfeld established this scholarship in memory of their son, Rudolf Libbert Hohlfeld, B.A., 1923, who lost his life on November 28, 1925, while engaged in geological survey work in eastern Peru. The recipient of the scholarship is to be a young man of the junior or senior class of the College of Letters and Science who is an able and promising student, actively interested in athletics, and of strong, upright character. Other things being equal, candidates majoring, or at least doing a considerable part of their work, in geology are to be given prior consideration. A student who has held the scholarship during his junior year may be reappointed for a second year as senior. The scholarship at this time amounts to $200 per year.

GAMMA PHI BETA SCHOLARSHIP—The Gamma Phi Beta sorority, in 1911, established an annual scholarship of $100 for women students, to be awarded on the basis of scholarship and need of financial assistance.

GEORGE I. HAIGHT SCHOLARSHIP—In June, 1930, the Class of 1899 voted to establish a $500 scholarship in honor of one of its distinguished members. The award is to be made annually to some Wisconsin man in need of financial assistance, preferably an upperclassman who has shown outstanding forensic ability.

KAPPA KAPPA GAMMA SCHOLARSHIP—An annual scholarship of $150 is provided by the Kappa Kappa Gamma sorority for the assistance of needy and meritorious women students.

KOHLER FAMILY SCHOLARSHIPS—In June, 1927, a gift of $20,000 was received from the Kohler family, of Kohler, Wisconsin, to endow two annual scholarships to be known as the Kohler Family Scholarship for Girls and the Kohler Family Scholarship for Boys. The scholarships are created to encourage attendance at the University by deserving graduates of the public high school of the village of Kohler whose intention it is to complete a four-year course.

FANNIE P. LEWIS SCHOLARSHIP FUND—By the will of the late Fannie P. Lewis, of Watertown, Wisconsin, $10,000 was left to be held in trust by the University Regents. The annual income from this money is to be divided equally between two women students of the University who shall be selected by the Regents, on the recommendation of the faculty. In making these recommendations both scholarship and need of financial assistance are to be considered.

LAVERNE NOYES SCHOLARSHIPS—The Trustees of the LaVerne Noyes Estate offer a limited number of scholarships to the University, equal in amount to the tuition plus laboratory fees, to students who have participated in the Great War, or to the children of men who have. Applications should be made at the beginning of the academic year to the Chairman of the Committee on Loans and Undergraduate Scholarships.

OMICRON NU SCHOLARSHIP—Omicron Nu, an honorary organization of home economics students established in 1919, provides a scholarship of $250 annually for a woman in the Home Economics Department of junior, senior, or graduate rank.

HARLAN B. ROGERS ATHLETIC SCHOLARSHIP—The will of the late Viola J. Rogers, of Portage, included a bequest to the University of $5,000 to establish the Harlan B. Rogers Athletic Scholarship, the income to be used each year as provided in the will. The first award was made during the year 1929-30.

SOUTH AMERICAN SCHOLARSHIPS—The Regents have made available to South American students three scholarships of $224 each. For information address the Secretary of the Regents.

CHRISTIAN R. STEIN STUDENT AID FUND—By the will of the late Christian R. Stein, of Madison, a bequest of $1,000 was made to the University, the interest on which maintains a scholarship to be given by the faculty to a student of the University who has been in attendance at least one year.

J. STEPHENS TRIPP SCHOLARSHIP—In April, 1923, the Regents placed $10,000 of the money received from the Tripp Estate in a separate fund in the University Trust Funds to establish the J. Stephens Tripp Scholarship, the income each year to be paid to a student, graduate or undergraduate, from Sauk County, Wisconsin.

MARTHA GUNHILD WEEK SCHOLARSHIP—In December, 1923, the University received $5,000 from the estate of Martha Gunhild Week, of Stevens Point, to establish the Martha Gunhild Week Scholarship. The income each year is to be awarded to a woman undergraduate in chemistry, the candidate to be named and recommended to the Regents by the faculty of the Chemistry Department.

WOMEN'S ATHLETIC ASSOCIATION SCHOLARSHIP—The Women's Athletic Association has established a scholarship in the amount of $100 per annum, which is awarded to an undergraduate woman.

JULIUS G. O. ZEHNTER ENDOWMENT FUND—The late Julius G. O. Zehnter, of Madison, provided for a bequest to the University of Wisconsin of $10,000, the income to be expended for and used by the German Department of the University. The first award from this was made during the year 1929-30.

LOAN FUNDS

The loans made by the University of Wisconsin are for emergency purposes only, inasmuch as the funds are not large enough to permit sustaining loans to be made.

MRS. WILLIAM F. ALLEN MEMORIAL LOAN FUND—In 1925 a bequest was made to the University from the estate of Mrs. William F. Allen, and the former University League Loan Fund was merged with it. The fund now amounts to over $2,500 and is available for loans to women students upon recommendation of the Committee on Loans and Scholarships.

ARCHIBALD W. CASE LOAN FUND—In 1916, J. F. Case established the Archibald W. Case Loan Fund for engineering students, in memory of his son. For information address the Dean, College of Engineering.

EMERY LOAN FUND—In 1900 a fund was started by Miss Annie Crosby Emery, formerly Dean of Women, which is loaned to needy women students on recommendation of the Committee on Loans and Scholarships.

ARTHUR END MUSIC LOAN FUND—In 1919 the Arthur A. End music loan fund was established as a memorial by his mother, Mrs. Mary B. End, of Sheboygan, Wisconsin, with an initial payment of $100, to be loaned to students of music. For information address the Secretary of the Regents.

CORA RODERMUND EVANS LOAN FUND—In 1926 a bequest of $5,000 was made to the University from the estate of Mrs. Cora Rodermund Evans, with a provision in the will stating that the income from this amount is to be loaned to deserving students in the Medical Department of the University.

JOHN A. JOHNSON STUDENT AID FUND—The University is indebted to the liberality of Hon. John A. Johnson, late of Madison, for a gift of $5,000, made in 1876, the interest on which is loaned to students. The principal of this fund now amounts to about $30,000. The sum obtained by one student in one year shall not exceed $50, and the total amount shall not exceed $200.

KEMPER K. KNAPP LOAN FUND—On January 16, 1924, the Regents accepted the gift of $5,000 from Kemper K. Knapp, of Chicago, for a fund to be used as a student loan fund. Since that time Mr. Knapp has increased the fund to $25,000. Loans are made under the following and such other regulations as the Regents may adopt: (1) loans to be made to students in attendance at the University of Wisconsin; (2) each loan before being made to be recommended by a committee of the faculty; (3) each loan to draw interest at the rate of

three per centum per annum for the first term and at the rate of six per centum for each renewed term; (4) no loan or renewal of a loan to be made for a longer term than one year.

KUPPENHEIMER LOAN FUND—Mr. Albert B. Kuppenheimer, of Chicago, donated $1,000 in December, 1916, to establish a loan fund open to all men students under following conditions: (1) loans not to exceed one year; (2) joint signatures of responsible parties required; (3) interest, only after maturity, at six per cent; (4) administration to be in the hands of the general university loan committee.

THOMAS J. MARSTON LOAN FUND—This fund was established in 1925 by a bequest from Mrs. Annie G. Marston in memory of her husband, the income to be used for the purpose of assisting poor, worthy, competent students in pursuing their undergradute studies in the University. The principal of the fund now amounts to approximately $23,000.

JOHN J. POSSEHL LOAN FUND FOR PHARMACY STUDENTS—In February, 1928, a gift of $1,000 was received from John J. Possehl, of Milwaukee, the amount to be held in trust and the income to be loaned each year to worthy students taking the pharmacy course. All repayments of loans are to be added to the principal. Loans to be made upon recommendation of the Director of the Course in Pharmacy.

ALEXANDER H. ROGERS LOAN FUND—Through the generosity of the sons of the late Alexander H. Rogers, of Chicago, the sum of $1,000 from the estate of Mr. Rogers has been turned over to the University to be used as a loan fund for the assistance of needy students. By the terms of the gift no one student may secure more than $250 from this fund.

ISRAEL SHRIMSKI LOAN FUND—In 1929 A. B. Kuppenheimer and John Wineberg of Chicago, friends of Israel Shrimski, a distinguished alumnus of the University of Wisconsin, gave $12,500 to perpetuate his memory. Loans are made under regulations similar to those governing the Kemper K. Knapp Fund.

ISRAEL SHRIMSKI STUDENT AID AND LOAN FUND—In 1929 the Regents received $2,000 from the estate of Israel Shrimski, as provided in his will. The money is to be loaned in such amounts and under such terms and conditions as the Committee on Loans and Scholarships may from time to time determine.

HENRY STRONG LOAN SCHOLARSHIPS—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes an annual allotment to the University of Wisconsin for loan scholarships, available for use of men and women students under the age of twenty-five years, preferably in the upper classes, possessing not only zeal for leadership but also character and those traits tending to leadership, to aid them in obtaining a practical, literary, scientific, mechanical, or business education. The amount available for the year 1931-32 is approximately $2,000.

THE MAJOR LYMAN C. WARD MEMORIAL LOAN FUND—In 1919 a gift of $100 was received for the establishment of the Major Lyman C. Ward Memorial Loan Fund, the money to be loaned to men students only and preferably to undergraduates.

SECRETARY'S LOAN FUND—The Secretary of the Regents in 1900 established a fund of $500 for the aid of meritorious students. Additions to the fund have been made by others. No loan shall ecxeed $50 in a single year, and the aggregate of loans to any person shall not exceed $200. The principal of this fund now amounts to about $3,000. For information address the Secretary of the Regents.

AGRICULTURAL COLLEGE LOAN FUND—In 1911 Albert B. Kuppenheimer, of Chicago, gave $750 to establish a loan fund in the College of Agriculture. In 1916 the outstanding balance of the Geneva Loan Fund was consolidated with the Kuppenheimer Fund, making a total of $1,500. This is loaned to needy students in small amounts with interest at six per cent after maturity. For information address the Dean, College of Agriculture.

COLLEGE OF ENGINEERING LOAN FUND—The College of Engineering Loan Fund was started in 1901 by a friend of the college in Milwaukee, to be used for the assistance of needy students. It has been added to at various times until it now amounts to about $1,800. For information address the Dean, College of Engineering.

WISCONSIN ENGINEER LOAN FUND—In 1923 the Wisconsin Engineer, a student publication, gave $500 to establish the Wisconsin Engineer Student Loan Fund. A further gift of $500 was received in 1928. Loans are made upon recommendation of the Dean of the College of Engineering. Students borrowing from the fund are informed as to the source of the money, and a report is to be made each year to directors of the Wisconsin Engineer, showing the use to which the money has been put. If the Wisconsin Engineer prospers in the future as it has in the past, substantial additions will be made to the fund.

LOAN FUND FOR PHARMACY STUDENTS—This fund was established in 1928 by the Milwaukee Chapter No. 19, Women's Organization, National Association of Retail Druggists, with an initial payment of $400. This fund is to be increased to $1,000. The income only is to be loaned to students in pharmacy, and preference is to be given to women.

PHYSICAL EDUCATION CLUB LOAN FUND—In March, 1929, a gift of $529.94 was received from the Physical Education Club to establish a loan fund for women majoring in physical education; the original amount of the fund has been increased by subsequent gifts. Loans are made upon recommendation of the Director of the Course in Physical Education for Women.

GRADUATING CLASS LOAN FUND—The Class of 1900 gave to the University several hundred dollars, the profit of the Senior Class Play, as the nucleus of a loan fund for the aid of needy students, to which several succeeding classes have made substantial additions.

CLASS OF 1885 LOAN FUND—In March, 1916, the Class of 1885 established a small loan fund for needy students.

CLASS OF 1912 LOAN FUND—The Class of 1912 left the balance in the class fund, amounting to $850, to establish a loan fund. The money was placed in the University Trust Fund and allowed to accumulate for ten years; the interest is available for loans. The principal of the fund now amounts to some $1,800.

CLASS OF 1913 LOAN FUND—The Class of 1913 turned over the proceeds of the class play, amounting to $396.48, and a number of the members of the class took out twenty-payment life insurance policies of $100 in the state life insurance fund. Dividends on these policies and interest earnings on the fund have been added annually. The principal of the fund now totals about $2,600. When the policies mature in 1933 the income each year will be loaned to students.

CLASS OF 1914 LOAN FUND—The Class of 1914 established a loan fund, each senior paying $2 a year for five years. The fund now amounts to approximately $1,500.

CLASS OF 1916 MEMORIAL LOAN FUND—The Class of 1916 established a loan fund now amounting to approximately $1,400. Principal and interest are to be loaned to students for periods of not to exceed one year; not more than $50 is loaned to one person. Three per cent interest is to be charged, with six per cent after maturity.

CHICAGO ASSOCIATION OF WISCONSIN ALUMNAE LOAN FUND—In 1913 the Chicago Association of Wisconsin Alumnae donated a fund for loans to needy women students. Preference is given to juniors and seniors and no student may draw more than $50 from the fund.

ROOM AND BOARD

The University owns and operates two dormitories for women, Chadbourne and Barnard Halls, accommodating about 275 students; also two for men, Adams and Tripp Halls, accommodating 500 students. In addition, there are five so-called cooperative houses, Tabard Inn, Charter House, Andersen House, Catherine Cleveland House, and Fallows House, where a total of 95 women students is accommodated. The occupants of these houses are usually chosen from students who have been in attendance at the University at least one semester, but a few rooms in each house are available for new students who come well recommended. Students living in these cooperative houses keep their expenses considerably lower than is possible elsewhere; for example, board is obtainable for $190 to $200 a year, instead of $225 to $250; rooms are from $90 to $150 a year. Information regarding these houses may be obtained from the Dean of Women.

Special interest houses open to women for both room and board include La Maison Française, La Casa Cervantes, Das Deutsche Haus, and Arden House, operated under the auspices of the departments of French, Spanish, German, and English respectively. Both men and women rooming outside may take their meals at these houses.

All other students are dependent for rooms upon commercial dormitories, private rooming houses, the Y. M. C. A. building, and the various fraternity, sorority, and club-houses. The prices of single rooms outside of university dormitories range from $4 to $10 a week. A few double rooms can be secured for $2.50 a week per student, but the more desirable ones rent at $3 to $5 per student.

Lists of approved rooming houses for men and for women are prepared by the Dean of Men and Dean of Women respectively, from whom copies may be obtained. However, the supply of available rooms is ample, and, inasmuch as all arrangements for student rooms hold for an entire semester under ordinary circumstances, students are urged not to engage rooms which they have not seen, but to wait until they arrive in Madison before renting. All houses listed by the Dean of Women have been inspected by the staff of her office, and, although responsibility cannot be assumed by the University, such houses are believed to be suitable homes for women students. They accommodate women exclusively and in each case a parlor is provided for the reception of visitors. Permission to live in houses other than those inspected and approved is given only by the Dean of Women, and such permission must be obtained before the student engages a room.

Dining rooms are maintained in Chadbourne and Barnard Halls and in connection with the men's dormitories. In the Memorial Union the University

provides a variety of dining services for students not living in dormitories. The combined dining rooms in the Union accommodate two thousand students a day. The Refectory, the largest room, serves three meals daily, cafeteria style; the Georgian Grill serves a la carte and table d'hote meals noon and night; and the Rathskeller provides light lunch and bar service for men at all times. In addition, seven private dining rooms are available to students for private dinners or banquets of any size. In private boarding houses and cafeterias, board ranges from $6 to $9 a week.

DORMITORY REGULATIONS

In accordance with an act of the Legislature of 1913, preference in the assignment of rooms in these halls is given to residents of the state of Wisconsin. When assignments are made for the following year, students living at one of the halls will be given preference over those who have not had such residence. Certain quotas by classes (freshman, sophomore, etc.) have been established; these are maintained until July 15, after which date all unassigned applicants constitute the general waiting list in order of deposit.

The halls and dining rooms are closed during the Christmas recess; during the spring recess the halls are open but the dining rooms are closed. University regulations require that board and room be paid in advance by the quarter.

Applications for rooms will not be received until April 1; these should be sent to the Bursar of the University, together with a deposit of $10 and a statement of the student's choice of dormitory, the permanent home address, and an indication of the class he will enter. Room assignments will be made beginning June 1.

Written acceptance of assigned rooms for the year must be received by the Department of Dormitories and Commons not later than September 1 or, for the second semester, January 20, or the deposit will be forfeited and the room reassigned. Those accepting rooms must take possession by 8 a. m. of the last registration day of the first semester, or the corresponding date of the second semester, or forfeit their deposit and room, unless written notification of late arrival is received by the department before that time and the room and board bill for the period is paid in advance. When a person remains on the waiting list after September 1, or January 20 in the case of the second semester, the deposit will be forfeited if an assignment is made before the beginning of classes and is not accepted or rejected promptly.

After a room has been assigned and accepted, a refund of the deposit is made only at the close of the period of residence, and then only providing that the student has met all obligations to the department, that is, has paid all bills due the department, has left all equipment in the room intact and in good order, and has turned in his key. Unassigned depositors may claim a refund at any time.

All rooms are assigned for the entire academic year and the student will be held for the rent of the room for the year, or until it is filled from the waiting list. Students withdrawing must make satisfactory arrangements with the Department of Dormitories and Commons in advance.

Rooms will be ready for occupancy at the beginning of the academic year in September at noon of the day preceding the beginning of Freshman Period. Baggage marked with hall and room number will be received beginning the same day.

Requests for information regarding rooms, board, rates, assignments, and refunds should be addressed to the Department of Dormitories and Commons.

DORMITORIES FOR WOMEN

In Chadbourne Hall, accommodating 125 women, and Barnard Hall, accommodating 150 women, each room is provided with dresser, rocker, cot, bookshelves, rug, and study table, lamp, and chair. During the academic year, students are expected to provide towels, sheets, pillow cases, blankets, and couch covers. During the summer session, sheets, pillow cases, counterpanes, and two light-weight cotton blankets are furnished, but towels are not.

Women living in the dormitories are under the immediate charge of the hostesses of the halls and are subject to the rules of the Women's Self-Government Association of the University.

The rent for the school year of a single room in either Chadbourne or Barnard Hall is $160; of a room accommodating two, $130 per person; of two rooms *en suite* accommodating two, $160 per person. A few single rooms on the fifth floor of Barnard Hall are rented for $130 per student. Residents of Chadbourne and Barnard Halls are required to take their meals in the hall in which they reside. In addition, there are accommodations in the dining rooms for a number of other women students. The price of board has been fixed at $250 for the academic year, including the time from the beginning of classes in September to the last day of examinations in June, exclusive of Christmas and spring recesses.

DORMITORIES FOR MEN

Tripp and Adams Halls, modern fireproof buildings situated on the lake shore, are each designed to house about 250 men. Each hall is a quadrangle divided into houses accommodating about thirty men; each house is thus an independent unit with its own entrance, social rooms, toilet and shower facilities. This arrangement of units enables the men to become banded together in a congenial comradeship for social purposes and for participation in intramural athletic tournaments. The rooms are furnished in a comfortable and sturdy masculine style with chiffonier, bed, study table, lamp, and chair, bookshelves, arm chair, rug, waste-basket, and curtains. Bed linen, a bed cover, and two woolen blankets are supplied and laundered by the University, but students are expected to furnish towels and to provide for their personal laundry.

Residents are subject to the regulations of the Men's Dormitory Association, a self-governing body, and are expected to comply cheerfully with the requirements and obligations of this association, including the payment of the semester dues. There are very definite regulations governing quiet hours and conduct at social functions and in the dining halls. The university rules applying to all organized groups are in effect and enforced in the dormitories. A group leader known as the dormitory fellow has immediate charge of the men in his unit; his office is to give counsel and help in building up a strong social organization, and to aid the men in profitably pursuing their college careers.

The rent of a single room for the academic year is $160; of a double room $130 per person; of three-window end rooms, $180; and of two-window corner rooms, $170. There is only a very limited number of double rooms. Residents of the men's dormitories are required to take their meals in the adjacent refectory, in which there are also accommodations for a number of other men students. Board has been fixed at $260 for the academic year, including the time from the beginning of classes in September to the last day of examinations in June, exclusive of Christmas and spring recesses.

STUDENT LIFE

Much of the life and activity of students outside the classroom is concentrated in the University's new "living room," the Memorial Union, a splendid building erected and equipped at a cost of $1,250,000, largely through the generosity of more than 18,000 students, alumni, faculty, and friends of the University. Among the physical facilities of the Union are: cafeteria, large and small dining rooms, grill room, and lunchrooms; rooms for games, music, committee meetings, and assemblies; quarters for student publications and clubs; combined ballroom and banquet hall; library; spacious lounge; barber shop; writing room; checkrooms; alumni offices; and lodgings for transient alumni and visiting teams. By virtue of this wide range of facilities, the Memorial Union opens to the university community heretofore unequalled opportunities for formal and informal social gatherings of diverse types.

Upon registration and payment of his or her semester fees, including an amount of five dollars set aside for the maintenance and operation of the Memorial Union, each student automatically becomes a member of the Union and is entitled to all the privileges of the building during the semester. Life members of the Union (students who have paid a total of fifty dollars in Memorial Union fees or by subscription) are exempt from further payments and are accorded the privileges of the building for life.

FACULTY SUPERVISION

The Faculty Committee on Student Life and Interests has general supervision over all organized student activities, and its chairman, the Dean of Men, is available for correspondence and consultation regarding student affairs at all times. He will gladly confer with parents or guardians regarding individual men students, and he is anxious to get in touch with boys who are contending against illness, discouragement, financial worries or other obstacles to successful work in college. His office issues mimeographed lists of lodging and rooming houses for men students, with detailed information.

The academic and social welfare of women students is under the direct supervision of the Dean of Women, whose office is located in Lathrop Hall, a building designed for the use of women students. The dean and her staff of assistants invite correspondence with parents and guardians of women students and gladly cooperate with them in matters affecting their welfare. For the benefit of those women who cannot be accommodated in Chadbourne and Barnard Halls, the dean's office prepares annually lists of rooming and boarding houses for women students. New students desiring rooms should report at once to her office upon arrival in Madison.

STUDENT GOVERNMENT

THE WISCONSIN UNION

The Wisconsin Union is the organization of all men and women students, created to operate the new Memorial Union building and to provide a cultivated social program and a common life for its student, faculty, and alumni members.

Its chief component parts are the Men's Union, representing the men of the University, and the Women's Self-Government Association, representing the women.

The central governing body of The Wisconsin Union is the Union Council, consisting of eight men and women student members and six alumni and faculty members, all elected or appointed by the bodies of Union members they respectively represent. Assisting the Union Council are twelve house committees, planning for and controlling the several departments of the house: commons, library, program, women's affairs, graduate activities, etc.

The Wisconsin Union is an experiment not only in the integration of a diverse student population and in the enrichment of the hours outside the classroom, but also an experiment in student self-government and self-education.

MEN'S UNION

Every male student in the University is *ipso facto* a member of the Men's Union. Where Wisconsin men are concerned, the Men's Union is concerned; consequently it tries to set up in a subtle way, a set of standards by which the quality of a man at Wisconsin is to be judged, and tries to make it possible for a man to live a full-rounded man's life at the University. Among the more external agencies of which the Union avails itself to accomplish its purposes are: student dances, a winter sports program, a community chest, a concert series which brings the leading musical artists of the world to Madison, and theatrical performances by such artists as the New York Theatre Guild.

The two formal units in the executive machinery of the Men's Union are the Union oBard and the Subsidiary Union Board. The Union Board is the board of directors of the Men's Union, and it chooses the president and the other officers of the Union from among its own number; the Board is elected by the male members of the student body. The subsidiary body supplements the Board in carrying out the principal activities of the Men's Union; its members are chosen by the Board on the basis of effort, interest, and performance during a period spent as candidates in performing routine tasks.

WOMEN'S SELF-GOVERNMENT ASSOCIATION

Every woman student in the University is *ipso facto* a member of the W. S. G. A. The object of the Association is, in its own words, "To regulate all matters pertaining to the student life of its members which do not fall under the jurisdiction of the Faculty; to further in every way the spirit of unity among the women of the University to increase their sense of responsibility toward each other; and to be a medium by which the social standards of the University can be made and kept high." Each dormitory, each sorority house, and each lodging house where more than three girls reside, has one or more representatives on the board.

The Association each year provides entertainment of various sorts for university women, cooperates with Union Board in arranging social events for the whole University, and undertakes, in cooperation with a faculty committee representing different schools and departments and under direction of an assistant in the office of the Dean of Women, the presentation of information concerning various occupations and professions for women through a biennial vocational conference and other mediums. A bulletin of information for freshman women, "If I Were a Freshman Again," is published by the Association and mailed out during the summer.

STUDENT HEALTH

THE DEPARTMENT OF STUDENT HEALTH was initiated by the University for the protection and adequate care of the health of students. Upon first admission to the University, *each student, including those in the Graduate School,* is required to undergo a medical examination for the purpose of determining his medical and physical status. Based on the findings of this examination, special recommendations are made to the dean of the student's college and to the Departments of Physical Education and Military Science to safeguard the interests and health of the individual.

Students are notified at the time of registration when and where to report for examination and *they must be punctual in keeping such appointments, assured that these take precedence over all class work.* Excuses for any class or laboratory work missed on account of the medical examination will be granted in every instance. Where, in the case of graduate students, teaching hours conflict with the pre-arranged time for the compulsory medical examination, *an immediate phone call* to the Student Health Department will secure for such applicants *another appointment at a mutually convenient hour.*

The chief function of the service is to prevent illness in the student population. In order to accomplish this aim, the cooperation of each student is necessary, since the protection of the whole depends upon the maintenance of health in the individual. Whenever illness occurs, the medical staff is ready to meet the need of the individual. Consequently, the prompt reporting of illness works to the advantage of both the individual and the community.

THE AMBULATORY CLINIC, situated on the main floor of the infirmary, maintains an adequate staff of physicians and nurses for the needs of all students able to report in person. Hours for consultation are 8 a. m. to 12 noon and 2 to 4 p. m. on week days, excepting Saturday afternoon, and 9:30 to 10:30 a. m. on Sunday; students are requested to observe these hours except in emergency cases. A member of the staff will see or visit emergency cases at any hour with an appreciation of the grave possibilities of minor illness. Early attention to each and every indisposition is encouraged.

THE STUDENT INFIRMARY, a modern hospital of approximately 100 beds connected with the Wisconsin General Hospital, provides facilities for the care of students who are confined to bed or who need nursing attention. It is desirable that all such students avail themselves of these privileges rather than to remain in their rooms, in order that they may receive adequate medical and nursing attention and that the spread of communicable diseases may be checked.

ABSENCE. Statements of absence from classes because of illness should be obtained promptly through the Clinic or Infirmary as the case may be. Application for excuses must be made within a week after return to classes.

EXPENSE. The clinic is maintained by the University as a part of the administration of general student welfare without expense to the student. The infirmary is supported by $4.50 of the student's general fee and all necessary laboratory and nursing service is rendered without charge to the student. Care of specialists and special nursing in individual cases are matters of extra expense, and arrangements for them may be made through the infirmary staff.

SOCIETIES AND PUBLICATIONS

LITERARY, FORENSIC, AND DRAMATIC SOCIETIES

The men's literary societies are: Athena, organized in 1850, and Hesperia, organized in 1854. These societies are interested principally in debating. The women's literary societies are: Castalia, organized in the early years of the University and Pythia, organized in 1902. Most of their time is devoted to more general literary pursuits and not extensively to debating. The University is a member of the Western Conference Debate League composed of Northwestern University, Purdue University, and the Universities of Michigan, Illinois, Minnesota, Iowa, Indiana, Ohio, and Wisconsin. Each University meets four others in debate annually. From time to time additional intercollegiate debates are arranged. Wisconsin meets the Universities of Iowa and Minnesota annually in a triangular league for women.

The University regularly competes in the annual contest of the Northern Oratorical League, composed of Northwestern University, Western Reserve University, and the Universities of Iowa, Michigan, Minnesota, and Wisconsin. Positions on the University debating teams are won in open competition, both undergraduate and graduate students in good standing being eligible. The privilege of representing the University in the Northern Oratorical League contest is won in the local David B. Frankenburger contest, open to undergraduates in good standing.

Participation in intercollegiate debating or oratorical contests makes a student eligible for membership in the Wisconsin Chapter of the national honorary forensic fraternity, Delta Sigma Rho, which, together with the Forensic Board, represents the organized student control of forensic affairs in the University.

The general dramatic club, Wisconsin University Players, is composed of both men and women and is open to all students who upon tryout show either sufficient dramatic talent or special ability in the fields of production or management. The club gives several formal productions during the year in the University Theatre. They also give a series of laboratory plays as open meetings which the public may attend.

Haresfoot Club is a men's dramatic organization devoted to the annual production of an original musical comedy in which all the rôles are taken by men.

PROFESSIONAL SOCIETIES

A number of professional clubs and societies for the promotion of interest in specific lines of academic or technical work have been organized and are usually maintained under the guidance of the departments concerned. In other departments where no such organization has been effected, similar results are reached by means of senior and graduate seminaries.

RELIGIOUS ORGANIZATIONS

Prominent among the religious organizations of the University are the Young Men's Christian Association and the Young Women's Christian Association. These organizations maintain secretaries who devote their entire time to religious, social, and philanthropic work among the students. Nine student pastors supported by eight religious denominations, each with its own student organization, cooperate with the secretaries and promote religious work in the student body in a very systematic way.

MUSICAL ORGANIZATIONS

The University Band, consisting of about 200 men, is divided into a concert band and a second band, the latter serving as a training school for the less experienced players. Rehearsals are held two and three times weekly, respectively. Underclassmen playing in the band may receive credit in satisfaction of the physical activity requirement. Upperclassmen who are members of the concert band and who remain for duty at commencement are compensated for their services to the extent of thirty dollars each.

The University Orchestra, composed of about 75 players, is organized for the purpose of studying the larger classical forms and presenting them in public. Membership is open to qualified students of all classes. The Second Orchestra is open to all University students who through lack of experience or conflict do not play in the regular University Orchestra. The fundamentals of orchestral playing ing are stressed in the study of the easier types of music. Practical experience in conducting and interpretation is offered.

The Men's Glee Club, incorporated under the laws of Wisconsin, is composed of a concert club and a second club, membership in each of which is determined by competitive tryouts. The concert club makes an extensive annual tour throughout the Middle West and has gained everywhere a most enviable reputation by maintaining the highest standard of chorus singing.

The Women's Glee Club is an organization of forty-five women which makes frequent public appearances locally. Membership is open to all women students and vacancies are filled by competitive trial. The University Singers, an organization of fifty voices, studies and performs masterpieces of choral literature. The A Cappella Choir is limited in number to thirty-two; it presents in concert the best part songs in musical literature. Membership in these two groups is on a competitive basis and is open to any student in the University.

SOCIAL ORGANIZATIONS

The social life of the undergraduate finds expression in about a hundred fraternities, sororities, and other house groups, and in a great diversity of clubs and societies, many of them organized principally around professional or other special interests but usually embodying a distinct element of comradeship as well. To catalog even the more important of these organizations would serve no very useful purpose, inasmuch as the student, if he has the time and other requisites for membership, usually has no difficulty in making the necessary contacts with organizations of the sort in which he may be interested.

STUDENT PUBLICATIONS

Student publications include the *Daily Cardinal,* a morning newspaper published in its own printing plant adjacent to the campus; the *Octopus,* an illustrated humorous monthly; the *Wisconsin Engineer* and the *Wisconsin Country Magazine,* monthlies edited and managed by students of these colleges and containing material of professional interest and the *Badger,* a comprehensive and elaborate annual issued under the auspices of the junior class. Positions on the editoral and business staffs of these publications are ordinarily open to all qualified students above the rank of freshman; appointments are made by the various boards of control on the basis of experience and ability.

HONORARY FRATERNITIES

The honorary fraternities with the dates of their establishment at Wisconsin are:

Alpha Gamma Pi (Women's Commerce), 1918
Alpha Epsilon Iota (Women's Medical), 1926
Alpha Kappa Delta (Sociology), 1922
Alpha Omega Alpha (Men's Medical), 1926
Alpha Zeta (Agricultural), 1905
Artus (Economics), 1912
Beta Gamma Sigma (Men's Commerce), 1913
Chi Theta Epsilon (Civil Engineering), 1924
Delta Phi Delta (Art), 1921
Delta Sigma Rho (Forensics), 1906
Eta Kappa Nu (Electrical Engineering), 1910
Gamma Alpha (Graduate Scientific), 1910
Gamma Epsilon Pi (Women's Commerce), 1922
Gamma Sigma (Gymnastics), 1918
Order of the Coif (Law), 1907
Omicron Nu (Home Economics), 1915
Phi Beta Kappa (Academic), 1898
Phi Delta Kappa (Educational), 1921
Phi Eta Sigma (Men's Freshman Scholastic), 1927
Phi Kappa Phi (General), 1919
Phi Lambda Upsilon (Chemical), 1906
Phi Mu Alpha Sinfonia (Men's Musical), 1921
Phi Sigma (Biological), 1917
Pi Epsilon Delta (Dramatic), 1919
Pi Tau Sigma (Mechanical Engineering), 1916
Rho Chi (Pharmaceutical), 1925
Scabbard and Blade (Military), 1905
Sigma Delta Chi (Men's Journalistic), 1911
Sigma Delta Epsilon (Women's Graduate Scientific), 1921
Sigma Delta Psi (Athletic), 1917
Sigma Epsilon Sigma (Women's Freshman Scholastic), 1927
Sigma Sigma (Medical), 1908
Sigma Xi (Graduate Scientific), 1907
Tau Beta Pi (Engineering), 1899
Theta Sigma Phi (Women's Journalistic), 1910

PART III—ADMISSION

GENERAL REQUIREMENTS

Fifteen units*, distributed as follows, are the fundamental requirement for regular admission to any college or course in the University, excepting certain special short courses in the College of Agriculture, as specified below:

I. Two units of English are required of all entrants; three units are recommended for all and are required of those who do not offer two units of foreign language. One unit of algebra and one of geometry are also required of all, with an additional half or whole unit of algebra recommended for those seeking admission to the College of Engineering.

II. Two units of science or history, or two units of one of the following foreign languages—French, German, Greek, Hebrew, Italian, Latin, Norse, or Spanish—must be presented by all. If foreign language is offered there must be at least two units in a single language, although in exceptional cases one unit may be offered as the optional subject.

III. The remaining units necessary to bring the total to fifteen must be offered from Groups A and B, with a maximum of four units from Group B and a total of not more than four units in any single subject.

GROUP A

	Units		Units		Units
English	1—2	History and Civics		Science	
Foreign language		History	1—4	Botany	½—1
French	1—4	Civics	½—1	Biology	1
German	1—4	Economics	½	Chemistry	1
Greek	1—3	Mathematics		General Science	½—1
Hebrew	1—2	Advanced algebra	½—1	Geography	½—1
Italian	1—2	Solid geometry	½	Physics	1
Latin	1—4	Trigonometry	½	Physiology	½
Norse	1—2			Zoology	½—1
Spanish	1—4				

GROUP B

Agriculture		1—4
Bookkeeping		½—2
Commercial law		½
Commercial arithmetic		½
Commercial geography		½
Business organization	If taken in the junior or senior year	½
Office practice		½
Salesmanship		½
Shorthand		2
Typewriting (only ½ unit if not combined with shorthand)		½—1
Domestic art		1—2
Domestic science		1—2
Drawing, art and design		1—4
Mechanical drawing		1—4
Shop work		1—2
Shop work and drawing		1—4
Music		1—4
History and appreciation		1
Theory and harmony†		2
Choral music		½—1
Orchestra		½—2
Band		½—2
Applied music		½—2
Optional (not including drill subjects such as penmanship, physical education, or military training)		½—1

†Not less than 2 units accepted.

*Entrance requirements are stated in units of high-school work, a term which is not to be confused with the term credit as applied to university work. A unit represents five class periods a week in one branch of study for a school year of at least 36 weeks. Two laboratory periods in any science or vocational study are considered equivalent to one class period. In closely allied subjects, such as botany and zoology, not usually taught throughout an entire year, units may be constructed by adding the respective times values of the subjects. Three periods a week for a year and a half may be counted as one unit.

SPECIAL REQUIREMENTS

COLLEGE OF AGRICULTURE. For admission to the Short Course and Dairy Courses students must be at least sixteen years of age and must have a good common school education. Candidates for the Winter Dairy Course are required to have at least six months of experience in a creamery or cheese factory before being admitted.

COLLEGE OF ENGINEERING. Students planning to enter this college are advised to include in their high-school work the following subjects: 1½ or 2 units of algebra, 1 unit of plane geometry, ½ unit of solid geometry, 3 units of English, 2 units each of science and history, and 2-4 units of foreign language.

SCHOOL OF COMMERCE. Two full years of work in one of the General Courses in the College of Letters and Science, or the equivalent thereof, including eight credits in elementary economics, are required for admission. Students are strongly advised to include also eight credits in mathematics and six in geography.

SCHOOL OF EDUCATION. The regular university entrance requirements apply to students entering the special courses (Art Education and Physical Education). For others, two full years of work in the College of Letters and Science are required for admission.

SCHOOL OF JOURNALISM. For admission to this school, two full years of work toward the B.A. degree in the College of Letters and Science, or the equivalent thereof, are requird, ordinarily including the special studies of the pre-journalism sequence as noted under that heading.

LAW SCHOOL. Candidates for the degree are required to present for admission the equivalent of three full years of work in the College of Letters and Science. A limited number of students who have reached their majority and who have the general entrance requirements stated above and two years of college work may be admitted as special students.

LIBRARY SCHOOL. The numerous special requirements are given in detail under the heading Library School, which see.

MEDICAL SCHOOL. Two full years of work in the College of Letters and Science are required for admission, including the special subjects as set forth in detail under the heading Medical School, which see.

MUSIC SCHOOL. The special requirements are set forth under the heading School of Music, which see. It is advisable that such students should include in their high-school work music courses listed in Group B above, as outlined under "Scope of Preparatory Work", page 46.

ADVISED GROUPING OF PREPARATORY SUBJECTS

Students are advised to adapt their preparatory work to the course they expect to pursue in the University. Attention is called to the special admission requirements of the various colleges and courses and to recommendations regarding preparation in foreign language. Students expecting to go to the University and who are uncertain as to the college in which they will take their work, are advised to distribute 12 of the 16 units of the high-school course as follows: at least 2 units each of mathematics, science, and history; 2 to 4 units of foreign language; and at least 3 units of English, or 4 if less than 3 units of foreign language are offered. Extra units of history, science, or mathematics should replace foreign language if none is offered.

FOREIGN LANGUAGE

Although foreign language is not definitely required for admission to any course, failure to present it will result in greatly curtailing the student's free elections in completing the requirements for graduation from certain courses. Those who expect to take any of the following named courses should preferably present units of foreign language as indicated:

COLLEGE OF AGRICULTURE

Course in Home Economics—2-4 units in one language or 5 units in two

SCHOOL OF EDUCATION

Course in Physical Education for Men—3 units in one language or 2 units in each of two.

Course in Physical Education for Women—4 units, any languages listed

COLLEGE OF LETTERS AND SCIENCE

Course in Chemistry—2 units of French; 2-4 units of German

Chemistry-Commerce Course—2-4 units of German; 2 units of French or Spanish

Course in Hygiene—2-6 units, any languages listed

Medical Science Course—2 units of Latin; 2-4 units of French or German

Pharmacy Course (four-year)—2 units of French; 2-4 units of German

COURSES LEADING TO THE BACHELOR OF ARTS DEGREE

The attainment of *some degree of proficiency* in one or more foreign languages before entering the University, as opposed to *mere completion* of foreign-language courses in high school, will be of great advantage in meeting the new requirements for graduation from those courses in the College of Letters and Science which lead to the Bachelor of Arts degree. (See Announcement of the College of Letters and Science for statement of attainment examinations for proficiency and for intermediate knowledge in a foreign language.) Students who expect to enroll in one of the following named courses of study are strongly advised to prepare themselves in foreign language as indicated:

General Course, Course in Commerce*, Course in Journalism—4 units of French, German, Latin, or Spanish, with a possible addition of 2-4 units of another language listed under Group A above

Course in Humanities—4 units of Latin, and 2-4 units of Greek, French, or German

General Course, with major in Medical Science—2 units of Latin and 4-6 units in French or German or both.

Course in Music (Bachelor of Music degree)—See General Course above.

COURSES LEADING TO THE BACHELOR OF PHILOSOPHY DEGREE

No foreign language is definitely required for this degree, but if the student has completed four years of one language in high school he may take an attainment examination, success in which will relieve him of certain other requirements for the degree.

*No foreign language required in Commerce if student is a candidate for the Ph.B. degree.

FRESHMAN PERIOD

All freshmen are required to be present at the University on the Wednesday preceding the beginning of instruction in September 1931 and to remain throughout the week. This period (September 16-22) will be devoted to registration, conferences with advisers, physical examinations, aptitude tests, special educational examinations, assignments to classes, lectures and discussions on subjects of importance to new students, and a general introduction to university life.

Because attendance throughout the entire period is required, it is essential that all details connected with admission be attended to as early as possible. Students who graduate from high schools or academies in June should inform their principals sometime in May or early in June of their intention to attend the University in the fall, so that the necessary certificates may be prepared and other important data furnished to university authorities. No guaranty of admission can be made to prospective students whose credentials are not in the hands of the Registrar by August first. So far as possible, candidates who will need to take entrance examinations should avail themselves of the June examination period; this means that candidates with dubious records and those from non-accredited schools outside the State would do well to correspond with the Registrar before June first.

Rooms for the semester should be secured in advance of Freshman Period so that there will be no confusion, uncertainty, or waste of time during the days when attention should be centered on "getting started."

METHODS OF ADMISSION

There are four general methods by which admission to undergraduate standing in the University may be obtained:

1. By presenting a certificate of graduation from an accredited high school.
2. By submitting evidence of studies successfully pursued in another institution of higher learning.
3. By passing entrance examinations.
4. By qualifying as an adult special student.

Prospective freshmen and adult special students may learn at any time of year by corresponding with the University Registrar whether or not they have the necessary qualifications for admission and upon what basis they may be admitted. Prospective students who have had some college work should correspond with the Advanced Standing Committee (see page 39). Students may enter the University at the opening of either semester or of the summer session, but all credentials should be filed sufficiently in advance of the date chosen to permit the authorities to pass upon them and to issue the proper certificates of admission. Candidates for admission in September are responsible for having their credentials filed by the first of August. The credentials must in every case include a complete record of all previous secondary school and advanced work.

ADMISSION UPON CERTIFICATE

FROM WISCONSIN SCHOOLS

Graduates of accredited high schools may enter the University, without examination, upon presentation of a certificate showing the satisfactory completion of the fifteen required units and bearing the recommendation of the principal. Only the form prepared by the University is acceptable, a supply of which may be obtained from the Registrar by the principal. The completed certificates should be returned to the University before August 1.

Principals of accredited schools are requested to note the statement on page 41 regarding the examination of freshmen in English. A similar examination in algebra is given to freshmen in the College of Engineering.

Graduates of four-year non-accredited schools in Wisconsin who have satisfied the full requirements for admission to the University may be admitted on probation, without examination, upon recommendation of the principal.

Any high school or academy in the state whose course of instruction covers the branches required for admission to the University may be admitted to its accredited list of preparatory schools after a satisfactory examination by a committee of the Faculty. Upon application made by an afficer of any high school or academy in the state to the Chairman of the Committee on High-School Relations, the University will examine the school with reference to placing it upon its accredited list of preparatory schools. The examination, which will be conducted by a committee of the Faculty, will cover the course of study and methods of instruction in the school. No school can be placed upon the list whose course of study is not fully equal to the four-year course for high schools recommended by the State Superintendent.

Any high school or academy with a complete four-year course which does not include foreign language may be admitted to the accredited list under the conditions stated above, provided its course of instruction covers fifteen units in the subjects accepted for admission to the University.

The University desires to keep fully informed regarding the work of its accredited schools by means of annual reports and frequent inspections. Every accredited school is required to report each year concerning its teachers, course of study, methods of instruction, and material equipment. Forms are furnished by the University for this purpose. The University sends out inspectors at its own expense and at the convenience of the members of the staff. Especial attention is called to the necessity of promptly notifying the Chairman of the Committee on High-School Relations of changes in the dates of examinations and vacations. The list of accredited schools is published near the end of the academic year; it is sent to all high schools in the state. Copies may be obtained from the Chairman of the Committee on High-School Relations.

FROM SCHOOLS OUTSIDE WISCONSIN

1. Graduates of secondary schools outside Wisconsin, included in the current list of accredited schools of the North Central Association, may be admitted when recommended and certified by the principal as indicated above, provided the minimum admission requirements of the University be fulfilled. The grades must average *fair* or above, and the record of the last two years in the secondary school will be given special and critical consideration.

2. Graduates of other secondary schools outside Wisconsin may be admitted when properly recommended and certified, provided: (a) That the school maintains, on the basis of regular inspection, accredited relationship with the state university, or other university within the state included in the membership of the Association of American Universities. The state university must maintain the same standard of admission requirements as those institutions belonging to the Association of American Universities. (b) That the minimum admission requirements of the University of Wisconsin be fulfilled as to both number of units and character of work. In such cases the character of the work submitted is interpreted to mean an average standing of *good*.

Credentials properly certified by the principal on forms provided by the University should be submitted for approval before August 1.

DEFICIENCIES IN ENTRANCE REQUIREMENTS

Graduates of secondary schools who fail to gain the recommendation of their principals because of low grades will be required to take entrance examinations in those Group A subjects in which they are deficient. A deficient grade is one lower than 77 when 70 is the passing grade of the school, or below 81 on the basis of 75 as passing.

Graduates of schools which have established a "recommending grade" will be required to take entrance examinations in those subjects in which they failed to receive this recommending grade.

Graduates who do not have the required fifteen units will take entrance examinations in those subjects in which they lack credit.

Applicants for admission who are required to take entrance examinations as indicated above must also take a college aptitude test which will be used in conjunction with the entrance examinations for determining admission.

Entrance examinations are given three times a year, in September, February, and June, as specified in the calendar; no special examinations are given. Those who are likely to be required to pass entrance examinations in order to gain admission will do well to correspond with the Registrar as soon as possible so that they may be informed early of their deficiencies and thus have ample time to prepare themselves for examination. There is likely to be less severe dissappointment if candidates take the examinations in February or June, since, if rejected, they still have opportunity to seek admission to some other institution.

Graduates of accredited schools whose academic subjects average less than 77 with 70 as the passing grade of the school, or less than 81 with 75 as passing, are urged not to apply for admission to the University because their chances for success in college are slight. If they are admitted it will be only on probation.

ADVANCED CREDIT

Advanced credit for high-school work may be granted to students with satisfactory average standings who present more than fifteen units acceptable for admission, provided: (a) the subjects in which advanced credit is sought are the general subjects accepted for admission to the University; (b) the work is as advanced as work given in the freshman year; (c) the course for which credit is desired be approved by the chairman of the department; and (d) the student passes a satisfactory examination at least two hours in length, held at the University before or during the Christmas recess. No advanced credit will be given for work in language unless it be in excess of six units of language offered for admission, nor will advanced credit be given for less than three semester hours.

ADMISSION WITH ADVANCED STANDING

Applicants for admission who have had any work whatsoever in another institution of higher learning, regardless of whether or not they wish to receive credit for it, must submit complete credentials of both their high-school and "college' work, as defined above, to the proper authorities of the specific college which they desire to enter, and not to the University Registrar. Applicants who wish to enter the College of Engineering should send their records to the Dean of that College; those entering the College of Agriculture to the Assistant Dean; and all others to the Chairman of the Advanced Standing Committee. All such transcripts should be sent at least six weeks preceding the opening of the session which the student desires to enter.

Not more than one-fourth of the number of credits required for a four-year course will be given for a single year's work in another institution. This maximum will be given only when the student makes an average of C or better during his first or second semester at Wisconsin. At least the senior year's work (30 credits and 30 grade-points) must be earned in residence at Wisconsin, and students can therefore expect at best not more than three years of advanced standing on transfer.

FROM WISCONSIN TEACHERS' COLLEGES

Graduates of the two-year departmental courses in the state teachers' colleges who have actually completed two years' work thereat, who were previously graduated from four-year high-school courses, and who are entitled to unlimited state certificates, will, upon the presentation of their high-school and teachers' college transcript, be admitted to the junior year in the Normal Course, provided they are able to finish the work for the degree by August, 1932. Those who will evidently be unable to complete the requirements of the Normal Course within the specified time limit will be registered in one of the other courses; their records will be evaluated on the same basis as those of students entering from other colleges and universities (see below).

FROM NORMAL SCHOOLS AND TEACHERS' COLLEGES OUTSIDE WISCONSIN

Graduates and students of normal schools or teachers' colleges of other states will be admitted to the University with such advanced credit as their previous work entitles them to, except that no credit will be given greater in amount than that granted to graduates of any such institution by the state university of the state within which it is situated. In addition to the usual transcript and the certificate of high-school work completed, such graduate or student may be asked to present an official statement from the university of the state in question as to the amount of advanced credit that would be given for the work so completed.

FROM OTHER COLLEGES AND UNIVERSITIES

Students from accredited colleges and universities who have pursued college courses equivalent to those of the University of Wisconsin with an average standing of at least C on an A-B-C-D-Fail grading basis and who have been granted honorable dismissal from their former institution, may be admitted to the University. Former students of other institutions can not be received as freshmen on the basis of their preparatory school records.

In the College of Letters and Science, freshmen are limited in their elections to English composition, foreign language, history, mathematics, natural sciences, and drawing. Students who wish to receive full credit for their freshman year at other colleges should, therefore, make up their programs from these subjects.

Studies not open to freshmen at Wisconsin, such as philosophy, education, and sociology, will ordinarily not be credited if taken in the freshman year at another institution. A point-credit ratio (see page 38) of 1.3 for the first two years is now required of University of Wisconsin students for admission to the junior year of this College. This authorizes the admission of only those transferred students whose grades are such as to warrant the belief that they will do work of this calibre at Wisconsin.

ADMISSION TO THE SUMMER SESSION

Applicants for admission to the Summer Session who wish to work for a degree at Wisconsin must file regular transcripts as specified in the preceding paragraphs; this requirement also applies to all persons seeking admission to the Law School or the Graduate School, regardless of their intention of securing a degree. All other summer session applicants who have not previously been matriculated at Wisconsin are required to furnish documentary evidence of good standing.

All other summer session applicants who have not previously been matriculated at Wisconsin are required to furnish documentary evidence of good standing. For a teacher this will consist of a statement of his or her status in the school where employed, signed by a responsible official of such school; for a student at another institution, an official statement of good standing thereat; for others, appropriate statements of attainments, occupation, and purpose. These statements are to be filed in advance so that necessary permits to register can be issued.

ADMISSION UPON EXAMINATION

Applicants for admission who have not been graduated from a secondary school may be admitted to the University upon passing entrance examinations in the required number and kinds of units as specified above. These examinations are given three times a year, in February, June, and September, on the dates indicated in the calendar; no special examinations of any sort are given. All candidates are expected to correspond with the Registrar before presenting themselves for examination, and all must be present at 9 o'clock on the first examination day. Candidates may divide the subjects and take the examinations in two trials, but failure to pass all the subjects in two trials will necessitate complete re-examination. The Registrar will furnish, upon request, information as to the character of the examinations.

Results of College Entrance Board Examinations are accepted in lieu of passing these entrance examinations.

In general, it is preferable for prospective entrants to submit to examination in February or June rather than in September, since failure at the latter date may result in a sudden change of plans at the very outset of the academic year.

These admission examinations are also open to high-school graduates who may be deficient in certain subjects and who therefore are unable to take full advantage of the certificate plan of admission.

ADMISSION ON THE ADULT SPECIAL BASIS

Citizens of Wisconsin, twenty-one years of age or over, who do not possess all of the requirements for admission and who are not candidates for a degree, may be admitted to the College of Letters and Science or the College of Agriculture upon giving satisfactory evidence that they are prepared to take advantageously the subjects open to them. Such students are normally required to select their studies only from courses open to freshmen. If they desire to take a study to which only advanced students of these colleges are regularly admitted,

they must show special preparation or aptitude for such course. This privilege of admission is granted in the College of Engineering only to students who are able, on examination, to meet all the entrance requirements in mathematics or who have completed their preparatory mathematics in the Extension Division of the University and present a certificate therefrom, duly approved by the chairman of the Department of Mathematics. The privilege of admission on the adult basis is rarely granted in the Law School and then only to students who can meet the regular entrance requirements to the College of Letters and Science.

Candidates applying for admission on the above basis are required to present to the Registrar in advance of their coming an official detailed statement of their preparatory studies for evaluation and approval.

Students will not be admitted, save in exceptional cases, directly from the secondary schools to the status of adult specials; nor will graduates of accredited schools be permitted to enter as adult specials, since they are required to qualify for regular matriculation.

Before beginning their third year, students admitted on the adult basis must have fully satisfied all entrance requirements. When all entrance requirements have thus been absolved, such students may continue work in the University, will receive regular classification, and may be accepted as candidates for a degree.

SCOPE OF PREPARATORY WORK

The following description serves to indicate the extent of the preparation expected in each of the several subjects named in the preceding requirements for admission:

ENGLISH

2, 3 or 4 units. Candidates for admission must present two units in English, one in composition, and one in the reading and study of English classics. These two units correspond to the work of the first two years of the standard high-school course, in which half of the time is devoted to theme writing and instruction and composition, and half to the detailed study of a number of the English classics. At least three units in English are recommended, the third unit to consist of additional work in composition, and either (1) an outline history of English or American literature with the reading and study of selections of each period, or (2) the intensive study of a few typical examples of the novel, the drama, the lyric, and the essay. Four units of English should include composition and both (1) and (2) given above, in addition to the two required units.

THE TWO UNITS REQUIRED OF ALL

Composition and Rhetoric. Practice in theme writing with instruction in the principles of composition and the forms of discourse must form an important part in each unit of English presented for entrance. Every entrant is examined as to his ability to express himself in clear, correct, idiomatic English. The test consists in writing several essays on familiar subjects, in which the student plans his work by paragraphs and constructs both paragraphs and sentences in accordance with the simpler principles of composition. No student will be passed in this test and permitted to pursue the course in freshman English whose mark shows serious weakness in spelling, punctuation, grammar, sentence construction, or division into paragraphs. Facility of expression will not be sufficient to offset

marked deficiencies in these respects. A more detailed statement of the requirements for admission to freshman English is given in University Bulletin, High-School Series, No. 25. Students deficient in English compostion must make up such deficiency in one year or be dropped from the University. The University provides special instruction for such students.

READING AND STUDY OF ENGLISH CLASSICS. The two units required in English should include the thorough study of at least ten of the English classics on the list of uniform college entrance requirements in English, or their equivalents. The primary aim of the study of these selections should be the interpretation of the works as independent units; other considerations, such as form, biography, literary history, or critical comparisons, though they should not be neglected, should be kept subsidiary to this main object.

UNITS IN ADDITION TO THE TWO REQUIRED OF ALL

HISTORY OF ENGLISH AND AMERICAN LITERATURE. 1 unit. In addition to the required units in English, one unit in the history of Englsh literature or in the history of English and American literature may be presented. The greater part of the time should be devoted to the reading of selections from representative authors of each period. In the study of the history of literature, which should occupy no more than one-quarter of the time, emphasis should be placed on general movements and tendencies as shown in the selections studied. In the history of English literature characteristic selections from most of the following authors should be read: Chaucer, Shakespeare, Bacon, Milton, Pope, Addison, Goldsmith, Gray, Burns, Scott, Wordsworth, Coleridge, Keats, Shelley, Tennyson, Browning, Lamb, George Eliot, Dickens and Thackeray. In American literature selections from the following: Longfellow, Whittier, Bryant, Holmes, Irving, Hawthorne, Cooper, Poe, Lowell, and Emerson. A study of the principles of composition and practice in theme-writing must be included in this unit.

ADVANCED STUDY OF CLASSICS. 1 unit. In addition to the two units of required work, which include the reading and study of English Classics, students may offer one unit representing advanced work in the study of literature. This should consist of an intensive study of typical examples of the novel, the drama, the lyric, and the oration or the essay. At least one work from each of the following four groups should be included: I. (a) Thackeray's *Henry Esmond;* (b) Hawthorne's *The House of Seven Gables;* (c) Dickens' *A Tale of Two Cities;* (d) George Eliot's *Silas Marner.* II. Shakespeare's (a) *Macbeth,* (b) *Hamlet,* (c) *King Lear.* III. Palgrave's *Golden Treasury* (First Series), (a) Books ii and iii, or (b) Book iv; (c) Milton's *Lycidas, L'Allegro,* and *Il Penseroso.* IV. (a) Burke's *Speech on Conciliation;* (b) Webster's *First Bunker Hill Oration,* and Washington's *Farewell Address;* (c) Macauley's *Life of Johnson, Essays on Milton;* (d) Carlyle's *Essay on Burns.* A study of the principles of rhetoric, with frequent and systematic theme-writing, must form a part of this unit.

MATHEMATICS

ALGEBRA. 1, 1½, or 2 units. The one required unit should include: addition, subtraction, multiplication, division, equations of the first degree with one unknown number, simultaneous equations of the first degree, including the graphical solution of a pair of linear equations with two unknowns, factors, highest common factor, lowest common multiple, solution of quadratic equations.

A third half year of algebra is strongly recommended for all students and is required of engineering students. The work should cover: the theory of quadratic equations; elementary theory of exponents and radicals; systems of non-linear equations including linear quadratic systems, quadratic systems containing no first degree terms; graphic representations of quadratic equations in two variables; examples involving binomial theorem with positive integral exponents; arithmetical and geometrical progressions; logarithms; ratio, proportion, and variation.

If a fourth half year is given it should cover: proof of binomial theorem for positive integral exponents, with examples involving negative and fractional exponents; polynomials and equations of any degree in one variable, including factor theorem, remainder theorem, determination of rational roots, graphic and algebraic approximate determination of real irrational roots, roots common to two equations, relation between roots and coefficients of the equation; permutations and combinations; determinants.

GEOMETRY. 1 unit of plane geometry. An additional half year of solid geometry is strongly recommended for students who expect to enter the College of Engineering.

TRIGONOMETRY. ½ unit. The fundamental properties of the trigonometric functions, the addition theorem and the more important formulas which follow from it; the solution of the various cases of right and double plane triangles; the use of logarithmic and trigonometric tables.

Additional credit. ½ or 1 unit for work in algebra, trigonometry, surveying or other mathematics; total credit not to exceed 4 units.

HISTORY, CIVICS, AND ECONOMICS

HISTORY. 1, 2, 3, or 4 units. History may be offered in the following blocks of 1 unit each: ancient, ancient and medieval, European to approximately the end of the 17th Century, medieval and modern, modern European, English, United States. One, two, three, or four blocks may be presented. A real equivalent may be presented in place of a recommended block, but a one-year course in general history will not be accepted.

CIVICS. ½ or 1 unit. This may comprise the study of government in its relation to either the local community or the nation, or both. It may be combined with history or economics in the construction of an elective unit.

ECONOMICS. ½ unit. A knowledge of the fundamental principles of economic science as presented in a good elementary treatise.

SCIENCE

BIOLOGY. 1 unit. This course should include plant biology, animal biology, and human biology or physiology. The course should include demonstrations by the teacher and individual laboratory work on the part of pupils. Biology should be upon the same basis as physics and chemistry.

BOTANY. 1 unit. A study of the life histories of types from the main groups of plants, with a series of simple physiological experiments. At least two-thirds of the course should consist of laboratory work. If it is impracticable to give a full year's work to the subject, botany may be combined with physical geography, physiology, or zoology to construct units.

CHEMISTRY. 1 unit. A study of the more common elements and their compounds. This course should include about four or five actual hours of work a week in the laboratory, and two or three periods a week in the classroom throughout the year. Two laboratory periods are considered as equivalent to one class exercise. A laboratory notebook must be kept.

PHYSICS. 1 unit. Not less than three classroom periods a week, and not less than four actual hours of work a week in the laboratory. A record of all work done should be kept in a notebook. Any standard textbook may be used.

PHYSICAL GEOGRAPHY. 1 unit. To include: (1) The principles as presented in the best recent textbooks, which give adequate treatment of the atmosphere and ocean, and emphasize the development and influence of topographic forms. (2) Field study adapted to the locality; every candidate must submit a statement of the field trips taken by him. (3) The interpretation and habitual use, in the laboratory, of topographic maps, weather maps, charts, and pictures. If it is impracticable to give a full year's work to the subject, physical geography, botany, physiology, and zoology may be combined to construct units.

PHYSIOLOGY. ½ unit. Human anatomy, histology and physiology, and the essentials of hygiene. The textbook work must be illustrated by charts and models, and supplemented by anatomical demonstrations and chemical experiments.

ZOOLOGY. 1 unit. Laboratory work (at least two-thirds of the course), with careful description and drawings. Class exercises may be based on any standard textbook.

FOREIGN LANGUAGE

GREEK. 1, 2, or 3 units. First unit, grammar and elementary book; second unit, Xenophon's *Anabasis,* four books; Greek composition; third unit, Homer's *Illiad,* six books, or an equivalent amount of the *Odyssey;* Greek composition.

LATIN. 1, 2, 3, or 4 units. First unit, grammar and elementary book; second unit, *Caesar,* books I-IV; third or fourth units, *Cicero,* six orations (selections from the letters may be substituted for two orations); or *Virgil,* six books; composition, preferably in connection with *Caesar* and *Cicero.*. These requirements are planned with special reference to the needs of those candidates who purpose continuing the study of ancient or modern languages or of history. Real equivalents will be accepted for any part of these requirements, such as Rolfe and Dennison, *Latin Reader,* or Sanford-Scott, *Second Latin Book.*

GERMAN. First unit. (a) Correct pronunciation; (b) grammar equivalent to Manfred's *Ein praktischer Anfang* (23 lessons), Spanhoofd's *Elementarbuch* (24 lessons), or Bacon's *New German Grammar* (50 lessons); (c) about 50 pages of easy prose; (d) ability to translate from German into English and vice versa, and to answer simple German questions in German.

Second unit. (a) Fluent pronunciation; (b) elementary grammar completed; (c) about 75 of the more usual strong verbs; (d) 200 pages of reading, chiefly modern prose, but including simple poems and possibly a short play.

Third unit. (a) Further grammar and syntax study; (b) at least 200 pages of prose and verse, partly as outside reading reported on for content only; (c) constant oral and written practice.

Fourth unit. (a) At least 400 pages of standard literature in prose and verse, partly as outside reading as above; (b) increasing attention to literary appreciation and biographical and historical background; (c) ability to understand ordinary modern German texts, to write simple topics relating to them, and to converse on them in German; (d) ability to follow recitations conducted in German.

FRENCH. First unit. (a) The elements of grammar as found in the first part of usual French grammars; (b) about 100 pages of simple French, with emphasis on correct pronunciation.

Second unit. (a) A review of the grammar covering all the most common irregular verbs; (b) 200 pages of simple French.

Third unit. (a) At least 400 pages of French chosen from nineteenth-century classics; (b) considerable work in oral and written composition.

Fourth unit. One year of work, including: (a) at least 500 pages of classic and modern French literature; (b) ability to write a short French composition and to show understanding of a simple lecture in French by answering questions upon it in the same language.

For detailed information as to grammars, texts, etc., see *A Four-Year High-School Course in French,* copies of which may be obtained on application to the Department of French and Italian.

ITALIAN. First unit. (a) The elements of grammar; (b) 200 pages of easy Italian, with emphasis on correct pronunciation. Second unit. (a) Correct pronunciation. (b) ability to translate freely simple Italian texts; (c) an accurate knowledge of the grammatical principles of the language, and of its regular verbs; (d) about 500 pages of text.

SPANISH. First unit. (a) The elements of grammar; (b) 100 pages of easy Spanish, emphasis on correct pronunciation. The work in grammar should be approximately that found in any standard Spanish grammar. The student should be taught the Castillian pronunciation.

Second unit. (a) Correct pronunciation; (b) ability to translate freely simple Spanish texts; (c) an accurate knowledge of the grammatical principles of the language, and of its regular verbs; (d) about 300 pages of text.

Third unit. (a) At least 400 pages of Spanish chosen from nineteenth-century authors; (b) considerable work in oral and written composition.

Fourth unit. One year of work including: (a) at least 400 pages of modern Spanish literature; (b) ability to write Spanish composition and to show understanding of a simple lecture in Spanish by answering questions upon it in the same language.

For detailed information, see pamphlet entitled *A Four-Year Course in Spanish,* issued by the Department of Spanish and Portuguese.

NORSE. First unit. (a) Grammar and exercises equivalent to Holvik's *Beginner's Book in Norse,* or Michelet's *First Year Norse;* (b) 100 pages of text of the grade of Bjornson's *En Glad Gut.* Second unit. (a) A review of the grammar; (b) 200 pages of prose and verse, equivalent in grade to Holvik's *Second Book in Norse* and Ibsen's *Terje Viken.*

HEBREW. First unit. (a) Correct pronunciation and principles of Hebrew phonetics; (b) grammar, the equivalent of Harper's *Elements of Hebrew* as prescribed in Harper's *Introductory Hebrew Method and Manual,* first 25 lessons (through the regular verb); (c) reading of the first four chapters of Genesis or an equivalent amount of simple historical prose; (d) translation of simple English sentences into Hebrew.

Second unit. (a) Completion of the *Elementary Hebrew Grammar* covering the irregular verbs and nouns with suffixes (completion of Harper's *Method and Manual*); (b) the reading of about 50 pages of simple Hebrew prose; (c) ability to translate into Hebrew ordinary English prose, and to read at sight historical Hebrew like the narrative portions of *Judges* or *Samuel,* when new words are given.

ART AND VOCATIONAL SUBJECTS

Owing to the present state of development of fine and applied arts and the vocational subjects in the high-school curriculum, requirements in these subjects are not defined.

AGRICULTURE. Plant production, agricultural chemistry, soils, 1 or 2; animal husbandry, 1; rural economics, farm management, and farm mechanics, 1½.

COMMERCIAL WORK. Bookkeeping, ½ to 2; shorthand, 2; typewriting, 1 if combined with shorthand, otherwise only ½; commercial arithmetic, ½; commercial law, ½; commercial geography, ½; business organization, salesmanship, and office practice, each ½ unit if taken during the last two years.

DRAWING, ART, AND DESIGN. 1-4 units. Art, to include freehand drawing, light and shade, color rendering, and perspective, 1 or 2; principles of design including application in line, form, and color, 1 or 2; crafts with correlated design, 1 or 1½.

DOMESTIC ART. Textile and clothing, 1 or 2.

DOMESTIC SCIENCE. Food study, 1 or 2.

MANUAL ARTS. Mechanical drawing, 1-4; shop work,, 1-2; freehand drawing and design, 1-2; mechanical drawing and shop, 1-4.

MUSIC

A maximum of four units of entrance credit in music may be allowed, when taken under the conditions stipulated by the University School of Music.

HISTORY AND APPRECIATION OF MUSIC. 1 unit; five periods per week for one year. A non-technical presentation of those fundamentals of form and design essential for intelligent listening to music, together with a brief historical account of the development of music which will aid in giving perspective to musical understanding. The course should consist of assigned reading, prepared topics, analysis of typical examples, class projects, musical participation, and much *discriminative* listening. To conduct this course successfully, there must be available adequate reference material. Also, for purposes of musical illustration, there must be an excellent phonograph and, if possible, a player-piano, with an adequate supply of acceptable, records, rolls, and scores.

THEORY AND HARMONY. 2 units only; five periods per week for two years. The course aims in the first year to provide the student with:

a) Theoretical knowledge of music symbols, terminology, intervals, key signatures, rhythms, and elementary chord structure, and a thorough knowledge of major and minor scales.

b) Ear-training, sight-singing, and dictation (laboratory work).

c) A knowledge of tone relationships with respect to rhythm, melody, harmony, and design.

In the second year the course should begin with simple triads and continue through cadences and sequences up to the dominant seventh chord. The purpose is:

a) To provide a stimulus for the creative impulses of the student, rather than to serve merely as musical grammar.

b) To develop a capacity for harmonic analysis essential for sound musicianship.

The work should consist of both paper and key-board application of all chords and progressions studied.

CHORAL MUSIC. ½ unit per year; five laboratory periods per week. This course contemplates choral study in small groups where it will be possible to pay attention to voice training and to the development of individual skill in singing. Sight-reading ability is prerequisite. The material studied must be selected from the standard choral literature and the course must be planned in such a manner that a systematic development of both skill and appreciation will result. In addition to the finished performance of typical examples of choral literature, opportunity should be provided for becoming acquainted with a wide range of the best choral literature.

ORCHESTRA. ½ unit per year; five laboratory periods per week. The basis for recognition of credit by the University is:

a) The instrumention shall be such that constructive orchestral development is possible.

b) Instructors must have had sufficient practical training to satisfactorily carry on such work.

The purpose of this course is to provide players of orchestral instruments an opportunity for the development of skill and for the enjoyment of this form of ensemble playing. It is essential, therefore, that there be an instrumentation that is sufficiently complete for the characteristic qualities of the various choirs to be realized. It is only upon this basis that an adequate performance of the literature of the symphony orchestra may be approximated.

The following minimum instrumentation is essential: four first violins, four second violins, two violas, one cello, one bass, one flute, two clarinets, one oboe, one bassoon, two trumpets (or cornets), one trombone (valve or slide), two French horns, tympani, and percussion.

In augmenting this group, the strings may first be greatly increased, with attention, however, to proportional increases in violas, cellos, and basses; then second bassoon, second oboe, second and third trombones, third and fourth French horns, and second flute may be added.

The music played by such a group may be simple but must be musically worth while. Perfect intonation, good tone, accuracy of reading, and expressive performance are the ends sought.

BAND. ½ unit per year; five laboratory periods per week. In order that credit for band may be accepted by the University, the following minimum instrumentation is necessary: eight B-flat clarinets, one flute and piccolo, one oboe, one bassoon, four cornets or trumpets, one baritone, two trombones, two tubas (preferably E-flat and BB-flat), three French horns in F or E-flat, and two percussion instruments. Instruments may be added in the following order: two B-flat clarinets, one additional French horn, one trombone, one E-flat clarinet, one alto clarinet, one bass clarinet, two trombones, and four saxophones (B-flat, E-flat,

tenor, and baritone). With such an instrumentation, music of a symphonic character is possible. Tone intonation, accuracy, and skill in reading, and expressive performance are the ends to be obtained. It should be a fundamental concept that the band is organized essentially as a musical organization rather than for utility purposes.

APPLIED MUSIC. ½ unit per year, with a maximum of 2 units; one thirty-minute private lesson per week, with one hour of practice daily.

Instruction in applied music taken for credit with teachers outside the regular school system should include: correct position with its relation to the natural production of good tone; scales and arpeggios played in rhythms in major and minor keys; sight reading; in the case of piano, pedaling; in the case of stringed instruments, bowing; the various types of touch; music chosen from the works of composers generally recognized as the best, and representing the various forms, such as march, waltz, gavotte, sonata; in the case of piano and organ, the complete cadence in all keys; correct interpretation as demanded by the pieces of various types studied.

Written application must be made in duplicate by the pupil, with the countersignature of the parent, to the principal of the high school not later than the second week of the school year, requesting permission to take applied music for a specific amount of credit with a private teacher properly accredited by the State Department of Education. When approved by the principal, one copy of the application should be signed and retained for the school office, and the other copy signed and returned to the student, who will present the approved application to the accredited private instructor when registering with such instructor for work with credit. The teacher shall submit to the principal, on a form provided by the school, a monthly report of the work done by the pupil. At the close of each semester, each pupil taking applied music for entrance credit to the University of Wisconsin shall be examined by a person selected by the principal from a list prepared by the University School of Music. The nature and the scope of each examination shall be determined by the University School of Music.

PART IV—THE COLLEGES

COLLEGE OF LETTERS AND SCIENCE

G. C. Sellery, Dean

I. COURSES OF STUDY OFFERED

The work of a student during his first two years in the College of Letters and Science is included under either the B.A. or the Ph.B. General Course or one of several special courses mentioned below and discussed in detail on the pages indicated. After completing two years in one of the General Courses the student may regularly (1) work toward either the B.A. or the Ph.B. degree in the General Course, (2) enter one of the special courses (Commerce, Journalism), (3) transfer to the School of Education as a candidate for the degree of B.S. (Education) and for the University Teachers' Certificate, or (4) work toward the B.A. or Ph.B. degree with a view to entering the Law School at the beginning of the senior year or later.

Leading to the Degree of Bachelor of Arts

General Course, page 64
Course in Commerce, page 81 (School of Commerce)
Course in Humanities, page 74
Course in Journalism, page 86 (School of Journalism)

Leading to the Degree of Bachelor of Science

Course in Chemistry, page 69
Chemistry-Commerce Course, page 73
Course in Hygiene (see School of Nursing Bulletin)
Four-Year Course in Pharmacy, page 77
Premedical Course, page 79

Leading to the Degree of Bachelor of Music

Course in Music, page 101 (School of Music)

Leading to the Degree of Bachelor of Philosophy

General Course, page 68
*Normal Course, page 69
Course in Commerce, page 81 (School of Commerce)

Leading to the Degree of Graduate in Pharmacy

†Three-Year Course in Pharmacy, page 77

*Course to be discontinued in August 1932.
†Course to be discontinued in June 1934; freshmen not admitted after 1931.

II. GENERAL REGULATIONS

1. ADVISERS

Upon being admitted to the University, each student is assigned to a member of the faculty who acts as his adviser during the freshman and sophomore years. The duties of the adviser are to assist the student in selecting his subjects so as to secure a well-rounded education, as well as to aid him in interpreting the requirements and to oblige him to meet them in their proper sequence. The responsibility for the selection of courses rests, in the final analysis, upon the student and it is not the province of the adviser to refuse approval of a course which the student is entitled to elect. Similarily, it is the primary duty of the student to meet the requirements of his course in their proper order, so that he may not, in his senior year, find himself unable to graduate. At the beginning of the junior year, when the student has selected his major study, an appropriate member of the division in which the major is located becomes his adviser. At the opening of each semester the student is required to consult his adviser concerning his choice of studies, and the adviser must approve the student's elections before he is permitted to enter classes.

2. CREDITS AND POINTS

CREDITS. The *credit* is the unit for computing the amount of work required for graduation. It is assigned to one hour of class or lecture work or to two or three hours of laboratory work per week for one semester, together with the necessary preparation. Students in the general courses are expected to earn an average of 15 credits per semester in class and laboratory work, making 30 credits per year, or 120 for the four-year course.

Each student in one of the general courses is required to take class and laboratory work in the amount of 14 to 16 credits per semester. A student who desires to elect fewer than 14 credits must obtain permission in advance from the Dean. A student who has received a grade of B in *each* subject of the preceding semester may take not to exceed 18 credits. No student will be permitted to count toward graduation more than 18 credits in one semester.

Candidates for the bachelor's degree who desire to graduate in three years may usually do so by obtaining 17 or 18 credits per semester after the first semester of the freshman year, and by attending three summer sessions. Students will need to select carefully their work for the summer with reference to the required and elective subjects of the course is which they expect to graduate. A student who expects to shorten his course in this way will necessarily consult with his adviser very carefully before selecting his subjects.

GRADE-POINT SYSTEM. In order to receive a degree the student must gain not only the number of credits required in the course which he is pursuing, but his studies must reach a certain average of excellence. This standard is fixed by the grade-point system, which requires for graduation from any course as many points as credits. The following table shows the university scale of grading, together with the number of points per credit for each grade:

GRADE	PERCENTAGE	POINTS PER CREDIT
A (Excellent)	93–100	3
B (Good)	85–92	2
C (Fair)	77–84	1
D (Poor)	70–76	0
E (Condition)	(See Sec. 7)	0
F (Failure)	Below 70	0

The point-credit ratio of a student is determined by dividing the total number of points he has earned by the total number of credits elected. If this ratio is less than 1.0 the student is falling behind in the requirements for graduation and may therefore be placed on probation, advised to withdraw, or dropped.

A student in any course requiring 120 academic credits for graduation must earn 60 grade-points and at least 60 credits in order to absolve the academic requirements of the first half of his four-year course, and *thereafter* must earn 60 grade-points and at least 60 credits in order to absolve the academic requirements of the second half of his four-year course. In other words, the credits in excess of 60 required to earn the 60 grade-points necessary for the first half of the four-year course will not be counted toward graduation. A student in any course requiring more than 120 academic credits for graduation must similarly earn half his grade-points and at least half his credits in order to absolve the requirements of the first half of his four-year course, etc.

3. ATTENDANCE

Students are required to be present at the opening of the semester and to remain until the work of the semester is finished. It is expected that every student will be present at all of the classes at which he is due. If at any time a student is absent, he must satisfy his instructors that such absence is for good and sufficient cause. Any student who is absent from any class immediately preceding or following Thanksgiving day or the Christmas or spring recess without an excuse acceptable to the Junior Dean will be excluded from the semester examinations in those subjects from which he was absent and will be required to write special examinations as if he had received conditions. This rule also applies to absences at the opening of the second semester.

4. TRANSFERS

Students transferring from special courses, e. g., Chemistry or Premedical, or from another college of the University, to one of the General Courses, will receive no more than 15 credits a semester toward graduation for work already done, except in semesters in which all standings are B or above, when the maximum is 18 credits. They will not receive credit for technical studies of another college, except to the amount and under the conditions stated under Election of Studies Outside the College, section 18 below. Students transferring are in general required to remove an incomplete, a condition, or a failure incurred in any subject in their former college, provided they can credit the subject in question in this college. If not, the subject will be declared equivalent to a "free elective" by the Executive Committee, on application, after the student has done a semester of satisfactory work in this college. This regulation is applied similarly to transfers within this college. Doubtful cases should be referred promptly to the Executive Committee.

5. ADMISSION WITH ADVANCED STANDING

Students from accredited colleges and universities who have pursued college courses equivalent to those of the University of Wisconsin and who have been granted honorable dismissal may be admitted to this College under the following conditions:

FRESHMEN AND SOPHOMORES. Inasmuch as freshmen in this College are limited in their choice of subjects to English composition, foreign language, history, mathematics, natural sciences, and drawing, those in other institutions who

wish to receive full credit for their work by transfer here should restrict their choice accordingly. Subjects such as education, philosophy, and sociology taken during the freshman year will definitely not be credited. The minimum standard of excellence for work accepted on transfer is C on an A-B-C-D-Fail grading basis; but a student, before transferring, should understand that he must be able to meet the 1.3 ratio by the close of the sophomore year if he is to be allowed to continue thereafter. (See section 14 below.)

JUNIOR AND SENIOR YEARS. No student will be admitted to the junior year unless his point-credit ratio for the first two years meets the 1.3 required for promotion of University of Wisconsin students to the junior year. A correspondingly high scholastic average is requisite for admission into the senior year.

The standard of scholastic excellence expressed as a point-credit ratio of 1.3 may be regarded as the approximate equivalent of C in two-thirds of the total number of credits and B in the remaining third, on an A-B-C-D-Fail grading basis.

6. RESIDENCE REQUIREMENTS

The minimum residence requirement is 30 credits and 30 grade-points, to be earned in at least two semesters at Madison (or six summer sessions, in no one of which may less than four credits be carried). All the requirements of the major subject must be met, including at least 15 credits and 15 grade-points in advanced work at the University.

All candidates for degrees must expect to take their senior year in residence. They are not permitted to take the advanced work of the major study or the thesis in another institution or by correspondence, since these studies normally culminate in the last year of the undergraduate course. In special cases the Executive Committee of the College, on application to the Dean, may permit a senior who has finished all the specific requirements and the work of his major and thesis, to take not to exceed 6 credits by correspondence to complete the requirements for his degree.

Students who wish to earn a second baccalaureate degree in this college are required to complete the additional studies regularly prescribed for that degree, involving at least one year's additional residence and the earning of at least 30 additional credits.

7. DEFICIENCIES

FAILURES. In general, a student who has failed in any subject must remove the failure by repeating that subject in class and securing a passing grade, as soon as the subject is again offered. A failure cannot be removed by correspondence study or by repeating the subject in another institution. Students in this college, however, are required to remove failures only in required subjects, i. e., those chosen to satisfy or those capable of satisfying specific requirements for a given degree, for the teachers' certificate, for any special curriculum or course (e. g., Chemistry Course), or for a major, including also any courses which carry credit toward the major, over and above the minimum requirement thereof. So far as this regulation is concerned, a subject chosen to satisfy any requirement thereby becomes a requirement, and students may not meet the requirement in any other way, but must remove failures in such subjects unless relieved by the Executive Committee as provided in section 4 above. Seniors, including those registered for graduate credit, who incur failures during their last semester of residence must remove such failures in the regular way; this rule applies also to incompletes and conditions incurred during the final semester.

ELIGIBILITY AS AFFECTED BY FAILURES. A student who has a failure on his record shall be eligible to participate in extra-curricular activities: (a) when he shall have repeated the subject with a satisfactory grade, or (b) when he shall have satisfactorily completed, in a subsequent semester or summer session, another subject approved as a substitute by the Executive Committee, or (c) when, in case the failure is in a subject certified to the Registrar by the Dean to be a free elective, he shall have completed a subsequent semester of satisfactory work on a full program. However, to regain eligibility for intercollegiate athletics under (b) or (c) a full year of satisfactory work must be completed, as provided by the Inter-Collegiate Conference rules.

CONDITIONS. The grade of condition is given to a student who has carried a subject throughout a semester with a passing average, but who, failing in his final examination, reduces his semester average to some numerical standing between 60 and 69. A condition must be made good by passing a special examination during the student's next succeeding semester of residence at the University or it becomes a failure, which must be removed as specified above. If a student repeats in class a subject in which he has incurred a condition, he is excluded from taking the condition examination and must complete the subject in the regular way. Former students not in residence are permitted to enter condition examinations only in case they left the University in good standing. No grade-points are awarded for conditions made good.

The usual way of removing a condition is by a successful final examination taken on the day fixed by the rules. If, however, in a course involving both laboratory and classroom work, the condition has been incurred on account of unsatisfactory laboratory or report work, it may be removed by absolving such substantial requirements as the instructor in charge of the course may prescribe. The removal of this type of condition will take effect on the official date for the removal of conditions. When a condition in such a course becomes a failure, the student may pass the course by repeating that portion of it (laboratory or classroom work) in which the condition was originally incurred, provided the instructor in charge authorizes this arrangement in advance.

INCOMPLETES. An incomplete may be given to a student who has carried a subject successfully until near the end of the semester and has then been compelled to quit work on account of illness or other cause beyond his control, leaving the final examination or the final examination and some limited amount of term work undone. An incomplete is not given to a student who stays away from a final examination unless he proves to the instructor that he was prevented from attending as indicated above. In default of such proof he will be failed or conditioned; even with such proof, if his term work has convinced the instructor that he cannot pass, he will usually be failed or conditioned. A subject marked incomplete must be completed during the student's next succeeding semester of residence at the University or it will lapse into a failure, unless the time limit has been extended by the Executive Committee. A student may not graduate with an incomplete incurred during the second semester of his senior year.

8. HONORS IN SCHOLARSHIP

Sophomore honors are awarded on the basis of a minimum of two full years of work (not less than 60 credits) completed in residence in the University. A student securing during these two years 135 grade-points, plus 1.5 grade-points for each credit above 60 required in his course, will be awarded Sophomore Honors; a student securing during these two years 165 grade-points, plus 2 grade-points for each credit above 60 required in his course, will be awarded Sophomore High Honors.

Senior honors are awarded on the basis of the academic requirements for the second half of any four-year course, all of which have been completed in residence at the University. A student securing 135 grade-points, plus 1.5 grade-points for each credit above 60 required in his course for completing the second half, will be awarded Senior Honors; a student securing 165 grade-points, plus 2 grade-points for each credit above 60 required in his course for completing the second half, will be awarded Senior High Honors. This rule will not be construed so as to bar any student from securing Senior Honors who has been permitted to carry *more* than the minimum number of credits during the first two years of his course and *less* than the minimum during the last two years.

Honors in the major may, upon recommendation of the department, be granted at graduation to any student who has done superior work in his major and who has passed with distinction a comprehensive examination on the work offered for his major. Students doing all their work in course, as well as those doing it partly in course and partly outside of course, shall, with the approval of the department, be eligible for such examination and honors.

Thesis honors are granted for an exceptionally fine or original thesis, without consideration of the student's record in other work.

The names of students awarded sophomore honors are bulletined in Bascom Hall; those of students awarded senior and thesis honors and honors in the major are published in the Commencement Register.

9. CLASSIFICATION OF STUDENTS

RANK. A student must have 25 grade-points and at least 25 credits before he may be classified as a sophomore; 58 grade-points and at least 58 credits before he may be classified as a junior; and 88 grade-points and at least 88 credits before he may be classified as a senior.

UPPER AND LOWER GROUPS. At the close of the sophomore year all students in the College of Letters and Science are divided provisionally into two groups on the basis of grade-points earned during the freshman and sophomore years. Students who have a point-credit ratio of at least 1.5 by the end of the sophomore year (or at any subsequent time) are designated as upper-group students. A student's upper-group status continues throughout the remainder of his college course as long as his point-credit ratio does not fall below 1.5. At the discretion of departments, upper-group students are eligible for more advanced work than other students.

ADVANCED STANDING. Students transferring to the University of Wisconsin from other institutions with from 45 to 90 credits shall be regarded as upper-group students after they have completed one semester of work at this University, provided their point-credit ratio for this period is not less than 1.5.

10. SPECIAL STUDENTS NOT CANDIDATES FOR A DEGREE

Under recently adopted legislation, persons who meet all the requirements for regular admission to the University, either as freshmen or with advanced standing, may apply to the Executive Committee of the College of Letters and Science for admission as "special students not candidates for a degree." Such individuals must give evidence of seriousness of purpose before their applications for admission on this basis will be approved. A student so admitted may not enter any course for which he lacks the prerequisites as published in announcements and time tables, except by special consent of the instructor therein; nor may he take part in any extra-curricular activity or join any student organization to which the

eligibility rules apply. Such students will not be classified by years and will therefore not benefit by the exceptions noted under Rule 1 of the eligibility requirements, as printed in the first-semester time table.

Regular students in good standing may be permitted by the Executive Committee to transfer from a course leading to a degree to the classification of "special students not candidates for a degree."

Special students are assigned to special advisers, to whom they must give evidence of capacity and of application to their university work in order to be permitted to continue.

III. THE FIRST TWO YEARS

11. PLACEMENT AND ATTAINMENT EXAMINATIONS

At the opening of the academic year each freshman is required to take a placement examination in English, in mathematics (if he expects to continue this subject in college), and in any foreign language which he has taken in high school and expects to continue in college. The results of these examinations will determine the classes in which the student is permitted or required to enroll, and in the event that a student is thus required to repeat in college the substantial equivalent of mathematics or a foreign language taken in high school, he will receive no college credit for such equivalent.

Any student who so desires may also take attainment examinations in English, history, mathematics, biology, chemistry, physics, and the foreign languages, with the object in view of proving his mastery of certain subjects required for graduation in his college course and thus of absolving the requirements altogether. Success in passing an attainment examination entitles the student to substitute some subject of his own choice for the required subject, but does not reduce the total number of credits required for graduation.

Students who will normally be candidates for the B.A. degree in June 1934 or thereafter are *required* to prove their ability in foreign language by passing attainment examinations rather than by mere accumulation of high-school units or college credits in language. (See section 25 below.)

Attainment examinations are given soon after the opening of each semester and also near the close of the second semester. Students should enroll for one or more of these examinations as soon as they are prepared, so that failure to pass may not unduly delay enrollment in required courses.

12. PHYSICAL ACTIVITY REQUIREMENT

Freshman and sophomore women are required to take three hours of physical training a week for a total of four semesters. Similarly every male freshman and sophomore is required to take three hours of work a week in either physical training, military science, or band instruction for a total of four semesters. Normal-school graduates, students who enter with junior standing, and students who are physically disabled, as certified by the Department of Student Health, are exempt from this requirement. Freshmen and sophomores who desire exemption must make application to the proper authorities at the opening of the academic year; there are no automatic exemptions.

Students entering from schools where they have had the basic ROTC course may take the advanced course in the freshman year in fulfillment of the general option in military science, but without academic credit; or they may elect physical training or band instruction. In the sophomore year the advanced course may be elected for academic credit as well as in fulfillment of the requirement. If one of the advanced courses in military science is elected, it must appear on the student's study list in the same way as any other regular subject, and sophomores, juniors, and seniors must include it in the maximum number of credits permitted.

13. COMPLETION OF THE FIRST TWO YEARS

Freshmen admitted during the year 1930-31 and both freshmen and sophomores admitted in September 1931 and thereafter who are pursuing regular courses of study leading to a degree (excepting the Bachelor of Music degree), become candidates for the title of Junior Graduate in Liberal Studies. The corresponding certificate is granted upon completion of two years' work with a total of not less than 60 credits and 60 points. Some students who fail to complete the requirements for this certificate within four semesters will be permitted to return for one additional semester as sophomores on probation. Granting of the certificate of junior graduate does *not* automatically admit the recipient to the junior class.

IV. THE LAST TWO YEARS

14. PROMOTION TO THE JUNIOR YEAR

At the close of the sophomore year, commencing in June 1932, students will be classified according to their university records into three groups:

I—Those whose point-credit ratio for the two-year period is 1.3 or higher.

II—Those whose point-credit ratio is 1.1 but less than 1.3.

III—Those whose point-credit ratio is lower than 1.1.

Admission to the junior class will be automatic for students belonging to Class I. Students belonging to Class II may apply to the Committee on Promotion for admission to the junior year, and their applications may be supported by written recommendations from members of the teaching staff under whom the student has worked during his sophomore year. In general, students belonging to Class III will be excluded from the junior year, although the Executive Committee of the College may recommend to the Committee on Promotion the admission of those whose records during the sophomore year show a substantial improvement over their work in the freshman year.

Any student who has been refused admission to the junior year may reapply after a lapse of at least one year or after having successfully carried at least one semester of satisfactory work in another college or university. Applications will be considered on the following bases: (a) the high-school and university records of the student, (b) the record of the student since leaving the University, and (c) other relevant circumstances. Students who have been employed during a period of absence may substantiate their applications by recommendations from employers.

15. MAJOR STUDY

At the beginning of his junior year each candidate for a degree shall select a major study in one of the divisions* into which the College is organized and shall be assigned an adviser appropriate to the field in which he expects to concentrate. A division may refuse to accept as a major any student with less than a specified point-credit ratio in those subjects of the first two years which lie within the field of concentration, but a deficiency in the general point-credit ratio of a student who has been admitted to the junior year shall not be made a criterion of refusal.

Within each division certain fields of concentration have been outlined, and special fields may be arranged for individual students with approval of the Dean. These fields may correspond to the separate departments in the division or be restricted to groups of subjects within a department, or they may include courses in more than one department. The regular fields at present authorized are announced under the separate departmental headings. (See Courses of Instruction, pages 104-204.) A few fields which cut across departmental lines or are otherwise irregular are announced below.

The general requirements of the major are as follows: (a) A maximum of 60 credits may be prescribed by the division, including not more than 40 credits within the field of concentration, and not more than 20 credits outside the field of concentration, of which as many as ten may be outside the boundaries of the division. Of these 60 credits, some may be earned during the first two years. (b) At least as many grade-points as credits must be earned in the major. (c) A thesis of 4-6 credits may be prescribed by the division, as specified in the detailed announcements of the major requirements. (d) During the last semester each candidate for a degree is required to pass a comprehensive examination covering all the work of the field of concentration. In the case of a B.A. candidate, this will include a passage of simple prose in one of the foreign languages offered for graduation.

16. SPECIAL FIELDS OF CONCENTRATION

MEDICAL SCIENCE

A major in medical science is authorized for students in the B.A. General Course who have been pursuing the regular three-year premedical sequence and who have met the usual premedical requirements (see section 18 below). In their senior year such students register in the Medical School as well as in the College of Letters and Science. The work of the major consists of a minimum of 20 credits, including thesis, in medical subjects, of which 10 credits must be within a single department of the Medical School—ordinarily anatomy or physiology. The general requirements for the B.A. degree must be met by students pursuing this major.

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*The term "division" as used in this and the following sections refers to a group of affiliated departments of the college or to any single department not so affiliated. The present groupings are as follows, and all other regular departments are to be regarded as non-affiliated:

Biology—Botany, Zoology.

Language and Literature—Art History, Classics, Comparative Literature, English, French and Italian, German, Journalism, Scandinavian Languages, Spanish and Portuguese.

Mathematical and Physical Sciences—Astronomy, Mathematics, Physics.

Social Sciences—Economics, History, Philosophy, Political Science, Sociology and Anthropology.

The regular Course in Medical Science leading to the B.S. degree consists of two years of premedical studies followed by the first two years of the four-year course leading to the M.D. degree. Students interested in this course are referred to the bulletin of the Medical School.

The two and three-year premedical sequences appear on page 79.

BACTERIOLOGY

Students who wish to prepare themselves for positions in the field of bacteriology are permitted to offer for the B.A. or Ph.B. degree a major in biological sciences, including courses in Medical Bacteriology, Agricultural Bacteriology, and related departments. Such students should consult with Prof. P. F. Clark or Prof. W. D. Frost.

DIVISION OF LANGUAGE AND LITERATURE

The Division of Language and Literature offers the following fields of concentration:

1. Departmental fields of concentration, corresponding to the separate departments of the Division (see statements under departments concerned);

2. Inter-departmental fields of concentration, which include work in more than one department of the Division. For students exceptionally prepared in two or more foreign languages, whose plan of work cannot be adequately met within the Department of Comparative Literature, special arrangements will be made, upon application to the chairman of the Division.

Supervised Individual Reading. Students who have passed the test for either advanced or intermediate knowledge in a given language and whose general record is of considerably more than average grade, may register for additional language credit, if, in order to improve further their fluency and accuracy in the use of foreign texts, they desire to read under supervision works in the foreign language dealing with subjects related to their major field of study. The texts to be read, which should be of a general and not too technical character, will be agreed upon in consultation between the student's major department and the language department concerned. Credit for such reading will be language credit based on an examination given by the language department and not credit in the student's major department. Arrangements for such individual reading require the approval, in advance, of the language department concerned and the Dean of the College.

HISPANIC STUDIES

Beside the advanced courses in Spanish language, literature, and civilization offered by the Department of Spanish and Portuguese, there are various other Spanish subjects in the University, making possible for the students a comprehensive preparation in the field of Hispanic studies. The commercial, political, diplomatic, journalistic and educational opportunities for men and women well equipped in this field are numerous and important. Spanish culture is rich in achievement, and has originality and human appeal. In our occidental civilization the Spanish race stands today as the representative of a certain attitude towards life which is one of the constituents of European culture. Through a fundamental course of Hispanic studies in their integration with the general academic courses, the student will gain a wide educational training and an understanding of the peoples speaking Spanish or Portuguese and occupying more than half of the western hemisphere.

Students may register for this major field of concentration at the beginning of their junior year. Prerequisites for registration are: (a) completion of all required subjects for the B.A., other than foreign language; (b) Economics 1a and

1b (General economics); (c) an intermediate-knowledge examination (or, preferably, a proficiency examination) in Spanish. The following courses, although not prerequisites for registration, are recommended for election by students in the first two years to enrich their background in preparation: Geography 5-6 (Regional economic geography) or 1-2 (Elements of natural environment); History 2 (Modern European history) and 4 (History of the United States); Political Science 7 (American government and politics).

The basic courses for this major are:

	Credits
Art History 153—The age of Rembrandt and Velázquez (or cognate fields of Spanish art offered by this department)	2
Economics 151—Latin America; economic development and trade	3
Geography 102—Geography of South America	3
Geography 111—Geography of Middle America	2
Political Science 131—The United States and Latin America	3
Spanish 17—Spain and Spanish America of today	4
Spanish 21—Survey of Spanish literature	6
Spanish 102—Spanish contemporary literature	6
Spanish 126—Spanish-American literature (conducted in Spanish)	4
Spanish 150—Spanish civilization (conducted in Spanish)	2
Spanish 151—Spanish-American civilization (conducted in Spanish)	2
Total	37

If the preparation of the student warrants, some of these courses may be pursued in the sophomore year. A general knowledge of Spanish literature such as is provided in Spanish 21 will be assumed of students offering the proficiency examination in Spanish at the time of registration in the major (see c above); and therefore the 6 credits involved could be applied to electives.

Plans are under way for the establishment of other basic courses on Spanish subjects in the Department of History.

The program of electives will be flexible enough to accommodate the individual purpose of the student. Courses especially recommended for election because of their particular bearing on the major are: Geography 107 (Geography of the Mediterranean region); Geography 145 (Geography of foreign markets); Portuguese 1-2 (Elementary Portuguese). Economics 251 (Seminary, Latin-American development and trade) will be open in exceptional cases to undergraduate students. Majors in this field will be expected to do extensive Spanish reading in connection with the courses taken in the various departments. A proficiency examination in Spanish must be passed before graduation.

For further information and registration apply to Professor Joaquín Ortega, in charge of this major field of concentration.

17. THESIS

If a thesis be prescribed by the division, it must represent a scholarly treatment of some phase of the student's work in his major study; the subject thereof requires approval by the student's adviser and the faculty member in general charge of the field of concentration (who is ordinarily the departmental chairman). The thesis shall be typewritten and bound according to specifications furnished by the University Librarian, and, after approval by the faculty member under whose guidance it has been prepared, shall be deposited in the University Library not later than the second Friday before Commencement. The thesis carries only 4-6 credits toward the requirements of the major and toward graduation.

18. ELECTION OF STUDIES OUTSIDE THE COLLEGE

Students in any of the B.A. or Ph.B. courses (excepting the Normal Course) are allowed to elect a maximum of 20 credits in the other colleges and schools of the University (Agriculture, Engineering, Law, Medicine, and Education) under the conditions specified below. However, certain courses in the School of Education are counted regularly as Letters and Science subjects and so do not come under these rules.

Students in the B.S. courses may credit studies taken outside the College only if such studies are required in their respective courses.

The Schools of Commerce, Journalism, and Music and the Library School are administrative subdivisions of the College of Letters and Science. Students may elect certain studies in the first two of these (i. e., in the Departments of Economics and Journalism) without special permission; rules for enrollment in Music courses may be found on page 96 and for admission to the Library School on pages 93-96.

GENERAL CONDITIONS

(a) The student must have completed the work of the freshman and sophomore years of the College of Letters and Science, including those studies which normally come in the freshman and sophomore years at Wisconsin. This means, in the case of a B.A. student, that he must have 58 credits and 58 grade-points, and must have completed his two years of English, two of the three requirements in history, mathematics, and science, and four semesters of foreign language in college unless the B.A. requirement has been completed earlier, before he may enjoy the privileges of this rule. (See sections 24-26 below.) Ph.B. students must have been equally industrious in completing the requirements of their course; in particular, they must have completed their English and 20 credits in science and mathematics (requirement b), together with one of the options under requirement c. (See sections 28-30 below.)

(b) The student must be spending at least two full years in residence for the bachelor's degree. That is, studies outside the college may not be credited by students who have been granted more than two years of credit for work completed in another institution or by those whose residence work is reduced below two years by correspondence study.

(c) Certain courses, intended primarily for students of other colleges but offered by departments of the College of Letters and Science (e.g. Math. 51, Physics 51, etc.), are open in the same way as courses intended primarily for students of the College of Letters and Science.

(d) Not more than 5 of the 20 credits may be earned in either semester of the junior year.

(e) Elections must be approved by the Dean of the College of Letters and Science. Such approval will be endorsed on the study list in each case in advance, and on the student's permanent record in the Registrar's office. Courses which are parallel to Letters and Science courses will be approved only for special cause. Courses which involve a large manual or routine technical element will ordinarily be approved only as extras. Special consideration, however, will be given to programs directed to a definite educational end.

SCHOOL OF EDUCATION

The following courses are open in the same way as regular Letters and Science subjects:

Art Education 50, 51, 55—open to freshmen and others

Education 31 Educational Psychology 11, 41	} open to sophomores and upperclassmen
Education 101, 102, 103, 117, 202, 203, 204 Educational Psychology 112, 121, 123	} open to juniors and seniors only

In the summer session, courses in educational methods are also open to students in Letters and Science who wish to qualify for the State Teachers' License, but during the regular year the methods courses and Educational Psychology 75 (Psychology and practice of teaching) are both definitely closed to students not actually registered in the School of Education.

LAW SCHOOL

The student in a B.A. or a Ph.B. course who satisfies the conditions specified in paragraphs (a) and (b) above may count toward his degree a maximum of 26 credits in law courses, providing he has confined his elections outside the college to the Law School.

MEDICAL SCHOOL

Candidates for the B.A. degree are permitted to major in medical science; they may register in the Medical School in their senior year and may count toward their degree the full work of the first-year medical course, 36 credits. Such students must earn at least 90 credits in Letters and Science and meet all the regular premedical requirements (10 credits each in general chemistry, biology, and physics, 4 credits in organic chemistry, one year of college Latin or equivalent, and a reading knowledge of French or German) during the first three years. See section 16 above for requirements of major in medical science.

19. ADMISSION TO THE LAW SCHOOL; PRE-LEGAL STUDIES

Students are eligible for transfer to the Law School when they have (a) completed three academic years of satisfactory work on full programs of study (see second paragraph of section 2 above, entitled Credits and Points) in any of the B.A. or Ph.B. courses, (b) satisfied the basic requirements of the first two years in any of those courses (e. g., English, foreign language, and the history-mathematics-science requirement in the B.A. General Course), and (c) successfully carried their third year of Letters and Science studies. In this third year students should complete all unfullfilled general requirements and virtually all the requirements of the major, with the excepton of the thesis.

Any major in Letters and Science, energetically carried with the general degree requirements, will furnish adequate preparation for the study of law. But the Law School Faculty believes that, as a rule, the student intending to study law should choose a field of concentration in the division of the social sciences (economics, history, philosophy, political science, sociology), and that, in any event, when he begins the study of law he should have acquired some understanding of the economic and political life of the Uited States and of Anglo-American constitutional history, as well as some acquaintance with philosophy and social psychology. They recommend especially the following courses: Economics 1; History 4, 5, 117, 141; Philosophy 11; Political Science 1 or 101; Sociology 46, 139. They recommend also, for their bearing on certain phases of the law:

Economics 5, 19, 123, 124, 133, 137, 142; Philosophy 21, 41, 43, 136, 146; Political Science 13, 123, 125, 139, 165, 245; Sociology 161.

By availing themselves of either this section or section 18, students may earn both the undergraduate degree and the law degree in six years. Indeed, students who do not secure their arts degrees in addition to their law degrees will be at a disadvantage.

20. ADMISSION TO THE SCHOOL OF EDUCATION

Students are eligible for transfer to the School of Education when they have satisfactorily completed the regular requirements of the first two years of one of the General Courses, as contemplated in section 18, paragraph (a), above. However, no student will be accepted into the School of Education unless his scholastic record indicates the probability of success in some teaching field.

It is recommended that students who expect to enter the School of Education include in the work of their first two years one or more courses in the department in which they expect later to pursue a teaching major. Principles of secondary education (Education 31) and Mental development (Educational Psychology 11) may be taken during the sophomore year.

21. UNIVERSITY TEACHERS' CERTIFICATE

The University Teachers' Certificate is not granted to students of the College of Letters and Science excepting those registered in special courses (Chemistry, Commerce, Humanities, Journalism, etc.), who may become candidates for the certificate without losing their regular status by registering in both the School of Education and the College of Letters and Science during the junior and senior years.

Students not in one of the special courses who wish to be recommended for the University Teachers' Certificate are required to transfer to the School of Education in the junior year as candidates for the degree of Bachelor of Science (Education). See section 20 above.

In order to qualify for the University Teachers' Certificate, special course students must meet the following requirements:

I. Completion of all the regular requirements of the special course, plus four additional credits and four grade-points (if only 120 credits are ordinarily required for graduation from that course).

II. Completion of the following professional requirements:

	Credits
Educ. 31—Principles of secondary education	3
Educ. Psych. 75—Psychology and practice of teaching	5
Departmental teachers' course	3 or 4
Elective in the Department of Education	4 or 3
	15

III. Completion of the special requirements for teaching a major subject, or a major and one or two minor subjects, as outlined under the appropriate departmental heading in the School of Education.

IV. Recommendation of the departments of the major and minor subjects, or the responsible authorities of the special courses, as to fitness for teaching.

V. Presentation of a certificate of physical health and fitness from the University Medical Examiner.

22. STATE TEACHERS' LICENSE

A student who wishes to become a high-school teacher without transferring to the School of Education has the privilege of fulfilling the requirements for a State Teachers' License while completing his regular work for the B.A. or Ph.B. degree. For a first license the following credits in education are *required* by the State Superintendent of Public Instruction:

	Credits
1. Educational psychology (Educ. Psych. 41)	3
2. Principles of education (Educ. 31)	3
3. *Teachers' course in major subject	2

Fifteen credits in education are required for a life certificate to teach. For the remaining seven credits the State Superintendent *recommends* the following list; part of the seven must be made up for a renewal license, and the remainder for a life certificate:

	Credits
4. *Teachers' course in minor subject	2
5. History of education	3
6. Educational measurements	2

More specific information may be obtained from the office of the State Superintendent of Public Instruction or from the office of the Dean of the School of Education.

Attention is called to the fact that the minimum requirement to teach in a high school which is a member of the North Central Association of Colleges and Secondary Schools is fifteen hours in education.

23. ADVANCED INDEPENDENT WORK

A student whose point-credit ratio for the first two years is not less than 2.5 and who is recommended by three of his sophomore instructors, may be permitted by the major division of his choice to pursue his major study independently of class work. At the close of the senior year such a student, provided he has met all the requirements outside the major, shall be tested on this independent work by the submission of a thesis and by a comprehensive examination in the major, covering subjects agreed upon at the inception of the independent work. If the thesis and examination are satisfactory, the student shall be granted the maximum number of credits allowed for the field of concentration selected, and grade-points shall be assigned according to the quality of the work.

Upon recommendation of the division and upon approval by the Graduate Office of work done on the thesis, such a student may be admitted to the Graduate School at the end of the seventh semester, thereby becoming subject to its regulations and eligible to its scholarships. The student who, at the close of the eighth semester, has met the general requirements outside the major, has passed the comprehensive examination, has had his completed thesis approved by a committee of three appointed by the Graduate Office, and is recommended by the division and the Graduate School, shall be granted the bachelor's degree (as of the close of the seventh semester) and the master's degree. If all other requirements have been met but the thesis has not been completed, the student shall be granted only the bachelor's degree, and the master's degree shall be withheld until the successful completion of the thesis.

*Available only in the Summer Session.

A student in a special course which requires more than 120 credits for graduation may follow this procedure in nine rather than in eight semesters, in which case the requirements of the ninth semester shall be those stated above for the eighth semester.

A student who is registered for advanced independent work and who fails to pass with distinction the general examination at the close of his senior year may nevertheless be recommended by his examining committee for the bachelor's degree.

V. THE B.A. GENERAL COURSE

24. OUTLINE OF CURRICULUM

(a) English: 10 or 12 credits, as follows: 6 credits in freshman composition; 4 or 6 credits in sophomore literature (English 33 or 30). Students earning a grade of A in the first semester of the composition course may, if they so desire, omit the second semester of it. On the completion of English 1 a provisional pass mark is given; if at any time later in his course a student is reported as deficient or careless in English composition he may be required to take additional work in that subject.

(b) Foreign language: 32 credits in one, two, or three of the foreign languages specified below are required for graduation. These credits may be earned partly in high school and partly in the University, or wholly in the University. High-school work is accepted in satisfaction of the foreign language requirement at the rate of four university credits for one unit, up to the amount of six units or 24 university credits. A student is not permitted to repeat in college, for credit, the equivalent of a course in foreign language which he has had in high school. French, German, Classical Greek, Hebrew, Italian, Latin, Norse, Portuguese, and Spanish, and no other languages, may be offered either for entrance or graduation.

Eight credits is the least amount of a foreign language which will be accepted toward the foreign-language requirement of any course, and if two or three languages are presented at least 16 credits must be in one language. Students choosing a foreign-language major must present a second foreign language.

Students entering from foreign countries where they have studied English as a foreign language in recognized secondary schools or colleges, may be allowed not more than four entrance units for their work in English as partial fulfillment of the foreign language required for graduation. Such students, including those entering with advanced standing, will take the preliminary tests in freshman English administered at the beginning of each semester, and those who fail to pass these tests must take work in sub-freshman English. Students presenting English as a foreign language for the B.A degree must earn at least sixteen credits in another foreign language accepted by the University of Wisconsin and excluding their mother tongues, and must continue such foreign language at this University for at least one year.

Students who will normally be candidates for the B.A. degree in June 1934 or thereafter must meet the foreign-language requirement by proving either (1) proficiency, i.e. advanced knowledge, in one foreign language or (2) intermediate, i.e. reading, knowledge, in two languages, ancient or modern. For details, see Group II under section 25 below.

(c) Two of the following: natural science, 10 credits, *in a continuous year course;* mathematics, 8 credits; history, 6 credits, *in a continuous year course.* If the student has had no history or no science in high school, he is expected to take a year course in the subject lacking. A student is not permitted to repeat in college, for credit, the equivalent of a course in mathematics which he has had in high school.

Under natural science are included botany, zoology, biology (a combined course made up of a semester of botany and a semester of zoology), chemistry, physics, geography, and geology. All are courses of five credits per semester for two semesters, with laboratory work, or field work in geography and geology.

Commencing with 1931-32, students should also be able to satisfy the natural science option by taking a minimum of 11 credits in elementary survey courses in astronomy, botany, geology, physiology, and zoology, and possibly chemistry and physics. These courses, which will include laboratory work in each case, will be semester courses for three, four, or five credits, depending upon the subject. A more detailed announcement will be made at the opening of the academic year.

(d) Major study and electives to total 120 credits. See section 15 above.

25. STUDIES OF THE FRESHMAN YEAR

Only one subject is definitely required of all first-semester students, viz. English 1 (freshman composition), three credits per semester. Those freshmen, however, who are successful in the attainment examination in English may substitute English 3 (intermediate composition), two credits per semester, or English 29 (English history and English literature), five credits per semester. This latter course gives two credits in English and three in history.

The other subjects, sufficient to make up a program of 14, 15, or 16 credits for the semester, are to be chosen from the groups listed below, composed of subjects which extend for two semesters, unless otherwise indicated. A complete program may be made up by selecting one or two subjects from Group I plus two or one foreign languages from Group II.

GROUP I. MATHEMATICS, SCIENCE, HISTORY. At least one subject must be chosen from this group, but not more than five credits per semester may be taken in any single subject.

MATHEMATICS: The following are semester courses which are repeated each semester:

Mathematics 1 (college algebra)—four credits
Mathematics 2 (trigonometry and analytic geometry)—four credits
Mathematics 3 (analytic geometry)—three credits
Mathematics 7 (theory of investment)—four credits

SCIENCE:

Biology 1—five credits (Botany 1 in the first semester, followed by Zoology 1 in the second semester, or Zoology 1 followed by Botany 1)
Botany 1, 2—five credits per semester
Chemistry 1—5 credits per semester
Geography 1, 2—five credits per semester
Geology 1—five credits per semester
Physics 1 or 31—five credits per semester
Zoology 1, 2—five credits per semester

HISTORY:

History 1 (medieval)—three credits per semester
History 5 (English)—three credits per semester
History 10 (ancient)—three credits per semester
History 29 (combined course in English history and English literature)—three credits per semester in history

Students may earn five credits per semester in freshman history by taking two courses. In this case they will do the full work of one course, receiving three credits; in the other course they will omit much of the collateral reading and the reports, and will receive two credits. If only one freshman history course is taken, it must be for three credits.

DRAWING:

Drawing 1, 2 (mechanical)—three credits per semester
Drawing 50, 51 (freehand)—three credits per semester

GROUP II. FOREIGN LANGUAGE. As indicated above, the foreign language requirement for the B.A. degree can henceforth be met only by demonstrating either (a) proficiency in a single language, or (b) intermediate knowldge in two languages, ancient or modern. (See last paragraph of 24b above.)

The test for proficiency (i.e., advanced knowledge) in a language presupposes adequate preparation based on the equivalent of four years' study of that language in college (e.g., four years in high school and two in college, or two years in high school and three in college, etc.); the test for intermediate (or reading) knowledge is based on approximately half this amount of preparation. Superior students with less than this amount of study and those who have lived abroad or have acquired a knowledge of foreign language in some other way are encouraged to take the examinations.

Normally each freshman will be required to pursue one foreign language during his freshman year in preparation for his attainment examination in that language. An exception will be made, of course, in the case of those students who may have been able to satisfy the foreign-language requirement completely at the outset.

A student who continues in college a foreign language which he has studied in high school is assigned to a class on the basis of a placement test and is subject to promotion or demotion at the end of the first few weeks if demanded by the quality of his classwork; a second test may then be given if the student is dissatisfied with his placement.

Credits earned in foreign language will count only as electives toward the 120 required for graduation, but no credit will be given for courses which are substantially equivalent to those completed in high school.

The languages at present available include French, German, Classical Greek, Italian, Latin, Norse, Portuguese, and Spanish. The number of credits per semester varies from three to five, depending on the language selected and the degree of advancement of the student; beginning courses carry four credits.

MODERN LANGUAGES. Proficiency in a modern language shall be shown by demonstrating (a) adequate comprehension of representative passages from classic and modern authors, which may include matter taken from the student's major field, (b) the ability to understand and pronounce simple phrases in the spoken language, and (c) some knowledge of the history of the literature and culture of the foreign people.

Intermediate knowledge in a modern language shall be shown by a test involving the ability to pronounce the modern language and to interpret, adequately, modern prose of average difficulty.

ANCIENT LANGUAGES. Proficiency in Greek or Latin shall be shown by demonstrating (a) the ability to translate into idiomatic English representative passages of prose and poetry from the fields of the student's previous reading, which shall be substantially equivalent to the satisfactory completion of four years of the language in the high school and four semesters in the University, or a similar amount differently distributed, (b) some knowledge of each author's work as a whole and of its historical and cultural background, (c) the ability to translate English sentences involving the common grammatical constructions into Greek or Latin prose.

Intermediate knowledge in Greek or Latin shall be shown by demonstrating the ability to translate adequately and explain the grammatical constructions in passages of average difficulty chosen from such portions of at least three Greek or Latin authors as are usually read in high school or college.

26. STUDIES OF THE SOPHOMORE YEAR

In the sophomore year the student must continue his English for two semesters, as well as his foreign language, unless these requirements have already been met; likewise his history, mathematics, or science, unless this group requirement has been absolved in his freshman year, together with additional Letters and Science courses necessary for a program of 14 to 16 credits.

27. LANGUAGE SEQUENCE (B.A.)

Showing an arrangement of studies to meet the requirements for the certificate of Junior Graduate in Liberal Studies.

FRESHMAN YEAR

Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Foreign language (one or two)	3-8	Foreign language (one or two)	3-8
History—science—math. option	8-3	History—science—math. option	8-3
Physical activity requirement	0	Physical activity requirement	0
	14-16		14-16

Drawing, either mechanical or freehand, may be taken during the freshman year in lieu of one of the optional requirements, which is thereby postponed to the sophomore year in place of one of the free electives.

SOPHOMORE YEAR

Engl. 30a or 33a—Literature	3-2	Engl. 30b or 33b—Literature	3-2
Foreign language	3-5	Foreign language	3-5
Electives	6-10	Electives	6-10
Physical activity requirement	0	Physical activity requirement	0
	14-16		14-16

VI. THE PH.B. GENERAL COURSE

28. OUTLINE OF CURRICULUM

(a) English, 10 credits of composition (English 1 and 2).

(b) Science and mathematics: A total of 20 credits to be taken in year courses; e. g., 8 credits in mathematics and 12 in science, or 10 credits in mathematics and 10 in science, or 20 in mathematics, or 20 in science. Only the laboratory sciences as approved for the B.A. course will be accepted as meeting this requirement.

(c) Two of the following groups:

1. Philosophy and psychology; or mathematics—10 credits in one of the two. Mathematics may not be offered both here and under (b) above.
2. History, 10 credits, to be taken in year courses, excepting that courses in the "hundred" group may be credited by semesters.
3. A reading knowledge of one foreign language (see section 25). If this option is selected, intermediate composition (English 2) is not required.

(d) Major study and electives to total 120 credits. See section 15 above.

29. NON-LANGUAGE SEQUENCE (Ph.B.)

Showing an arrangement of studies to meet the requirements for the certificate of Junior Graduate in Liberal Studies.

FRESHMAN YEAR

Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Science	0, 5, or 10	Science	0, 5, or 10
History 1, 5, or 10	3 or 5	History 1, 5, or 10	3 or 5
Mathematics	4 or 0	Mathematics	4 or 0
Physical activity requirement	0	Physical activity requirement	0
	14-16		14-16

The same subjects are open to freshmen in this course as in the B.A. course, and on the same terms. (See section 25.)

Drawing, either mechanical or freehand, may be taken during the freshman year in lieu of one of the optional requirements, which is thereby postponed to the sophomore year in place of one of the free electives.

SOPHOMORE YEAR

The study list for the sophomore year must include English 2, intermediate composition, two credits each semester, unless the student has passed an attainment examination for reading knowledge in one foreign language. The study list must also include whatever subjects are necessary in order to complete the science-mathematics option and the history option commenced in the freshman year. If the philosophy and psychology option is chosen, work on it should commence during the sophomore year. In the event the foreign-language option has been met by examination, the student should have about twelve credits of free electives each semester of this year.

VII. NORMAL COURSE

LEADING TO THE DEGREE OF BACHELOR OF PHILOSOPHY (NORMAL COURSE)

Inasmuch as this course is to be discontinued at the close of the summer session of 1932, new students are no longer being admitted to it. The requirements for graduation from the Normal Course may be found on page 62 of the Announcement for 1930-31.

VIII. COURSE IN CHEMISTRY

J. H. MATHEWS, DIRECTOR, PROFESSOR OF CHEMISTRY

The purpose of the Course in Chemistry is to train competent chemists for industrial, governmental, and teaching positions. The United States is a leading nation in chemical industries and our continued industrial success is largely dependent on the ability of our universties to supply the ever-increasing demand for men with adequate chemical training. In recent years this demand has not been met. Many industries are essentially chemical in character and have long employed chemists; others, because of the necessity of meeting changing conditions and keener competition, are finding it increasingly necessary to employ chemists to originate, simplify, and control plant processes. Chemical control and research are necessary in practically every industry.

The principal departmental bureaus of the Government employ a considerable number of chemists, both for research and control work. All of the larger cities require skilled chemists, as do many of the various state commissions and the federal and state experiment stations. The development of agriculture is largely dependent on the services of the chemist, and trained workers are in great demand in this field. Many industries are establishing central experimental and research laboratories for the intensive study of the specific problems relating to those industries. Positions in those laboratories are most desirable, as they afford specialized training which leads to the attainment of exceptionally lucrative positions. Research laboratories are being established for a great variety of purposes, and these laboratories must ever look to the universities for trained chemists. For these positions, especially, it is highly desirable that the four-year course in chemistry be followed by from one to three years of graduate work. The demand for the exceptionally well-trained man is steadily increasing and, whenever it is possible, the student who shows an aptitude for chemistry should plan for graduate training.

The thoroughly trained teacher of chemistry has an exceptional opportunity to play an important role in the social, economic, and industrial development of the nation. His opportunities to aid in the dissemination of useful knowledge, in the development of a wider appreciation of scientific knowledge, and to contribute to scientific progress both by his teaching and his opportunity for personal research, are such as to make this profession unusually attractive to those who have a sincere desire to serve their fellow men.

The curriculum of the Course in Chemistry is designed to offer a broad foundation in the chemical and related sciences. It does not profess to train chemists for special industries, for each industry has its special problems and special methods. Interwoven with the courses in chemistry are courses designed to broaden the understanding and to round out educational training. Several electives are provided, and it is required that a certain number of these be studies other than chemistry. Students are expected to take a sufficient number of cultural studies to acquire the proper educational balance.

Four courses of study are offered: A general course, a course for industrial chemists, a course for food or sanitary chemists, and a course for agricultural chemists. Attention is called to the fact that specialized training along the lines of soil chemistry and physiological chemistry may be obtained by election of courses in these subjects along with the required studies of the general course.

REQUIREMENTS. Students having the entrance requirements prescribed for the College of Letters and Science may be admitted to this course. It will be observed from the outline of the curriculum below that the work of the freshman year is identical in each of the four fields of study, and in all of them a year each of general inorganic, analytical, organic, and physical chemistry is required. The course in English is the composition course required of all freshmen in the University. The equivalent of at least courses 2a and 2b in German and courses 1a and 1b in French is required for graduation from the Course in Chemistry, but high-school work in these languages may satisfy the graduation requirement in part. A student entering with preparation in but one of these languages will naturally continue work in it during the freshman year.

In each of the courses, 130 credits and an equal number of grade-points are required for graduation. Students will frequently find it desirable to absolve a part of the requirements during one or more summer sessions. The work of the senior year includes the writing of a thesis, embodying the results of a detailed experimental investigation.

Each year at least one opportunity for an extended industrial trip will be offered. The Middle West has become an important center of chemical industries, and nearly all of the more important of them may be seen in operation here. It is expected that the students taking the Course in Chemistry will avail themselves fully of these opportunities to visit representative industrial plants. At least one such trip must be taken during the course. While it is not specifically required for graduation, students are urged to devote at least one of their summer vacation periods to practical chemical work in some chemical industry.

COURSE IN CHEMISTRY

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CHEMISTRY)

ALL OPTIONS

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Chem. 1a—General chemistry	5	Chem. 1b—General chemistry and qualitative analysis	5
Math. 1—College algebra	4	Math. 2—Trigonometry and analytic geometry	4
German or French	4	German or French	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Physical activity requirement	0	Physical activity requirement	0
	16		16

GENERAL OPTION

SOPHOMORE YEAR

If Math. 5a be taken in the first semester, it should be followed by Math. 5b in the second; if Chem. 10 be taken in the first semester, it may be followed by either Math. 5a or Geol. 7 in the second.

Chem. 11a—Quantitative analysis	5	Chem. 11b—Quantitative analysis	5
German or French	4	German or French	4
Physics 31—General physics	5	Physics 31—General physics	5
Math. 5a—Differential calculus, or	3	Math. 5b—Integral calculus, or	3
Chem. 10—Mathematical chemistry	(3)	Geol. 7—Short course in mineralogy	(3)
Physical activity requirement	0	Physical activity requirement	0
	17		17

JUNIOR YEAR

Chem. 120, 121—Organic chemistry	5	Chem. 120, 121—Organic chemistry	5
Chem. 130, 131—Physical chemistry	5	Chem. 130, 131—Physical chemistry	5
German or French	4	German or French	4
Elective	3	Elective	3
	17		17

SENIOR YEAR

Chem. 100—Thesis	2-3	Chem. 100—Thesis	2-3
Chem. 119—Organic analysis	3	Chem. Engr. 15—Industrial organic chemistry	2
Chem. 107—History of chemistry	2	Agr. Bact. 2—Survey of bacteriology	4
Chem. Engr. 15—Industrial chemistry	3	Electives	7-6
Electives	5-4		
	15		15

Of the 18 elective credits, at least 10 must be taken in subjects other than chemistry.

OPTION FOR INDUSTRIAL CHEMIST

SOPHOMORE YEAR

Same as for sophomore year of General Option except that mineralogy, metallurgy, or calculus may be elected.

JUNIOR YEAR

Same as for junior year of General Option

SENIOR YEAR

Chem. 100—Thesis	2-3	Chem. 100—Thesis	2-3
Chem. Engr. 15—Industrial chemistry	3	Chem. Engr. 15—Industrial organic chemistry	2
Chem. Engr. 23—Manufacturing equipment	2	Chemical Engineering electives	4
Electives	8-7	Electives	7-6
	15		15

OPTION FOR FOOD CHEMIST OR SANITARY CHEMIST

SOPHOMORE YEAR

Chem. 11a—Quantitative analysis	3	Chem. 11b—Quantitative analysis	3
German or French	4	German or French	4
Physics 31—General physics	5	Physics 31—General physics	5
Agr. Bact. 1—Survey of bacteriology	5	Botany 1—General botany	5
Physical activity requirement	0	Physical activity requirement	0
	17		17

JUNIOR YEAR

German or French	4	German or French	4
Chem. 120, 121—Organic chemistry	5	Chem. 120, 121—Organic chemistry	5
Bot. 110—Plant histology	3	Bot. 111—Microscopical examination	3
Chem. 119—Organic analysis	3	Chem. 146, 147—Chemistry of foods	5
Elective	2		
	17		17

SENIOR YEAR

Chem. 100—Thesis	2-3	Chem. 100—Thesis	2-3
Chem. 130, 131—Physical chemistry	5	Chem. 130, 131—Physical chemistry	5
Chem. 107—History of chemistry	2	Chem. 113—Water analysis	1
Electives	6-5	Electives	7-6
	15		15

Of the 15 elective credits, at least 8 must be taken in subjects other than chemistry.

OPTION FOR AGRICULTURAL CHEMIST

SOPHOMORE YEAR

Chem. 11a—Quantitative analysis	3	Chem. 11b—Quantitative analysis	3
German or French	4	German or French	4
Bot. 1—General botany	5	Agr. Chem. 1—General agricultural chemistry	3
Physics 31—General physics	5	Agr. Chem. 2—Agricultural analysis	2
Physical activity requirement	0	Physics 31—General physics	5
		Physical activity requirement	0
	17		17

JUNIOR YEAR

Chem. 120, 121—Organic chemistry	5	Chem. 120, 121—Organic chemistry	5
German or French	4	German or French	4
Agr. Chem. 121—Dairy chemistry	5	Agr. Bact. 2—Survey of bacteriology	4
Electives	3	Elective	4
	17		17

SENIOR YEAR

Chem. 100—Thesis	2-3	Chem. 100—Thesis	2-3
Chem. 130, 131—Physical chemistry	5	Chem. 130, 131—Physical chemistry	5
Agr. Chem. 122—Animal chemistry	5	Physiol. 3—Animal physiology, or	4
Electives	3-2	Bot. 146—Plant physiology	(4)
		Electives	4-3
	15		15

Of the 14 elective credits, at least 8 must be taken in subjects other than chemistry.

IX. CHEMISTRY-COMMERCE COURSE

J. H. MATHEWS, DIRECTOR, PROFESSOR OF CHEMISTRY

The need for such a course arises from the fact that men of affairs in the industrial world are often handicapped because they do not possess a fundamental knowledge of the technical principles involved in their business. This course is intended particularly for students who desire to fit themselves to hold commercial positions such as business managers, technical secretaries, managerial secretaries, sales managers, purchasing agents, technical salesmen, and in fact any commercial position in which a thorough understanding of fundamental chemical principles would be an asset.

REQUIREMENTS. 130 credits are required for graduation, of which not more than 14 may be in the starred courses in economics, nor more than 40 in any single department. Students with fifty per cent more grade-points than credits at the close of the junior year will write a thesis in chemical industry in the senior year; others will take a course in chemistry prescribed by the Chemistry Department.

The requirement in foreign language is 24 credits in French, German, or Spanish, of which at least 16 must be in one language and at least 8 more in the same or a second language. Students who present for entrance less than two units in one foreign language will be required to continue the study of foreign language in the junior year in place of some of the optional and elective work.

CHEMISTRY-COMMERCE COURSE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CHEMISTRY-COMMERCE)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Math. 1—College algebra	4	Math. 7—Theory of investment	4
Foreign language	4	Foreign language	4
Chem. 1a—General chemistry	5	Chem. 1b—General chemistry and qualitative analysis	5
Physical activity requirement	0	Physical activity requirement	0
	16		16

SOPHOMORE YEAR

Chem. 20—Organic chemistry	4	Chem. 11a—Quantitative analysis	4
Econ. 1a—General economics	4	Econ. 1b—General economics	4
Foreign language	4	Foreign language	4
Physics 1a or 31—General physics	5	Physics 1b or 31—General physics	5
Physical activity requirement	0	Physical activity requirement	0
	17		17

JUNIOR YEAR

Econ. 13—Marketing methods	3	Econ. 31—Business statistics	3
Econ. 6—Business letter writing	2	Econ. 5—Money and banking	3
Econ. 8a—Elements of accounting	3	Electives	10
Electives	8		
	16		16

SENIOR YEAR

Chem. 100—Thesis	2	Chem. 100—Thesis	2
Commercial chemistry	3	Commercial chemistry	2-3
Econ. 137, 142, or 181	3	Electives	12-11
Law 115—Commercial law	2		
Electives	6		
	16		16

Of the 32-33 elective credits, at least 3 per semester in the junior year must be in courses in chemistry, and at least 3 in the senior year in economics courses.

X. COURSE IN HUMANITIES

COMMITTEE IN CHARGE: PROFESSORS DODGE, ZDANOWICZ, F. C. SHARP, WAGNER, WINSPEAR.

PURPOSE AND PLAN. It had long been felt by a large number of professors in the College of Letters and Science that the citizens of the State would welcome the establishment of a course based upon the curriculum of the old college of liberal arts, with modifications which the trend of education in the last two generations has shown to be advisable. Consequently such a course, leading to the degree of Bachelor of Arts (Humanities), was instituted in 1920, for the benefit of students willing to devote part of their college work to non-professional, purely cultural development, either for its own sake or as a preparation for special study.

Students may here secure substantial introductions to the four great fields of learning: language and literature; history and its correlated branches; science; philosophy and mathematics. They will come into vital contact with at least one of the great civilizations of the ancient world. They will acquire the power to acquaint themselves with at least one of the great foreign civilizations of the modern world. They will have training in English composition and spend at least a year with the masters of English literature. They will be given the opportunity in courses in history, economics, and political science to gain knowledge regarding the institutions of the past and of the present, and to study methods of analyzing social facts. An introduction to one of the sciences will open to them the world of natural phenomena, and bring to them some experience in scientific method. Courses in philosophy and mathematics will serve to induce in them habits of close reasoning.

It is believed that students who seek what is called a "general education" will see the desirability of the initiation into these four fields which is required in the new course. It is believed, also, that students who feel the need of passing quickly to a special subject with the intention of concentrating their attention upon it will consider that the delay entailed by the satisfaction of the requirements in the new course will be justified by the enlarged vision with which it will insure their entering upon their specialized work.

REQUIREMENTS. The general requirements of this course are identical with those of the B.A. General Course and the regulations pertaining thereto also govern students in this course, excepting as modified by the following special requirements and rules. (See pages 49-67.) The major must be chosen from the fields of language, literature, natural science, economics, history, political science, mathematics, or philosophy. Professional subjects, excepting such as may be required for the teachers' certificate, are not open for election by students in this

course. Some member of the committee in charge will be assigned as the student's adviser and will inform him whether or not any given subject is professional. Upon successful completion of the requirements outlined below, including 120 academic credits and at least an equal number of grade-points, the student will be admitted to the degree of Bachelor of Arts (Humanities).

The student will meet the following special requirements:

(a) 12 credits in English composition and literature;

(b) three of the following four options in foreign language and literature: (1) 24 credits in Latin, (2) 14 credits in Greek—to be absolved by combining high-school units and college credits as described in Section 24b, page 64; (3) a reading knowledge of French, (4) a reading knowledge of German—as demonstrated to the satisfaction of the committee in charge. (These requirements must not be confused with the regular attainment examinations specified for the B.A. General Course.)

(c) 10 credits in the field of economics, history, and political science, of which at least 6 credits will be in history (freshmen will ordinarily elect 8 credits in medieval history);

(d) 10 credits in natural science;

(e) 12 credits in the field of mathematics and philosophy. Elections in philosophy shall be made after consultation with the chairman or the secretary of the Course in Humanities.

COURSE IN HUMANITIES

LEADING TO THE DEGREE OF BACHELOR OF ARTS (HUMANITIES)

RECOMMENDED SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Hist. 1—Medieval history	4	Hist. 1—Medieval history	4
Foreign language	3-5	Foreign language	3-5
Mathematics or foreign language	3-4	Mathematics or foreign language	3-4
Physical activity requirement	0	Physical activity requirement	0
	14-16		14-16

SOPHOMORE YEAR

Engl. 30a—General survey of literature	3	Engl. 30b—General survey of literature	3
Foreign language	3-5	Foreign language	3-5
Science	5	Science	5
Required subject (see list below)	3-4	Required subject (see list below)	3-4
Physical activity requirement	0	Physical activity requirement	0
	14-17		14-17

SUBJECTS RECOMMENDED FOR SOPHOMORE YEAR IN FULFILLMENT OF REQUIREMENTS

Econ. 1a—General economics	4	Econ. 1b—General economics	4
Pol. Sci. 1—Introduction to government and politics	3	Philosophy 11, 21, or 132	3
Philosophy 11, 21, 31, or 41	3	Pol. Sci. 1—Introduction to government and politics	3
Psych. 1—Introductory psychology	3	Psych. 1—Introductory psychology	3
Math. 5a—Differential calculus	3	Math. 5b—Integral calculus	3

XI. COURSE IN PHARMACY

EDWARD KREMERS, DIRECTOR, PROFESSOR OF PHARMACEUTICAL CHEMISTRY

OBJECT. The object of the Course in Pharmacy is to furnish a thoroughly scientific foundation for the pursuit of the profession of pharmacy in all its branches; to prepare students not only to operate drug stores but to fit them as well for other lines of pharmaceutical activity,—to enter hospital practice, to take up pharmaceutical manufacturing, to engage in pharmaceutical research and the teaching of pharmaceutical subjects, or to enter the government service. The elements of the fundamental natural sciences, botany, chemistry, and physics, must be studied and their principles understood before their application to pharmacy can be rationally considered. For this reason students in pharmacy are required to pursue general elementary courses in these fundamental sciences, where they have the advantage of close association with students in other departments of the University.

The general study of these fundamental sciences is followed by more or less specialized courses. General botany is followed by courses in vegetable histology and the anatomy of drugs; general chemistry, organic and inorganic chemistry, and qualitative and quantitative analysis are followed by courses in pharmaceutical and plant chemistry. General physics is followed by the application of physics to pharmacy.

The practitioner of any profession must be familiar with the literature of that profession. To this end he must be able to read the language in which this literature is written. A pharmacy student must, therefore, not only have command of the English language, but he must be able to read other languages, at least French and German. For this reason students in the four-year pharmacy course are expected to acquire a reading knowledge of both French and German.

COURSES. Two courses in pharmacy are being offered at present,—a three-year course leading to the degree of Graduate in Pharmacy and a four-year course leading to the degree of Bachelor of Science (Pharmacy). In accordance, however, with a resolution adopted by the American Association of Colleges of Pharmacy, of which the Department of Pharmacy of the University of Wisconsin is a member, the three-year course will be eliminated beginning with the academic year 1933-34. Accordingly, no students will be admitted to the three-year course later than the first semester of 1931-32.

ADVANCED WORK. Like the sister profession, medicine, pharmacy is in need not only of the general practitioner, but also of the specialist. For the preparation necessary to equip such specialists the University offers graduate courses. Accordingly, the graduate courses in pharmacy make up an important part of the work of the department, advanced courses and research facilities in pharmacy, pharmaceutical and plant chemistry, and pharmacognosy being provided. Graduates who desire to prepare themselves as chemists for manufacturing establishments, as analytical, food, or sanitary chemists, or as bacteriologists will find that the graduate work in pharmacy, not less than in other departments of the University, offers excellent opportunities for specialized study and research.

LABORATORIES. The pharmaceutical laboratories are located on the third and fourth floors of the Chemistry Building. On the third floor they consist of a dispensary and laboratories for pharmaceutical technique, practical pharmacy, pharmaceutical and plant chemistry, and a research laboratory. On the fourth floor are located the Frederick B. Power Pharmaceutical Library, the drug cabinet, the milling room, a laboratory for extraction and distillation purposes, equipped with steam and vacuum apparatus, a laboratory for the study of pharmacognosy, and a research laboratory.

THREE-YEAR COURSE IN PHARMACY

LEADING TO THE DEGREE OF GRADUATE IN PHARMACY

FIRST YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
Bot. 1—General botany	5	Chem. 15—Quantitative analysis	2
Pharm. 1—Pharmaceutical technique	3	Bot. 130—Seed plants	3
Physical activity requirement	0	Pharm. 1—Pharmaceutical technique	3
		Physical activity requirement	0
	16		16

SECOND YEAR

Chem. 20—Organic chemistry	4	Pharm. Chem. 27—Organic pharmaceutical chemistry	5
Pharm. Chem. 26—Inorganic pharmaceutical chemistry	5	Bot. 111—Microscopical exam. of drugs	3
Bot. 110—Plant histology	3	Pharm. 20—Elementary prescription practice	2
Pharm. 20—Elementary prescription practice	2	Pharmacog. 10—Sources of drugs	1
Pharmacog. 10—Sources of drugs	1	Pharm. 51—Drug-store practice	1
Pharm. 51—Drug-store practice	1	Electives	4
Physical activity requirement	0	Physical activity requirement	0
	16		16

THIRD YEAR

Pharm. 30—Pharmaceutical technology	5	Pharm. 121—Adv. prescription practice	2
Pharmacog. 120—Natural history of drugs	3	Pharmacog. 120—Natural history of drugs	3
Pharm. Chem. 40—Plant chemistry	3	Pharm. Chem. 40—Plant chemistry	3
Pharm. 50—History of pharmacy	1	Pharm. Chem. 45—Alkaloidal assay	1
Pharm. 100—Thesis	2	Pharm. 50—History of pharmacy	1
Elective	2	Pharm. 100—Thesis	2
		Electives	4
	16		16

Eight of the ten elective credits must be taken outside of the Departments of Pharmacy, Chemistry, and Botany.

FOUR-YEAR COURSE IN PHARMACY

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (PHARMACY)

This course, which is similar to the preceding one in its technical studies, with the addition of physics, requires for graduation (a) 120 credits and 120 grade-points and (b) the equivalent of two years of college German and one year of college French, part or all of which may be absolved most advantageously by high-school work, in order to allow the maximum number of free electives in college.

WISCONSIN PHARMACEUTICAL RESEARCH FUND

Recognizing the growing importance of research to the science and art of pharmacy, the pharmaceutical alumni and other friends of the University have established a fund, known as the Wisconsin Pharmaceutical Research Fund of the University of Wisconsin. The first contributions to this fund, amounting to $1000, were presented in June, 1917, and accepted by the Regents in the name of the University. Since 1917, by gifts and accrued interest, the fund has increased until it now totals more than $10,000. Half of the income of this fund may be devoted directly to pharmaceutical research while the remainder goes to augment the principal. Thus a permanent and ever-increasing endowment for pharmaceutical research at the University of Wisconsin is assured.

PHARMACEUTICAL EXPERIMENT STATION

In accordance with an act passed by the legislature in 1913, a Pharmaceutical Experiment Station has been established in connection with the Department of Pharmacy. The object of the Station, as outlined by the law establishing it, is two-fold:

(1) To coöperate with the Bureau of Plant Industry of the Department of Agriculture in the maintenance of the northern station for the cultivation of medicinal plants and to desseminate such information as may lead to the proper cultivation of medicinal plants and the production of high-grade vegetable drugs in this state; and

(2) To serve the public at large by coöperation with both pharmacists and physicians in securing for the sick the best medicines that pharmaceutical science and art can provide, and further, by coöperation with the State Board of Pharmacy, the State Board of Health, and the Dairy and Food Commission, to bring about these results.

The staff of the Experiment Station is made up of members of the faculty of the Department of Pharmacy. A garden of about forty acres for the scientific cultivation of medicinal plants and a laboratory for the investigation of problems connected with the preparation and testing of crude drugs, pharmaceutical preparations, and chemicals are maintained. Reports on the work of the Experiment Station are published from time to time and distributed to persons interested. For copies of these reports application should be made to the Director.

XII. PREMEDICAL CURRICULA

RECOMMENDED SEQUENCE FOR THE THREE-YEAR COURSE

LEADING EVENTUALLY TO THE DEGREE OF BACHELOR OF ARTS

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
French 1a or German 1a	4	French 1b or German 1b	4
History or mathematics	3-4	History or mathematics	3-4
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

SOPHOMORE YEAR

Engl. 30a or 33a—Literature	3-2	Engl. 30b or 33b—Literature	3-2
Chem. 20, 21, or 120, 121—Organic chem.	4-5	Zoology 2 or 104	5
Zoology 1—Animal biology	5	French 10b or German 2b	3-4
French 10a or German 2a	3-4	Elective	5
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

JUNIOR YEAR

Physics 1 or 31	5	Physics 1 or 31	5
Foreign language	4-5	Foreign language	4-5
Latin 1—Elementary Latin	5	Latin 2—Caesar	5
Electives if foreign language and Latin were pursued in high school	(10)	Electives if foreign language and Latin were pursued in high school	(10)
	14-15		14-15

RECOMMENDED SEQUENCE FOR THE TWO-YEAR COURSE

LEADING EVENTUALLY TO THE DEGREE OF BACHELOR OF SCIENCE (MEDICAL SCIENCE)

FRESHMAN YEAR

Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
Physics 1 or 31—General physics	5	Physics 1 or 31—General physics	5
French 1a or German 1a	4	French 1b or German 1b	4
Physical activity requirement	0	Physical activity requirement	0
	17		17

SOPHOMORE YEAR

Chem. 20, 21 or 120, 121—Organic chem.	4-5	Zoology 2 or 104	5
Zoology 1—Animal biology	5	French 10b or German 2b	3-4
French 10a or German 2a	3-4	Latin 2—Caesar	5
Latin 1—Elementary Latin	5	Elective if Latin was taken in high school	(5)
Elective if Latin was taken in high school	(4-3)	Free elective	2
Physical activity requirement	0	Physical activity requirement	0
	16-18		15-16

EXPERIMENTAL COLLEGE

ALEXANDER MEIKLEJOHN, Ph.D., LL.D., *Chairman, Professor of Philosophy*
CARL BÖGHOLT, M.S., *Assistant Professor of Philosophy*
ROBERT JAMES HAVIGHURST, Ph.D., *Assistant Professor of Physics*
DELOS SACKETT OTIS, Ph.D., *Assistant Professor of History*
PAUL RAUSHENBUSH, B. A., *Assistant Professor of Economics*
JOHN NEWMAN BEECHER, M.A., *Instructor in English*
HERMAN HARRY GILES, B.A., *Instructor in English*
JOHN WALKER POWELL, B.A., *Instructor in Philosophy*

No freshmen are being accepted in the Experimental College for 1931-32; the class admitted in September 1930 will be carried through the sophomore year.

The aim of the teaching policy of the college is definitely liberal. The attempt is made to prepare the mind of the student for dealing with the chief problems of individual and social living.

All the teaching methods are made to rest upon the independent work of the student. The college attempts not so much to teach him as to help him to learn for himself. There are weekly assignments of books to be read and papers to be written by the student. The work of the teacher takes the form of tutorial guidance. There are regular conferences with individual students, group conferences, and class meetings at which the reading is discussed and explained by members of the staff and others.

In each of the two years of the course the college takes as the object of its study a single civilization. There are no separate "courses" as in the regular curriculum. In the freshman year the Athenian civilization of the fifth and fourth centuries B. C. is studied and in the sophomore year the American civilization of the nineteenth century is taken up.

Students are allowed to take as extras regular subjects in the College of Letters and Science. It is also understood that in the sophomore year students are given the opportunity to take a course which may be needed as preparation for majoring in the later years.

Students who complete satisfactorily the two-year course in the Experimental College are given full junior standing in the College of Letters and Science and are regarded as having taken the "required studies" of one of the general courses in that college. However, students who are candidates for the Bachelor of Arts degree must arrange to meet the foreign-language requirement for that degree; in doing this they may take the regular language classes of the College of Letters and Science.

SCHOOL OF COMMERCE

C. L. JONES, DIRECTOR, PROFESSOR OF ECONOMICS AND POLITICAL SCIENCE

The School of Commerce of the University of Wisconsin, organized in September 1900, offers a three-year curriculum including junior, senior, and graduate years.

REQUIREMENTS FOR ADMISSION

Students in either division of the General Course (B.A. or Ph.B) in the College of Letters and Science who have been regularly promoted to the junior year (see section 14, page 56) are eligible for admission to this School. The work of the first two years must include eight credits in general economics (Economics 1a and 1b) as part of the usual requirements of the first half of either division of the General Course. Students are strongly advised to include Mathematics 7, Theory of investment, (which is definitely required for graduation) and Geography 5-6. (These courses in geography count as elective credits, but not toward absolving the options in science.)

RECOMMENDED PRE-COMMERCE SEQUENCES

LANGUAGE (B.A.)

The following arrangement of studies is recommended to meet the requirements for the certificate of Junior Graduate in Liberal Studies and for admission to the School of Commerce.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Math. 1—College algebra	4	Math. 7—Theory of investment	4
Science, 5 cr.; or history, 3-5 cr.	3-5	Science, 5 cr.; or history, 3-5 cr.	3-5
Foreign language	4-3	Foreign language	4-3
Physical activity requirement	0	Physical activity requirement	0
	14-16		14-16

SOPHOMORE YEAR

Engl. 33a or 30a—Literature	2-3	Engl. 33b or 30b—Literature	2-3
Econ. 1a—General economics	4	Econ. 1b—General economics	4
Foreign language	3-4	Foreign language	3-4
Geog. 5—Regional economic geography	3	Geog. 6—Regional economic geography	3
Electives	4-2	Electives	4-2
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

NON-LANGUAGE (Ph.B.)

The following arrangement of studies is recommended to meet the requirements for the certificate of Junior Graduate in Liberal Studies and for admission to the School of Commerce.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Math. 1, 2 or 3	4-3	Math. 7—Theory of investment	4
Science	5 or 10	Science	5 or 10
(History)	(3)	(History)	(3)
Physical activity requirement	0	Physical activity requirement	0
	14-16		14-16

SOPHOMORE YEAR

*Engl. 2a—Intermediate composition	2	*Engl. 2b—Intermediate composition	2
Econ. 1a—General economics	4	Econ. 1b—General economics	4
Geog. 5—Regional economic geography	3	Geog. 6—Regional economic geography	3
(History)	(2-3)	Math. 24—Theory of life insurance	3
Electives	5-2	(History)	(2-3)
Physical activity requirement	0	Physical activity requirement	0
	14-16		14-15

*Not required if foreign language option for Ph.B. degree has been absolved.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

1. A total of not less than 128 credits and 128 grade-points, of which 68 credits and 68 points shall normally be earned in the School of Commerce during the last two years.

2. Completion of the general requirements in foreign language, science, history, mathematics, etc., for either a B.A. or a Ph.B. degree in the General Course of the College of Letters and Science. (Most of these general requirements should be fulfilled during the freshman and sophomore years.) See pages 64-68.

3. Completion of the following courses, preferably by the close of the junior year:

	Credits	
(a) Economics:		
Economics 1a-b—General economics (sophomore year)	8	
Economics 5—Money and banking	3	
Economics 6—Business letters and reports	2	
Economics 8a-b—Elements of accounting	6	
Economics 13—Marketing methods	3	
Economics 31—Business statistics	3	
Economics 142—Public utilities	3	
Economics—free electives	10	38
(b) Law 115—Commercial law		2
(c) Mathematics 7—Theory of investment (freshman year)		4
		44

4. Completion of a major (at present confined to economics) aggregating not less than 38 nor more than 58 credits; at least as many grade-points as credits must be earned in the major. A maximum of ten credits beyond the 38 specified above within the Department of Economics and a maximum of ten additional credits in other departments of the University may be prescribed by the professor in charge of the student's special field of interest. The intent of this rule is to restrict to 58 credits the total requirement which may be placed upon the student by the School of Commerce and the professor in charge.

Students whose grade-points in economics do not exceed their credits by at least fifty percent are required to diversify the work of the major and may not offer more than three courses from any one of the fields described below for upper-group students.

Students whose grade-points in economics exceed their credits by at least fifty percent are required to concentrate in a selected field. Their electives must consist of at least twelve credits, which may include a thesis, in one of the following fields:

	Credits
I. Accounting	
Econ. 181—Advanced accounting problems	2
Econ. 182—Cost accounting	2
Econ. 183—Accounts of consolidations and income taxes	2
Econ. 184—Auditing	2
Econ. 185—Analysis of financial reports	2
Econ. 186—Accounting systems	2
Econ. 187—Governmental accounting	2
Thesis	4
II. Finance	
Econ. 137—Business finance	3
Econ. 110—Investments	2
Econ. 133—Financial history of the U. S.	3
Econ. 191—Credit system	3
Econ. 154—Risk and profit	2
Econ. 124—Taxation	3
Econ. 103—Public expenditures	2
Econ. 153—International finance	2
Econ. 151—Latin America; economic development and trade	3
Thesis	4
III. Labor and Personnel	
Econ. 122—Labor problems	3
Econ. 123—Labor legislation	3
Econ. 171—Labor management	3
Econ. 174—Labor market	3
Thesis	4
IV. Marketing	
Econ. 14—Sales administration	2
Econ. 15—Principles of advertising	2
Econ. 16—Advertising campaigns	2
Econ. 17—Merchandising	2
Econ. 127—Cooperative marketing	2
Econ. 128—Marketing of farm products	3
Thesis	4

	Credits
V. Public Utilities	
Econ. 195—Public utility management	3
Econ. 135—Railway transportation	3
Econ. 136—Transportation problems	3
Econ. 189—Railway rates and traffic	2-3
Econ. 168—Highway transportation	3
Thesis	4
VI. Risk and Insurance	
Econ. 154—Risk and profit	3
Econ. 121—Property insurance	2
Econ. 138—Life insurance	2
Math. 24—Theory of life insurance	3
Thesis	4
VII. Statistics	
Econ. 131—Wages and prices	3
Econ. 132—Statistical analysis of business cycles	3
Econ. 196—Advanced statistical technique	3
Math. 136, 137—Mathematics of statistics	6
Thesis	4

VIII. Commercial Teaching

The courses in the School of Education required of all candidates for the University Teachers' Certificate and not less than two courses selected from one of the above seven fields, together with a thesis or equivalent.

Undergraduates in this School may take courses aggregating 17 credits per semester, or 18 per semester in case none of their grades during the preceding semester was below B.

Students who have completed the foregoing requirements will be granted either the Bachelor of Arts degree or the Bachelor of Philosophy degree, depending upon which course requirements have been fulfilled.

TRANSFERRED STUDENTS

Students with advanced standing from other institutions and transfers from other courses in the University must meet all the requirements of this School. Substantial equivalents will be accepted for required courses, but no requirements will be waived. Courses in business subjects such as accounting, business administration, advertising, business law, etc., pursued in other institutions in the freshman year will not be accepted as equivalents of the courses offered here in these subjects. Only in exceptional cases will courses in these subjects pursued elsewhere in the sophomore year be accepted in satisfaction of the requirements.

Programs which do not comply with the regulations hereinafter described will be allowed only in the cases of students who are not candidates for a degree, who have had here or elsewhere a course equivalent to two years in the College of Letters and Science of this University, and who have had the prerequisites of the particular subjects they wish to pursue. Until such students have demonstrated their ability to maintain a grade of at least C in the courses to which they are admitted, their status will be that of students on probation.

THE GRADUATE YEAR

Requirements for Admission. To the graduate year of this School may be admitted students who hold the baccalaureate degree from this or other colleges and universities of good standing and whose personalities, character, and undergraduate records give promise of their ability successfully to meet the requirements outlined below and the demands of the business world for trained specialists and leaders. Applications for admission must be made in writing upon forms supplied by the Graduate School of the University.

Undergraduate Prerequisites. Graduate students who, in their undergraduate courses, have not substantially completed the major requirements described above must complete them either before entering upon the course of study outlined below or in connection with it. For such students more than two semesters of residence will be required for the completion of the course, how much more depending upon the number of credits earned during their undergraduate years toward the undergraduate major described above.

Course of Study and Other Requirements. The work of the graduate year will center in research seminars in the fields of accounting and statistics, marketing, public utilities, finance, and management, subject to the following regulations:

(1) Each student must select one of the foregoing as his field of specialization.

(2) His work for the year will be directed by the professor in charge of the field selected, who will arrange with him a program which shall include: (a) at least one of the research seminars conducted in the field selected; (b) other courses of graduate grade or seminars offered in the field, or assigned readings and papers to be done under his guidance outside of formal courses, or a combination of courses, readings, and papers which, together with his work in the seminar, will occupy not less than one-third nor more than one-half of his time; and (c)

courses of graduate grade offered in the other fields mentioned above or in the Department of Economics outside of these fields, or a combination of the two sufficient, together with the credits granted for the work done under the heads (a) and (b), to aggregate not less than 20 credits for the year.

(3) The quality of the student's work for the year will be tested by a thesis or seminary topic on some subject connected with his field of specialization and by an examination at the close of the year covering the principles of economics, statistics and the field of specialization.

(4) Students who successfully pass the test mentioned under (3) will receive the degree of Master of Arts (Commerce) or Master of Philosophy, depending upon the scope of their undergraduate work.

SCHOOL OF JOURNALISM

WILLARD G. BLEYER, DIRECTOR, PROFESSOR OF JOURNALISM

PURPOSE AND PLAN. The studies included in the School of Journalism are of two kinds: (1) those designed to familiarize the student with present social, political, and economic conditions in the light of their origin and development, as well as with the literature of his own and other languages; (2) those intended to give the necessary instruction in the methods of journalism and advertising. The course of study has been arranged in the belief that three-fourths of the time should be devoted to a study of the subjects in the first group, such as history, political science, economics, sociology, philosophy, psychology, language, and literature, which are fundamental to journalistic work.

The journalistic work includes courses in reporting, copy reading, head-line writing, make-up, the writing of special articles, editorial writing, critical writing, women's departments in newspapers and magazines, the community newspaper, newspaper administration, the history and principles of journalism, the reporting of public affairs, and advertising. Courses are also offered in the methods of retail advertising, national advertising campaigns, business letter writing and marketing methods. Representative French, Spanish, and German newspapers are studied in special courses for journalism students, given by the Departments of French, Spanish, and German. Courses in cartooning and in drawing for illustration are offered by the Department of Art Education.

Special lectures on various phases of journalistic work are given by newspaper men in active service. Additional information is available in a special bulletin of the School of Journalism, which may be had on application to the University Editor.

ADVERTISING. Students may obtain special training in preparation for advertising positions by combining courses in journalism with those in advertising. The normal arrangement of these courses is indicated in the Journalism-Advertising Group. Students who desire to enter the Journalism-Advertising Group must earn grade-point equal to credits in Economics 1a and 1b, and may not continue if they fail to earn a B in Economics 15.

TECHNICAL AND TRADE JOURNALISM. Although the curriculum in this school has been arranged primarily for students preparing for newspaper and magazine work, provision has also been made for those interested in technical and trade journalism. The courses in newspaper and magazine work may be elected by students in the professional schools and courses. Subject to the provisions governing the election of studies in other colleges (see page 60), students in the School of Journalism may elect courses in the College of Engineering, the Law School, the School of Education, and the College of Agriculture. By combining studies in commerce, agriculture, engineering, and other technical subjects with those outlined in the School of Journalism, students can obtain the necessary preparation for practically all lines of technical and trade journalism. One of the journalism courses, Technical and trade writing (Journ. 107), is especially designed for students interested in this field.

LABORATORY EQUIPMENT. A newspaper office with typewriters, copy desk, files, and reference books is maintained as a laboratory for the students of journalism. The full leased wire service of one of the national press associations is received by printer telegraph. In the specially equipped typographical laboratory, students are given practical training in the principles of typography in connection

with the courses in editing, advertising, and newspaper business management. A reading room adjoining the journalism laboratory is provided with files of the leading newspapers of the country, as well as of important American and English journalistic periodicals.

PRACTICAL EXPERIENCE. Students preparing for journalism are given practical training on the two Madison daily newspapers, the editors of which cooperate with the instructors of journalism for this purpose. The editors of a number of Wisconsin weekly papers cooperate in giving students in the course in the Community Newspaper practical experience for a week during the spring recess. Places on the editorial and business staffs of student publications are awarded for the most part on a basis of literary and executive ability, and are open to all students. The *Daily Cardinal,* published as a morning newspaper in a printing plant of its own, is edited by a staff organized from the students interested in journalism, who thus get practice in all the details of newspaper making. The *Octopus,* a humorous periodical, and the *Badger,* the university annual, edited and published by the members of the junior class, give opportunity for a variety of experience in journalism. *The Wisconsin Engineer,* a monthly edited and published by the students of the College of Engineering, and the *Wisconsin Country Magazine,* a monthly edited and managed by the agricultural students, furnish practice for those interested in technical and trade journalism.

ADMISSION REQUIREMENTS. For admission to this School, students must be eligible for junior standing in the College of Letters and Science as a result of having completed satisfactorily the first two years of the B.A. General Course. A minimum of 58 credits is necessary for junior standing, but students are advised to present at least 60 credits for admission to the School of Journalism if they expect to complete in two years of residence the 124 credits required for graduation from the School of Journalism. Credits that are lacking may be earned by attendance at the summer session or by correspondence study, during the period between the junior and senior years.

Students entering the University as freshmen or sophomores must complete not only the studies required in the first two years of the B.A. General Course, but also such other studies as are prerequisite for advanced courses in the curriculum of the School of Journalism. The required courses for the freshman and sophomore years of the Pre-Journalism Sequence are as follows:

	Credits
Freshman English (English 1)	6
Two years of foreign language; French, German, or Spanish	14
Ancient, medieval, English, or modern history	6
One year of a laboratory science	10
General survey of English literature (English 30)	6
General economics (Economics 1a and 1b)	8
Introduction to government and politics (Pol. Sci. 1)	3
Introductory psychology (Psychology 1)	3
General survey of journalism (Journalism 1)	2
Newspaper reporting and correspondence (Journalism 2)	6

Students must obtain nine grade-points in English 1a and 1b in order to be admitted to Journalism 2. Only those students who obtain nine grade-points in Journalism 2 will be admitted to the School of Journalism, or will be permitted to elect any advanced courses in journalism.

Students who have completed two or more years in another institution (college, university, or normal school), must be eligible for junior standing in

the B.A. General Course of the College of Letters and Science, in order to be admitted to the School of Journalism. If they desire to complete the requirements for graduation from the School of Journalism in two years, they should present the same subjects for admission to the School that students do who have attended the University for the first two years of their college work, excepting that credits in journalism are not necessary for admission. Students from other institutions should send a certified copy of their preparatory school and academic records to the chairman of the Committee on Advanced Standing, Bascom Hall, before coming to the University.

Requirements for Graduation. For graduation from the School of Journalism, 124 credits are required, in which are included those earned in the first two years of college work and those obtained in the junior and senior years in the School of Journalism. Of this total 31 credits must be taken in required and elective courses in journalism, inclusive of Principles of advertising (Econ. 15), but not of the freshman Survey of journalism (Journ. 1). Advertising campaigns (Econ. 16) and Marketing methods (Econ. 13) may be included in the required 31 credits in journalism only by students in the Journalism-Advertising group.

The student's point-credit ratio (see page 51) in courses in journalism and advertising must be not less than 1.5, and in other courses not less than 1.0. Those students in the School of Journalism who fail to maintain the grade-point requirements will be advised to withdraw from the School.

Students in the classes of 1932 and 1933 are required to have 32 credits in one or more foreign languages for graduation from the School of Journalism, part of which may be taken in preparatory schools; each year of foreign language work satisfactorily completed in a high school or academy is counted as four credits up to a maximum of 24 toward the required 32 credits. Beginning with the class of 1934, students must demonstrate by examination either (a) proficiency in one modern foreign language, (b) or a reading knowledge of two modern foreign languages. (See page 66.) For journalism students the languages which may be offered include Latin, Greek, French, Spanish, Portuguese, and German; other modern foreign languages may be offered only by special permission of the Director.

Upper-group seniors in the School of Journalism (those who have a point-credit ratio of not less than 1.5 for the first three years) have the privilege of writing a thesis (4 credits) presenting the results of a year's research in either contemporary or historical phases of newspapers, magazines, or advertising. These theses are bound and filed in the University Library. Lower-group seniors (those whose point-credit ratio is less than 1.5) will take four credits in elective courses in journalism, in place of the thesis.

The degree of Bachelor of Arts (Journalism) is granted to students who complete satisfactorily the requirements for graduation from the School of Journalism.

The other required courses for graduation from the School of Journalism and the number of credits to be earned in each are as follows:

I. REQUIRED COURSES IN JOURNALISM AND ADVERTISING

Course No	Title of Course	Yr. and Sem.	OPTIONAL GROUPS				
			Daily Newspaper	Community Newspaper	Journalism-Advertising	Journalism-Magazine	Teachers
2	Newspaper reporting	2 or 3	6 cr.	6 cr.		6 cr.	6 cr.
3	Copy reading	3	6	6	3	6	6
4	Advertising typography	3-II			1		
6	Business letters and reports	2-II			2		
7	Community newspaper	3-I		2			
8	Newspaper business management	3-II		2			
13	Marketing methods	3-I			3		
15	Principles of advertising	3-I	2	2	2	2	2
16	Advertising campaigns	3-II			2		
22	News writing and reporting	2-II			3		
100	Thesis (or substitute)	4	4	4	4	4	4
104	Editorial writing	4-I	2	2	2	2	2
105	Writing of special articles	3-I	2	2	2	2	2
106	Critical writing	4-II	2			2	
107	Technical and trade writing	3-II				2	
109	Law of the press	4-II	1	1	1	1	1
110	History of journalism	4-I	3	3	3	3	3
111	Principles of journalism	4-II	3	3	3	3	3
112	Reporting of public affairs	3-II	2**				
120	Interpreting foreign news	4-I					
123	Women's departments	3-II	2*		2*	2*	
	Teaching of journalism	SS					2
	Total Credits		33 cr.	33 cr.	33 cr.	33 cr.	31 cr.

*required of women students only. **required of men students only.

II. REQUIRED COURSES IN THE SOCIAL SCIENCES

In addition to the introductory courses in the Social Sciences required in the freshman and sophomore years at least fifteen credits must be chosen from not less than three of the five following groups:

1. History; 4 to 6 credits in courses numbered over 100, preferably Recent history of the United States (Hist. 124).
2. Economics; 3 to 6 credits in courses numbered above 100, preferably chosen from the following: Evolution of industry (Econ. 119), Capitalism and socialism (Econ. 144), Labor problems (Econ. 122), American labor history (Econ. 145).
3. Political Science; 3 to 6 credits in courses numbered over 100, preferably chosen from the following: Political parties and party problems (Pol. Sc. 122), History of American political ideas (Pol. Sc. 165), Survey of world politics (Pol. Sc. 125), International organization and the League of Nations (Pol. Sc. 137), Municipal administration (Pol. Sc. 135).
4. Sociology; 3 to 6 credits, preferably chosen from the following: Introductory sociology (Sociol. 1, 2), Social psychology (Sociol. 139), Personality and social adjustment (Sociol. 197), Social anthropology (Sociol. 46).
5. Psychology and Philosophy; 3 to 6 credits, preferably chosen from the following: Applied psychology (Psych. 50), Abnormal psychology (Psych. 107), Psychology of thinking (Psych. 111), Logic (Phil. 11), Introduction to philosophy (Phil. 21), Man and nature (Phil. 25), Ethics (Phil. 41).

RECOMMENDED PRE-JOURNALISM SEQUENCE

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Journ. 1—General survey	1	Journ. 1—General survey	1
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Foreign language (one or two)	3-8	Foreign language (one or two)	3-8
History 1, 5, or 10	3	History 1, 5, or 10	3
Science	5	Science	5
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

SOPHOMORE YEAR

*Journ. 2—Newspaper reporting	3	*Journ. 2—Newspaper reporting	3
Engl. 30a—Survey of English literature	3	Engl. 30b—Survey of English literature	3
Foreign language	2-3	Foreign language	2-3
or		or	
Hist. 2—Modern European history	(3)	Hist. 2—Modern European history	(3)
Pol. Sci. 1—Introduction to government and politics	3	Psych. 1—Introductory psychology	3
Econ. 1a—General economics	4	Econ. 1b—General economics	4
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

*Students in the Journalism-Advertising group take a three-credit elective during the first semester and Journalism 22 during the second semester in place of Journalism 2.

COURSE IN JOURNALISM

LEADING TO THE DEGREE OF BACHELOR OF ARTS (JOURNALISM)

DAILY NEWSPAPER GROUP

JUNIOR YEAR

	Credits		Credits
Journ. 3—Copy reading	3	Journ. 3—Copy reading	3
Journ. 105—Writing of special articles	2	Journ. 112 or 123	2
Econ. 15—Principles of advertising	2	Social science options	6-8
Social science options	3-6	Free electives	5-3
Free electives	6-3		
	16		16

SENIOR YEAR

Journ. 104—Editorial writing	2	Journ. 111—Principles of journalism	3
Journ. 110—History of journalism	3	Journ. 109—Law of the press	1
Thesis or substitute	2	Journ. 106—Critical writing	2
Social science options	3-6	Thesis or substitute	2
Free electives	6-3	Social science options	2-6
		Free electives	6-2
	16		16

COMMUNITY NEWSPAPER GROUP

JUNIOR YEAR

Journ. 3—Copy reading	3	Journ. 3—Copy reading	3
Journ. 105—Writing of special articles	2	Journ. 8—Newspaper business management	2
Journ. 7—Community newspaper	2	Social science options	6-8
Econ. 15—Principles of advertising	2	Free electives	5-3
Social science option	3		
Econ. 25—Rural life	(3)		
Free electives	4		
	16		16

SENIOR YEAR

Journ. 104—Editorial writing	2	Journ. 111—Principles of journalism	3
Journ. 110—History of journalism	3	Journ. 109—Law of the press	1
Thesis or substitute	2	Social science options, or	6-8
Social science options	3-6	Econ. 127 or 193	(2)
Free electives	6-3	Free electives	4-2
	16		16

JOURNALISM—ADVERTISING GROUP

JUNIOR YEAR

Journ. 3—Copy reading	3	Journ. 4—Advertising typography	1
Journ. 105—Writing of special articles	2	Journ. 123—(required of women)	(2)
Econ. 13—Marketing methods	3	Econ. 6—Business letters and reports	2
Econ. 15—Principles of advertising	2	Social science options	3-8
Social science option	3	Free electives	8-5
Free electives	3		
	16		16

SENIOR YEAR

Journ. 104—Editorial writing	2	Journ. 111—Principles of journalism	3
Journ. 110—History of journalism	3	Journ. 109—Law of the press	1
Econ. 16—Advertising campaigns	2	Thesis or substitute	2
Thesis or substitute	2	Social science options	6-8
Social science options	3-6	Free electives	4-2
Free electives	4-1		
	16		16

JOURNALISM—MAGAZINE GROUP

JUNIOR YEAR

First Semester	Credits	Second Semester	Credits
Journ. 3—Copy reading	3	Journ. 3—Copy reading	3
Journ. 105—Writing of special articles	2	Journ. 107—Technical and trade writing	2
Econ. 15—Principles of advertising	2	Journ. 123—(required of women)	(2)
Social science options	3-6	Social science options	5-8
Free electives	6-3	Free electives	4-3
	16		16

SENIOR YEAR

Journ. 104—Editorial writing	2	Journ. 111—Principles of journalism	3
Journ. 110—History of journalism	3	Journ. 106—Critical writing	2
Thesis or substitute	2	Journ. 109—Law of the press	1
Social science options	3-6	Thesis or substitute	2
Free electives	6-3	Social science options	4-6
		Free electives	4-2
	16		16

GROUP FOR TEACHERS

Candidates for the University Teacher's Certificate are required to register in the School of Education as well as in the School of Journalism at the beginning of the junior year.

JUNIOR YEAR

Journ. 3—Copy reading	3	Journ. 3—Copy reading	3
Journ. 105—Writing of special articles	2	Elective in Education	3-2
Econ. 15—Principles of advertising	2	Social science options	6-9
Educ. 31—Principles of education	3	Free elective	4-2
Social science options	3		
Free elective	3		
	16		16

SENIOR YEAR

*Educ. Mehods 88—Teaching of journalism	(2)	Journ. 111—Principles of journalism	3
Journ. 104—Editorial writing	2	Journ. 109—Law of the press	1
Journ. 110—History of journalism	3	Thesis or substitute	2
Thesis or substitute	2	Educ. Methods 76—Teaching of English	3
Social science options	4	Educ. Psych. 75—Psychology and practice of teaching	5
Free elective	5	Social science option	2
	16		16

*For the present the course in the methods of teaching journalistic writing and the supervision of student publications is given only in the Summer Session.

LIBRARY SCHOOL

CLARENCE BROWN LESTER, M.A., *Lecturer in Library Science, Director*
MARY EMOGENE HAZELTINE, B.S., *Associate Professor of Bibliography, Principal*
MARY KATHERINE REELY, B.A., *Assistant Professor of Bibliography*
AGNES KING, M.A., *Assistant Professor of Library Science*
MRS. WINIFRED LEMON DAVIS, M.A., *Assistant Professor of Library Science*
ALMA MATILDA RUNGE, B.A., *Instructor in Library Science*
MRS. EMILY KLUETER BROWN, B.A., *Reviser and Assistant*
ELLEN BERNICE GIBSON, B.A., *Reviser and Assistant*
LUCY M. CURTISS, *Assistant*

The Library School is a professional school offering a one-year course of training in library work to both men and women. This training may be taken either as an independent course by all who meet the entrance requirements, or as a joint course by seniors in the College of Letters and Science who qualify for entrance. In cooperation with the School of Education the Library School offers a special course for teachers; for detailed statement of this course, see School of Education.

The School is located on the second floor of the Madison Free Library building. These quarters, especially designed for the School, include complete equipment provided by the Free Library Commission, which administers the School jointly with the University, and provide every facility for professonal work. The School avails itself of all the library privileges of Madison.

For a complete catalog giving full description of the course of study, address the Principal, Miss Mary Emogene Hazeltine, Library School, 206 North Carroll Street, Madison, Wisconsin.

REQUIREMENTS FOR ADMISSION

1. Each candidate must fill out an application blank, a copy of which may be obtained by addressing the Principal, to whom it should be promptly returned.

2. Applicants must be at least twenty years of age. Persons over thirty-five who have no professional experience are advised against undertaking the course.

3. Graduates of accredited colleges whose undergraduate records are acceptable, are admitted upon the basis of such records, but must meet the other requirements for admission as set forth below. The applications of college graduates should, if possible, be filed not later than the first Friday in June of every year, and as much earlier as possible to allow time to arrange for the prerequisites, and to be sure of a place in the class, as the number of students that can be accepted is limited.

4. Students electing the joint course with the College of Letters and Science are admitted at the end of their junior year without written examination if they have upper-group status. The joint course is more fully discussed below.

5. All applicants not holding a degree from an approved college are required to take the entrance examinations, which are held on the first Friday in June of every year. Candidates for the examination must have completed sufficient work to classify them as juniors in an accredited college, while three years of college work or its equivalent are most desirable, and are urged upon all. Applicants taking the entrance examinations should understand that the examinations are designed to test their education, reading, and general information.

Sight translation from one foreign language is also included, the candidate having the choice of French or German.

6. A personal interview with prospective candidates is desirable whenever possible. Besides the background of education, so much depends upon the spirit in which library work is undertaken and the personal fitness for it, that much attention is given to the selection of students. Candidates are tested not only by college records or entrance examinations, but also by correspondence, by the testimony of their references, and by the personal interview.

The class entering in September of every year is made up not later than the first of July and includes the college graduates whose applications have already been accepted and the candidates who have passed the entrance examinations. Students are admitted only at the beginning of the first semester.

As the quarters of the School are limited, the number of students admitted for any one year can not exceed its desk room. If there are more candidates than can be accommodated, entrance is made competitive and those who pass the examination with the highest percentage are first accepted, together with college graduates. The others are placed on a waiting list, from which is filled any vacancy created by the withdrawal during the summer of an accepted student.

PREREQUISITES FOR ALL APPLICANTS

Accepted candidates must meet several special entrance requirements *before the School opens in September.* All who have not had experience in library work must spend at least one month in actual work in a designated library before joining the class. The library and the conditions under which the work is to be performed must be satisfactory to the Principal and, if desired, arrangements for such work will be made by her.

Candidates must be skillful with the typewriter before entering, as the School requires its use in the preparation of many of the lessons, and no instruction is given in the School. Detailed information concerning this requirement is sent with the application blank. It is also required that the standard "library handwriting" be mastered. Accompanying the application blank is a required list of books to be read in preparation for the first appointment of the school year in book selection.

SUGGESTED PRELIMINARY PREPARATION

Undergraduates in college who are planning to enter the Library School upon completion of their college work are advised to select courses from the groups below. Economics, history, English, and science are especially suitable for majors. Besides French and German, two years of history, two of economcs or political science, two of English, one of psychology, and one of pure science with its accompanying laboratory work are advised.

English literature, especially survey courses in English and American literature, and others in literary appreciation and criticism. Courses dealing with such literary types as the novel, the drama, and the short story, not only in English but in foreign languages, should be included; also work in composition or rhetoric.

Modern languages. French and German are most needed in library work. It is advisable to begin the language preparation in high school and to continue the study for at least two years in college.

Classical languages. Four years of high-school Latin are desirable.

History. Ancient, medieval, and modern European; history of England and of the United States.

Social Sciences. Economics, political science, and sociology.

Psychology, philosophy, and education.

Science—one or more of the following laboratory sciences: biology, botany, zoology, geography, geology, physics, chemistry.

Speech.

General business knowledge is of great value to the prospective librarian and is a prerequisite to success in administrative library positions. Candidates who have not had business experience are urged to become familiar with business methods, including the handling of a bank account, the management of a personal budget, a knowledge of the elementary principles of bookkeeping, and a general understanding of ordinary business transactions.

COURSE OF STUDY

The course of instruction extends throughout the university year, September to June. The work covers the following subjects, which are required of all:

First Semester

	Credits
Cataloging	5
Classification	3
Reference	2
Evaluation and selection of books	2
Trade bibliography and bookbuying	1
Loan administration	1
Library economy	1
	15

Second Semester

	Credits
Reference	2
Public documents	1
Subject bibliography	3
Evaluation and selection of books	2
Children's work	1
Library administration	2
Professional work	1
Field practice	3
	15

The field practice is one of the distinctive features of the School. During February and March of every year the academic schedule is suspended and the students assigned for actual work in the libraries of the State, under the supervision of the librarians and the members of the faculty of the School.

This actual work seeks to cover not only the various phases of library technique and library administration, but also the larger service to the public through extension methods, library publicity, book selection, coöperation of libraries with schools, and story telling.

EXPENSES

The tuition fee for residents of Wisconsin is $50 for the course, $25 being payable at the opening of each semester. For non-residents, the fee is $100 for the course, $50 to be paid at the opening of each semester. An infirmary fee of $4.50 per semester is required of each student. These fees are *payable at the Library School.* In the case of joint-course students, adjustment of payment to avoid double tuition is made at the Library School upon presentation of University receipts. The cost of textbooks and supplies for each student will average $40 for the year. A graduation fee of $10 is charged.

Upon notification that they have been accepted as students of the School, applicants are required to pay a registration fee of $5, which will be applied on the tuition of the first semester. In case of the withdrawal of the applicant before the opening of the School, the registration fee will be retained to cover the expenses of correspondence, etc.

The Library Commission pays the railroad fare of students to and from the required field practice.

JOINT COURSE WITH THE COLLEGE OF LETTERS AND SCIENCE

A joint course has been arranged between the Library School and the College of Letters and Science for those who are not able to afford the time for four years of college work followed by a year of technical training. The joint course is made possible by a rule of the College of Letters and Science which provides that candidates for the Bachelor of Arts degree are allowed under specified circumstances to elect studies in other of the university colleges and schools to an amount not exceeding 20 credits.

A regular joint-course student, in order to receive a B.A. degree and the Library School diploma, must earn 130 credits, to be distributed usually as follows: 96 credits by the end of the junior year including all the required work in the field of concentration excepting the thesis, and 4 thesis and 30 Library School credits during the senior year. If the student does not prepare a thesis, the 4 credits must be earned in the summer session. Except for the thesis, joint-course students must devote the entire time of the senior year to work of the Library School.

By properly arranging his studies and by carrying 16 credits per semester for the first three years, a student can ordinarily earn both the Bachelor of Arts degree and the Library School diploma at the end of four years. If the student does not carry 16 credits per semester for the full three years, the deficiency may be made up by work in the summer session.

If students elect the work of the Library School before they have attained senior rank, they are not exempt from the entrance examinations for the School. Furthermore, it should be understood that the work of the School is accepted for only ten college credits if completed before the beginning of the junior year, and that 20 college credits are allowed for it only if it is completed after the beginning of the junior year (the 20-credit rule quoted above requires junior standing before its privileges may be enjoyed).

Students in other institutions wishing to enter the joint course with advanced standing must bear in mind that the College of Letters and Science requires 40 credits in resident study; attendance at the Library School may not be counted toward fulfilling this requirement. Transfers from other colleges with intent to take the joint course are best accomplished at the beginning of the sophomore year. Arrangements for entering on advanced standing should be made through the Chairman of the Committee on Advanced Standing, University of Wisconsin, and the Principal of the Library School.

SCHOOL OF MUSIC

C. H. MILLS, DIRECTOR, PROFESSOR OF MUSIC

The School of Music offers a four-year course leading to the degree of Bachelor of Music; this course provides training in the fields of applied music, history and theory of music, and public school music.

Individual instruction in vocal or instrumental music may be taken by students not otherwise connected with the University, and such students are not required to pay the incidental fee, but they must be able to satisfy the usual entrance requirements as stated below.

Students enrolled in other schools and colleges of the University are allowed to take courses in the School of Music, subject to the approval of their adviser and the Director of the School of Music, under the following special regulations. Credits, not to exceed twenty, may be selected by sophomores, juniors, and seniors in theoretical music courses. A maximum of ten credits in applied music may be taken by juniors and seniors. The maximum number of credits in theoretical and applied music may not exceed twenty. Any student may take courses in applied music without credit provided he satisfies the entrance requirements. In the case of organ, piano, and violin, students will be expected to satisfy the entrance requirements for majors in these subjects, whether or not the subjects are taken for credit.

ENTRANCE REQUIREMENTS

The general requirements, other than those for admission to the University, include (1) sufficient natural musical ability, as determined by a series of tests, (2) the ability to sing at sight songs of the difficulty of the average hymn tune, and (3) knowledge of such fundamental facts of musical theory as key signatures, major and minor scales, note values, etc. A sub-freshman course, without credit, is offered for those unable to meet these requirements.

The special requirements for majors in applied music are:

ORGAN. No previous knowledge of organ playing is required, but a student will not be enrolled until he has acquired a satisfactory pianoforte technique and some skill in polyphonic playing.

PIANO. Applicants for admission, whether enrolled for credit or not, will be required to play music of the following grade or its equivalent; easier sonatas by Haydn and Mozart, Czerny, Op. 299, Books I and II, Heller, Op. 47, easier *Songs Without Words* by Mendelssohn. Knowledge of the formation, signatures, and fingering of major and minor scales is necessary; also the ability to read at sight hymn tunes and simple accompaniments.

VOICE. The student must be able to read simple music and must have had an amount of training equal to the first half of Concone, with the usual technical study for the same period.

VIOLIN. Candidates must be well grounded in correct position, intonation, tone, and bowing, and must have mastered the equivalent of David's Violin School, Part 1, and the easier pieces of Dancla, Alard, and others.

GRADUATE WORK

The degree of Master of Arts is awarded on the basis of a suitable thesis and courses. Candidates for this degree are required to take a minimum of 9 credits in music and 9 credits in education in addition to the thesis. Candidates must satisfy all requirements for the Bachelor of Arts degree, including 32 credits in foreign language and 75 out of 120 credits in academic subjects. For definite information regarding the nature of the required work, inquiry should be made of the Director of the School of Music.

FEES AND TUITION

Regularly enrolled students in the School of Music (i.e., those working toward a degree) and special students taking theory courses are required to pay the regular university fees (see page 15). Persons taking courses in applied music, either regularly enrolled students or special students in applied music only, are required to pay the tuition fees charged for such instruction, as noted below. Special students taking only private instruction in applied music are not required to pay the general fee or the non-resident tuition fee.

Students enrolling at any time previous to the fifteenth day of any semester will be charged the full applied music and practice room fees for the semester. Students enrolling thereafter may receive some reduction at the discretion of the Director. All fees must be paid at the beginning of each semester; until this has been done, the student will not be entitled to receive instruction.

Applied music fees are refunded in full if no lesson has been taken and if the name of the student does not appear on the schedule of the instructor. If any lesson has been taken, only one-half the fee is refunded. No refund is made after mid-semester except in cases of protracted illness when the instructor makes such recommendation to the Director. Practice-room fees are refunded on the basis of time expired until mid-semester after which no refund is made. The concert fee is not refunded unless a student leaves school within the first two weeks of the semester. Students who complete satisfactorily a semester of work in the University Orchestra are entitled to a refund of one-half their applied music fee upon the recommendation of the Director.

Tuition in applied music, per semester:

One-half hour of instruction once a week	$25
One-half hour of instruction twice a week	45
Class piano or voice for public school music	45
One hour of instruction once a week	45
One hour of instruction twice a week	90
Piano technic	4

Rent of practice rooms, per semester:

Organ, one hour daily	$9
Piano, one hour daily	4
Rent of band and orchestra instruments	2.50
Concert fee, per academic year	1

ORGANIZATIONS

THE UNIVERSITY ORCHESTRA, composed of about sixty-five players, is organized to study the larger classical forms and to present them in public. Rehearsals are held twice a week in Music Hall during the school year. Membership is open to the entire student body, and to others who can qualify in the tryouts. After two semesters' enrollment in the orchestra, a university student may receive one credit per semester. This work is listed as Music 76. Mr. Morphy, Director.

THE UNIVERSITY BANDS consist normally of about two hundred men, divided among three organizations known as the Concert Band, the Second Band, and the ROTC Band; the first is mainly a concert organization while the second forms a training school for the less experienced students. The ROTC Band is a unit of the Military Department. These organizations rehearse three times each week. Upper classmen who are members of the concert band and who remain for duty at Commencement are compensated for their services to the extent of thirty dollars. Students who desire to join should confer with the Director of the Bands. Mr. Morphy, Director.

Opportunity is offered to the best players in the bands and orchestra to participate in small groups playing chamber music. If this work is to be taken for credit, the material to be covered may be found listed under Music 85. For information concerning this work students should consult Mr. Morphy, Director.

THE LIGHT OPERA ORCHESTRA is limited to twenty-four men students. Overtures, selections, and light opera music will be studied and performed. This orchestra will accompany the annual Haresfoot production. Membership decided by tryouts.

THE SECOND ORCHESTRA is open to all university students who through lack of experience or conflict do not play in the regular University Orchestra. The fundamentals of orchestral playing are stressed in the study of the easier types of music. Practical experience in conducting and interpretation is offered. Instruments may be rented from the School of Music. Mr. Dalley, Director.

THE MEN'S GLEE CLUB is a campus organization incorporated under the laws of the state of Wisconsin. Two separate divisions are maintained: the Concert Club, the membership of which is selected by competitive tryouts, and the Corporation, to which members of the Concert Club may be elected after one year's service. Vacancies in the club are filled by competitive trial, and membership is open to the entire student body, including graduate students. Mr. Swinney, Director.

THE WOMEN'S GLEE CLUB is an organization of forty-five women which makes frequent public appearances locally. Vacancies are filled by competitive trial and membership is open to the entire student body, including graduate students. Mr. Dalley, Director.

THE UNIVERSITY SINGERS, an organization of fifty voices, studies and performs masterpieces of choral literature. Membership is on a competitive basis and open to any student in the University, including graduate students. Mr. Swinney, Director.

THE A CAPPELLA CHOIR is limited in number to thirty-two. It presents in concert the best part songs in musical literature. Membership is on a competitive basis and is open to any student in the University, including graduate students Mr. Swinney, Director.

EQUIPMENT

The School of Music is provided with a concert auditorium, lecture halls, teaching studios for applied music, practice rooms, a four-manual organ, a two-manual organ, five two-manual reed organs, pianos, orchestral and band instruments, and an equipment of mechanical instruments. Four audition rooms have recently been equipped so that students are enabled to acquaint themselves with an extensive library of phonograph records. The School occupies two adjacent buildings on the main campus, Music Hall and Music Annex.

CONCERTS AND RECITALS

Lecture-recitals and concerts, open to the public without charge, are given by members of the Faculty of the School of Music at stated intervals during the concert season.

Student recitals, free to all students of the University and open to all others by invitation, are held at frequent intervals throughout the school year.

Public performances being part of the course of study in a practical subject, all students are required to participate in a program when they are, in the instructor's opinion, sufficiently prepared.

The artist recital series consists of an annual course of recitals of chamber music. Students enrolled in the School of Music are required to attend the concerts for which a fee of one dollar a year is charged, payable at the time of registration. The Lener String Quartet and the London String Quartet have appeared under the auspices of the School.

REQUIREMENTS FOR TEACHERS

Candidates for the degree of Bachelor of Music who wish to obtain the University Teachers' Certificate are required to register in the School of Education at the beginning of their junior year and to earn a total of 124 credits and 124 points, with a minimum of 55 credits in Letters and Science. The following courses are specifically required:

	Credits
Educ. 31—Principles of education	3
Educ. Psych. 75—Psychology and practice of teaching	5
Music 45—An introduction to public school music	4
Departmental teachers' courses	3
	15

GENERAL

All students must present their registration cards from the Registrar's office before beginning assigned work in the School of Music. All students in applied music will be examined by the Examining Committee of the School of Music to learn the status of their work and, in the case of juniors and seniors, to determine whether or not the subject can be taken for credit.

The regular university calendar applies to the School of Music, but students in applied music may enter at any time. All university holidays are observed without make-up of lessons in applied music.

A student is expected not to take part in any public performance without the consent of his instructor and the director.

COURSE IN MUSIC

LEADING TO THE DEGREE OF BACHELOR OF MUSIC

A total of 120 credits and 120 grade-points is required for the degree, including a minimum of 54 credits in the College of Letters and Science and 46 to 66 credits in the School of Music, this number to be decided by consultation with the Director. A total of 32 credits in foreign language, including that taken in high school, is required for graduation. Students will not be enrolled as juniors unless they have earned a point-credit ratio of 1.5 in music subjects during the sophomore year. The candidate may choose his major in one of the following fields, in which he may obtain a maximum of 20 credits: applied music, history and theory of music, public school music. The following courses of study are suggested outlines which are subject to alteration, with the consent of the adviser, to meet individual cases.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Music 81, 82, 83, or 84*—Applied music	2	Music 81, 82, 83, or 84*—Applied music	2
Music 1—Harmony	3	Music 1—Harmony	3
Music 71—Solfeggio	1	Music 71—Solfeggio	1
Foreign language	4	Foreign language	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
History 1, 5, or 10	3	History 1, 5, or 10	3
Physical activity requirement	0	Physical activity requirement	0
	16		16

SOPHOMORE YEAR

Music 81, 82, 83, or 84*—Applied music	2	Music 81, 82, 83, or 84*—Applied music	2
Music 11—Second-year harmony	3	Music 11—Second-year harmony	3
Music 21—Counterpoint	2	Music 21—Counterpoint	2
Music 75—Advanced solfeggio	1	Music 75—Advanced solfeggio	1
Music 45—An introduction to public school music	2	Music 45—An introduction to public school music	2
Foreign language	3-4	Foreign language	3-4
English or history	3-2	English or history	3-2
Physical activity requirement	0	Physical activity requirement	0
	16		16

*Majors in Public School Music substitute Music 87 or 88.

MAJOR IN APPLIED MUSIC

JUNIOR YEAR

Music 81, 82, 83, or 84—Applied music	2	Music 81, 82, 83, or 84—Applied music	2
Music 112—Advanced counterpoint	2	Music 112—Advanced counterpoint	2
Music 31—History of music	2	Music 31—History of music	2
Music 5—Form and analysis	2	Music 5—Form and analysis	2
Music 36—Pedagogy	2	Music 37—Applied pedagogy	2
Educ. 21—Principles of education	3	Educ. Psych. 75—Psychology and practice of teaching	5
Free electives	3	Free electives	1
	16		16

SENIOR YEAR

Music 81, 82, 83, or 84—Applied music	2
Music 85—Ensemble	1
Music 102—Elementary composition	2-3
Free electives	10-9
	15

Music 81, 82, 83, or 84—Applied music	2
Music 85—Ensemble	1
Music 102—Elementary composition	2-3
Physics 91—Sound	1
Free electives	9-8
	15

MAJOR IN HISTORY AND THEORY OF MUSIC

JUNIOR YEAR

Music 81, 82, 83, or 84—Applied music	1
Music 112—Advanced counterpoint	2
Music 31—History of music	2
Music 5—Form and analysis	2
Educ. 31—Principles of education	3
Free electives	5
	15

Music 81, 82, 83, or 84—Applied music	1
Music 112—Advanced counterpoint	2
Music 31—History of music	2
Music 5—Form and analysis	2
Educ. 75—Psychology and practice of teaching	5
Physics 91—Sound	1
Free elective	2
	15

SENIOR YEAR

Music 102—Elementary composition	2-3
Music 100—Thesis	2
Free electives	11-10
	15

Music 102—Elementary composition	2-3
Music 100—Thesis	2
Free electives	11-10
	15

MAJOR IN PUBLIC SCHOOL MUSIC

In the freshman and sophomore years Music 87 and 88 are substituted for Music 81-84.

All students in this major must, in order to satisfy the piano and voice requirements, furnish evidence that they can do creditably the work as outlined in Courses 87 and 88. The amount of time required to complete these courses depends largely upon individual application and ability.

VOCAL

JUNIOR YEAR

First Semester	Credits
Music 51—Theory and practice of grade school music	2
Music 66—Conducting	2
Music 102—Elementary composition	2
Music 31—History of music	2
Music 5—Form and analysis	2
Educ. 31—Principles of education	3
Free elective	2
	15

Second Semester	Credits
Music 51—Theory and practice of grade school music	2
Music 102—Elementary composition	2
Music 31—History of music	2
Music 89—Elements of instrumentation	3
Educ. Psych. 75—Psychology and practice of teaching	5
Music 5—Form and analysis	2
	16

SENIOR YEAR

Music 39—Theory and practice of supervision	3	*Educ. 39—Theory and practice of supervision	3
Music 112—Advanced counterpoint	2	Music 112—Advanced counterpoint	2
Music 53—Theory and practice of secondary school music	2	Physics 91—Sound	1
Educ. 123—Tests and measurements	2-3	Music 81—Piano	1
Music 81—Piano	1	Free electives	9
Free electives	5		
	15-16		16

*This course is designed for students expecting to supervise music, physical education, and art, and consists of one lecture weekly by Professor Barr, one weekly conference with departmental teacher and practical work in supervision. Credit to be divided as follows: School of Music, 2 cr., and School of Education, 1 cr.

INSTRUMENTAL

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Music 87 or 88—Class piano or class voice	2	Music 87 or 88—Class piano or class voice	2
Music 11—Second-year harmony	3	Music 11—Second-year harmony	3
Music 75—Advanced solfeggio	1	Music 75—Advanced solfeggio	1
Music 45—An introduction to public school music	2	Music 89—Instrumental class instruction	3
Foreign language	3-4	Foreign language	3-4
English or history	3-2	English or history	3-2
Free electives	1-2		
	15-16		15

JUNIOR YEAR

Music 90—Instrumental methods	2	Music 91—Instrumentation	2
Music 66—Conducting	2	Music 31—History of music	2
Music 21—Counterpoint	2	Music 21—Counterpoint	2
Music 31—History of music	2	Educ. Psych. 75—Psychology and practice of teaching	5
Educ. 31—Principles of education	3	Music 5—Form and analysis	2
Music 5—Form and analysis	2	Free electives	3
Free electives	3		
	16		16

SENIOR YEAR

First Semester	Credits	Second Semester	Credits
Music 92—Instrumental music administration	3-4	Music 92—Instrumental music administration	3-4
Music 83—Stringed and other orchestral instruments	2	Music 83—Stringed and other orchestral instruments	2
Music 112—Advanced counterpoint	2	Music 39—Theory and practice of supervision	3
Music 39—Theory and practice of supervision	3	Physics 91—Sound	1
Educ. 123—Tests and measurements	2-3	Free electives	7-6
Free electives	4-2		
	16		16

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*—to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100-group may be credited by both undergraduates and graduates; those in the 200-group are ordinarily open only to graduates.

ANTHROPOLOGY

(See Sociology and Anthropology.)

ART

(See Drawing, page 121.)

ART HISTORY AND CRITICISM

OSKAR FRANK LEONARD HAGEN, Ph.D., *Professor of History and Criticism of Art, Chairman* (on leave I)
JESSE JANES GARRISON, M.A., *Instructor in History and Criticism of Art*
JOSEPH BARRON, M.A., *Instructor in History and Criticism of Art*
LAURENCE SCHMECKEBIER, Ph.D., *Instructor in History and Criticism of Art*

The department offers to the general student semester courses providing broad surveys of the history of art based upon aesthetic analysis, i.e., appreciation and interpretation. Semester courses 50 and 54 are designed to familiarize the student with the principal art trends (architecture, sculpture, and painting) from the prehistoric cave paintings to the art of the present day. The courses offered in the hundred group treat in a more specific way subjects introduced and broadly sketched in the survey group. These courses not only serve majors, but are of general cultural interest. The exhibit room in Bascom Hall serves for periodical exhibits and study.

MAJOR. 26 credits, including thesis for upper-group students; in addition, a reading knowledge of French, German, or Italian; 12 credits in history as a minimum, (courses particularly recommended are History 1, Medieval history, and History 134, The Renaissance).

It is also recommended, especially for those who expect to teach art or history of art, that from 6 to 12 credits be taken in practice courses (design, painting, etc.), which for the present may be secured in the Department of Art Education. The requirements for a teachers' certificate may be found under the School of Education.

HISPANIC STUDIES. Students interested in this field of concentration should consult page 58.

22. THE CRITICAL APPROACH TO PAINTING. II; 3 cr. A study will be made of critical judgments in art. Prerequisite: Consent of instructor. Offered 1931-32 and in alternate years. 11 TT and third hour. Mr. Garrison.

35. HISTORY OF ARCHITECTURE. I; 2-3 cr. A survey of the development of architecture from ancient times. Prerequisite: Sophomore standing. 8 TT and third hour. Mr. Barron.

36. HISTORY OF ARCHITECTURE. II; 2-3 cr. A continuation of Art History 35. 8 TT and third hour. Mr. Barron.

44. MEDIEVAL ART. I; 3 cr. A survey of medieval sculpture and painting (mosaics, stained glass, illuminated manuscripts) of Europe from the early Christian through the Gothic epochs. Prerequisite: Sophomore standing. 9 MW and third hour. Mr. Schmeckebier.

45. MEDIEVAL ART. II; 3 cr. A continuation of Art History 44. Prerequisite: Sophomore standing. 9 MW and third hour. Mr. Schmeckebier.

50. ANCIENT AND MEDIEVAL ART EPOCHS. 2-3 cr. The great originative styles preceding the Renaissance, i.e., the art of Egypt, of Hellas, and of the Christian West through the Gothic period; the specific artistic character and temperament of the various racial groups and their evolution as seen in architecture, sculpture, and the pictorial arts. Prerequisite: Sophomore standing. (Course 54 offers a continuation of the historical development to the present day.) Offered II, 1931-32; I, 1932-33. 10 MWF. Mr. Hagen.

54. MODERN PAINTING AND ITS ANTECEDENTS. 2-3 cr. A survey of such problems of painting as constitute the history of painting from the fifteenth century down to the present age; in other words, the genesis of modern art through the preceding four centuries. Prerequisite: Sophomore standing. Fee $3.75. 10 MWF. Offered I, 1931-32, Mr. Garrison; 11, 1932-33, Mr. Hagen.

101. GRAPHIC ARTS IN EUROPE. I; 2 cr. History of wood-cuts, engravings, and etching on copper from the origins in 1400 A.D. to Rembrandt. Prerequisite: Consent of instructor. Offered 1932-33 and in alternate years. Mr. Hagen.

102. GRAPHIC ARTS IN THE EIGHTEENTH AND NINETEENTH CENTURIES. II; 2 cr. History of engraving, wood-cuts, etching, and lithography. Prerequisite: Art History 101. Offered 1932-33 and in alternate years. Mr. Hagen.

103. BASIC CONCEPTS IN RENAISSANCE AND BAROQUE ART. I; 3 cr. Prerequisite: Art History 54. Not offered in 1931-32. Mr. Hagen.

104. ITALIAN SCULPTURE. I; 2 cr. Prerequisite: Art History 54. Offered 1931-32 and in alternate years. 2:30 MW. Mr. Garrison.

106. PAINTING IN THE AGE OF IMPRESSIONISM. I; 3 cr. Prerequisite: Art History 22 or 54, or consent of instructor. Fee $2.50. 11 MWF. Mr. Schmeckebier.

109. EVOLUTION IN ANCIENT AND MODERN ART. II; 3 cr. Prerequisites: Art History 50 or 113, and Art History 54 or 151, or consent of instructor. Offered in 1931-32. Mr. Hagen.

113. HISTORY OF GREEK SCULPTURE. II; 3 cr. Prerequisite: Sophomore standing. Not offered in 1931-32. Mr. Hagen.

114. Romanesque and Gothic Sculpture. II; 3 cr. Prerequisite: Art History 50 or 54. Not offered in 1931-32.

126. Flemish Painting from Van Eyck to Rubens. II; 3 cr. Prerequisite: Sophomore standing. Mr. Schmeckebier.

128. French Painting. II; 3 cr. Prerequisite: Sophomore standing. Mr. Garrison.

131. Development of Architecture in North America. I; 2-3 cr. Prerequisite: Sophomore standing. 9 TT and third hour. Mr. Barron.

138. Survey of Architecture of the Middle Ages. II; 2-3 cr. Prerequisite: Sophomore standing. Offered 1931-32 and in alternate years. 9 TT and third hour. Mr. Barron.

139. Introduction to Modern Architecture. II; 2-3 cr. Prerequisite: Sophomore standing. Mr. Barron.

151. Italian Painting of the Renaissance. I; 3 cr. The period from Giotto to Michelangelo and Rafael. Prerequisite: Art History 54. Offered 1931-32 and in alternate years. 11 MW and third hour. Mr. Garrison.

152. Northern Painting of the Renaissance. II; 3 cr. Painting in France, Flanders, Holland, and Germany from the Van Eycks to Albrecht Dürer. Prerequisite: Art History 54. Offered 1931-32 and in alternate years. Mr. Hagen.

153. Painting in the Age of Rembrandt and Velasquez. II; 3 cr. Prerequisite: Art History 54. Not offered in 1931-32. Mr. Hagen.

155. Venetian Painting of the Renaissance. II; 3 cr. Prerequisite: Art History 54. Not offered in 1931-32. Mr. Schmeckebier.

157. History of Spanish Painting. I; 3 cr. Prerequisite: Art History 54 Offered in 1932-33. Mr. Hagen.

202. Seminary. Yr; 2 cr. I, American Architecture; II, Modern Architecture. Mr. Barron.

205. Seminary, Impressionism. I; 2 cr. Prerequisite: Consent of instructor. Mr. Schmeckebier.

210. Seminary. Yr; 2 cr. The subjects of research, which change from semester to semester, are generally chosen from the fields covered in the advanced courses. Mr. Hagen.

ASTRONOMY

Joel Stebbins, Ph.D., Sc.D., *Professor of Astronomy, Chairman*
Charles Morse Huffer, Ph.D., *Assistant Professor of Astronomy*

1. Elementary Astronomy. I; 3 cr. Prerequisite: Sophomore standing. Mathematics not required. Lecture 1:30 MWF; one evening per week at observatory. Mr. Huffer.

2. General Astronomy. II; 3 cr. Prerequisite: Mathematics 2. Lecture 1:30 MWF; work at observatory to be arranged. Credit not given for both Astronomy 1 and 2. Mr. Stebbins.

6. Navigation and Practical Astronomy. II; 2 cr. Prerequisite: A course in trigonometry. 3:30 Tu, 10-12 S. Mr. Stebbins.

7. Advanced Field Astronomy. Yr; 2-3 cr. Prerequisite: Astronomy 6. Mr. Stebbins.

101. Astrophysics: The Solar System. I; 3 cr. Prerequisite: Mathematics 2, Physics 31. Mr. Huffer.

102. Astrophysics: Stellar Astronomy. II; 3 cr. Prerequisite: Mathematics 2, Physics 31. Mr. Huffer.

116. Celestial Mechanics. Yr; 3 cr. Prerequisite: A course in calculus. Mr. Stebbins.

200. Research. Yr; 3-5 cr. Graduate students and others qualified to pursue advanced astronomical studies will be received in the Washburn Observatory as assistants. Facilities for independent original work will be afforded to such students, and their work, if of sufficient value, may be printed in the Publications of the Washburn Observatory.

BACTERIOLOGY

(See Medical Bacteriology or Agricultural Bacteriology.)

BIOLOGY

Study in the biological sciences is conducted in the independent though coordinated departments of Botany, Zoology, Anatomy, Physiology, Physiological Chemistry, Genetics, Pathology and Medical Bacteriology, Pharmacology and Toxicology, Plant Pathology, and Agricultural Bacteriology.

1. General Biology. Yr; 5 cr. An elementary one-year course in general biology may be taken by combining Botany 1 and Zoology 1, both of which are given each semester. Either one may precede the other, although the normal order is to follow botany with zoology. Introductory to botany, zoology, anatomy, bacteriology, and physiology. (See Botany 1 and Zoology 1.)

The Teaching of Biology. See School of Education.

BOTANY

Edward Martinius Gilbert, Ph.D., *Professor of Botany and Plant Pathology, Chairman*
Charles Elmer Allen, Ph.D., *Professor of Botany*
George Smith Bryan, Ph.D., *Professor of Botany*
Benjamin Minge Duggar, Ph.D., *Professor of Physiological and Applied Botany*
Lewis Ralph Jones, Ph.D., Sc.D., *Professor of Plant Pathology*
George Wannamaker Keitt, Ph.D., *Professor of Plant Pathology*
James Bertram Overton, Ph.D., Sc.D., *Professor of Plant Physiology*
Rollin Henry Denniston, Ph.D., *Assistant Professor of Botany*
Norman Carter Fassett, Ph.D., *Assistant Professor of Botany*
Emma Luella Fisk, Ph.D., *Assistant Professor of Botany*
John Jefferson Davis, B.S., M.D., *Curator of the Herbarium*
George Olds Cooper, Ph.D., *Instructor in Botany*
Richard Irving Evans, Ph.D., *Instructor in Botany*
Earl Adrian Helgeson, Ph.D., *Instructor in Botany*
Ruth Irene Walker, Ph.D., *Instructor in Botany*

MAJOR. 30 credits, including thesis, Botany 1, and an elementary course in zoology. A thesis is required of all seniors majoring in botany unless exception is made by the chairman of the department.

1. GENERAL BOTANY. I, II; 5 cr. Preliminary to all advanced work. Accepted with Zoology 1 to make up an elementary course in general biology. Lab. fee $5.00. Lecture 2:30 MW or 10 TT; 6 hrs. lab., 2 hrs. quiz. Mr. Bryan, Miss Fisk, Miss Walker, and staff.

2. ADVANCED GENERAL BOTANY. II; 5 cr. Accepted as part of a teacher's minor or, with Botany 1, in satisfaction of the requirement of a year of natural science. The laboratory work of the course is a comprehensive survey of the plant kingdom and includes in the late spring the use of keys in the identification of many plants. The lectures deal primarily with the history of the development of the scientific spirit in biology and involve a discussion of the modern problems of evolution, inheritance, variation, etc. Prerequisite: Botany 1. Lab. fee $5.00. Lecture 10 TT; 6 hrs. lab., 2 hrs. quiz. Mr. Bryan, Miss Fisk, and staff.

100. SENIOR THESIS. Yr; 2-3 cr. A subject should be selected, whenever possible, before the close of the junior year. Lab. fee $1.50 per cr. 10 TT. Mr. Gilbert.

101. DISEASES OF PLANTS. I; 3 cr. Prerequisites: Botany 1 and Agr. Bact. 1. Lab. fee $4.50. 1:30-3:30 MWF. Mr. Gilbert, Mr. Walker.

102. METHODS IN PLANT PATHOLOGY. I; 3 cr. Prerequisite: Botany 101. Lab. fee $4.50. 10-12 MWF. Mr. Riker.

103. MORPHOLOGY OF ALGAE. I; 3 cr. Prerequisite: Botany 1. Offered 1932-33 and in alternate years. Lab. fee $3.50. 8-10 TTS. Mr. Allen.

104. MORPHOLOGY OF FUNGI. I; 3 cr. Prerequisite: Botany 1. Lab. fee $3.50. 8-10 MWF. Mr. Gilbert.

107. MORPHOLOGY OF GYMNOSPERMS. I; 3 cr. Prerequisite: Botany 1. Offered 1931-32 and in alternate years. Lab. fee $3.50. 1:30-3:30 MWF. Mr. Bryan.

108. MORPHOLOGY OF ANGIOSPERMS. II; 3 cr. Prerequisite: Botany 1. Lab. fee $3.50. 8-10 MWF. Miss Fisk.

110. PLANT HISTOLOGY. I; 3 or 4 cr. Prerequisite: Botany 1. Lab. fee $3.50. 10-12 MWF. Mr. Denniston.

111. MICROSCOPICAL EXAMINATION OF DRUGS AND FOODS. II; 3 cr. Prerequisite: Botany 110. Lab. fee $4.50. 10-12 MWF. Mr. Denniston.

112. MORPHOLOGY OF BRYOPHYTES. II; 3 cr. Prerequisite: Botany 1. Offered 1932-33 and in alternate years. Lab. fee $3.50. 8-10 TTS. Mr. Allen.

113. MORPHOLOGY OF PTERIDOPHYTES. II; 3 cr. Prerequisite: Botany 1. Offered 1931-32 and in alternate years. Lab. fee $3.50. 1:30-3:30 MWF. Mr. Bryan.

117. STRUCTURE OF ECONOMIC PLANTS. I; 3 cr. Prerequisites: Botany 1 and 2. Lab. fee $3.50. 8-10 MWF. Miss Fisk.

118. STRUCTURE OF FRUITS AND SEEDS. II; 3 cr. Prerequisites: Botany 1 and 2. Not offered 1931-32. Lab. fee $3.50. Miss Fisk.

129. Classification of Cultivated Plants. I; 2 or 3 cr. Prerequisite: Botany 1. Lab. fee $3.00. 8-10 TT. Miss Fisk.

130. Identification and Classification of Seed Plants. II; 3 or 4 cr. Prerequisite: Botany 1. Lab. fee $3.00. 8-10 TTS. Mr. Denniston.

131. Dendrology. II; 2 cr. Prerequisite: Botany 1. 3:30-5:30 TT. Mr. Denniston.

146. Plant Physiology. II; 4 cr. Prerequisites: Botany 1 and a knowledge of physics and chemistry. Lab. fee. $1.50 per lab. cr. Lecture 11 TT; lab. 9-11 ThS or 1:30-3:30 TT; quiz 11 S or 3:30 Th. Mr. Overton, Mr. Helgeson.

147. Advanced Plant Physiology. Yr; 2 cr. Prerequisite: Botany 146. Lab fee $4.00 per semester. 11 MW and lab. Mr. Overton.

148. Physiological Methods and Materials. I; 3 cr. Prerequisite: Botany 146. Lab. fee $2.50. 8-10 TTS. Mr. Duggar, Mr. Helgeson.

149. Special Physiology of Pathogenic Fungi. II; 2 cr. Prerequisite: Botany 146. 9 TT. Mr. Duggar.

150. Cytology. Yr; 5 cr. Prerequisites: Botany 1 and 2. Lab. fee $5.00. Lecture 10 TT; lab. 10-12 MWF, 11 TT. Mr. Allen, Miss Walker.

154. Evolution of Plants. I; 2 cr. Prerequisites: Botany 1 and 2. Offered 1931-32 and in alternate years. Lecture 2:30 MW. Mr. Allen.

156. Inheritance and Variation. II; 2 cr. Prerequisites: Botany 1 and 2. Lecture 2:30 MW. Mr. Allen.

160. Plant Geography of Wisconsin. II; 3 or 4 cr. Prerequisite: Botany 1. Lab. fee $3.50. 1:30-4:30 MF. Mr. Fassett.

200. Research. Yr; *cr. Investigation may be undertaken in any department of botany in which the student's preparation is adequate. Lab. fee $2.00 per credit. Staff.

214. Seminary in General Botany. Yr; 1 cr. 4:30-6 W. Mr. Allen.

215. Seminary in Plant Physiology. Yr. 1-2 cr. Mr. Duggar, Mr. Overton.

220. Advanced Mycology. Yr; 2 cr. Morphology and classification of fungi. Prerequisites: Botany 101, 104. Lab. fee $2.00. 1:30-3:30 TT. Mr. Gilbert.

221. Classification of Parasitic Fungi. Yr; 1 cr. Practice in the identification of parasitic fungi in field and laboratory, with discussions of principles used in classification and nomenclature. 3:30-5:30 F. Mr. Davis.

252. Cytology of the Fungi. II; 1-2 cr. The various methods of fixation and staining of fungi, with laboratory exercises applying these methods in a study of bacteria and fungi. Prerequisite: At least one semester of general cytology. Lab. fee $2.00 per cr. Mr. Gilbert.

See Zoology 106 and 107 and Genetics 101-106 for other courses in evolution and heredity; also Horticulture 7 and 8 for courses in plant propagation and floriculture. The announcements of the Departments of Genetics and Horticulture appear under the College of Agriculture.

CHEMISTRY

JOSEPH HOWARD MATHEWS, Ph.D., *Professor of Chemistry, Chairman*
HOMER BURTON ADKINS. Ph.D., *Professor of Chemistry*
FARRINGTON DANIELS, Ph.D., *Professor of Chemistry*
RICHARD FISCHER, Ph.D., *Professor of Chemistry*
LOUIS KAHLENBERG, Ph.D., *Professor of Chemistry*
FRANCIS CRAIG KRAUSKOPF, Ph.D., *Professor of Chemistry*
JAMES HENRI WALTON, Ph.D., *Professor of Chemistry*
NORRIS FOLGER HALL, Ph.D., *Associate Professor of Chemistry*
SAMUEL MARION MCELVAIN, Ph.D., *Associate Professor of Chemistry*
HENRY AUGUST SCHUETTE, Ph.D., *Associate Professor of Chemistry*
HOWARD NEWTON CALDERWOOD, Ph.D., *Assistant Professor of Chemistry*
VILLIERS WILSON MELOCHE, Ph.D., *Assistant Professor of Chemistry*
CLARENCE HARVEY SORUM, Ph.D., *Assistant Professor of Chemistry*
JOHN WARREN WILLIAMS, Ph.D., *Assistant Professor of Chemistry*
MATTHEW LESLIE HOLT, Ph.D., *Instructor in Chemistry*
LOREN CURTIS HURD, Ph.D., *Instructor in Chemistry*
MICHAEL WILLIAM KLEIN, Ph.D., *Instructor in Chemistry*
ROBERT JOHN MCCUBBIN, Ph.D., *Instructor in Chemistry*
WILLIAM EARL ROSEVEARE, Ph.D., *Instructor in Chemistry*

MAJOR. In addition to a thesis, at least 30 credits, including course 1, 6 credits in course 11 (including the lectures throughout the year), courses 120 and 130, and 2 credits in each of courses 121 and 131.

For teaching major see School of Education.

Chemistry 1a and Chemistry 1b are consecutive courses in general chemistry and are desirable courses for students majoring in other sciences or for those desiring a general cultural knowledge of chemistry. These two courses satisfy the requirements of 10 credits in science for the B.A. degree. The work in Chemistry 1a is devoted to theoretical chemistry and descriptive chemistry of the non-metals, and that of Chemistry 1b to the general chemistry of the metals and qualitative analysis. Students who have had good courses in chemistry in high school are placed in sections in which the work is more advanced. The equivalent of either of these courses may be taken in the summer session and Chemistry 1a is also offered in the second semester.

1a. GENERAL CHEMISTRY. I; 5 cr. Lab. fee and deposit, $17.50, Lecture 9 WF, 10 TT, or 11 TT; 6 hrs. lab., 2 hrs quiz. (Repeated second semester; lecture 2:30 TT.) Mr. Walton, Mr. Krauskopf, Mr. Sorum, Mr. McCubbin, and staff.

1b. GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. II; 5 cr. Continuation of Chemistry 1a, which is prerequisite. Lab. fee and deposit, $17.50. Mr. Walton, et al.

2a. GENERAL CHEMISTRY. I; 4 cr. For freshmen in engineering only. Lab. fee and deposit, $15.00. Lecture 11 MW; 4 hrs. lab., 2 hrs. quiz. (Repeated second semester; lecture, 2:30 TT.) Mr. Kahlenberg, Mr. Calderwood, and staff.

2b. GENERAL CHEMISTRY AND QUALITATIVE ANALYSIS. II; 4 cr. Continuation of Chemistry 2a, which is prerequisite. Lab. fee and deposit, $15.00. Mr. Kahlenberg, Mr. Calderwood, and staff.

10. Mathematical Chemistry. I; 3 cr. Prerequisites: Algebra, trigonometry, and Chemistry 1 or 2. Students who desire to specialize in chemistry should take Chemistry 10 or Mathematics 5. 9 MWF. Mr. Daniels.

11. Quantitative Analysis. Yr; 3-5 cr. Prerequisite: General chemistry, including qualitative analysis. The first semester of this course is repeated in the second semester. Lab. fee and deposit, 3 or 4 cr., $20.00; 5 cr., $25.00. Lecture 9 TT; 6-9 hrs. lab. Mr. Hall, Mr. Hurd, and staff.

12. Quantitative Analysis. I; 3 cr. For agricultural students only. Prerequisite: General chemistry, including qualitative analysis. Lab. fee and deposit $20.00. Lecture 1:30 Tu; 5 hrs. lab. Mr. Meloche and staff.

14. Quantitative Analysis. I; 5 cr. For engineering students only. Prerequisite: General chemistry, including qualitative analysis. Lab. fee and deposit $25.00. Lecture 9 TT; 7 hrs. lab. Mr. Meloche and staff.

15. Quantitative Analysis. II; 2 cr. For pharmacy students only. Lab. fee and deposit $15.00. Lecture 1:30 Tu; 5 hrs. lab. Mr. Meloche and staff.

20. Organic Chemistry. I, II; 2 cr. Prerequisite: Chemistry 1 or 2. An introductory course for students who do not have the time required for Chemistry 120, or who do not require so extensive a course. Courses 20 and 21 should be taken concurrently. Lecture 8 MWF. Mr. McElvain, Mr. Klein, and staff.

21. Organic Chemistry. I, II; 2 cr. Prerequisite: Credit or concurrent registration in Chemistry 20. Lab. fee and deposit $20.00. Lab. 6 hrs. Mr. McElvain, Mr. Klein, and staff.

30. Physical Chemistry. II; 3 cr. For chemical engineering students. Lab. fee and deposit $15.00. Lecture 11 TT; lab. Mr. Williams, Mr. Roseveare, and staff.

100. Senior Thesis. Yr; 2-3 cr. Lab. fee and deposit, 2 cr. $15.00. Staff.

106. Advanced Analytical Practice. Yr; 2-5 cr. A continuation of Chemistry 11. Lab. fee and deposit, 1 cr. $10.00; $5.00 per additional credit. Mr. Hall, Mr. Meloche.

107. History of Chemistry. I; 2 cr. Prerequisite: Chemistry 11, 120, or concurrent registration. Lecture 9 MW. Mr. Kahlenberg.

108. Advanced Qualitative Analysis. II; 2-5 cr. Prerequisite: Chemistry 1. Lab. fee and deposit, $15.00; $5.00 per additional credit. Mr. Krauskopf.

113. Water Analysis. II; 1 cr. Prerequisite: Chemistry 11 or consent of instructor. Lab. fee and deposit, $7.50. Lecture and lab. 8-12 S. Eight-week course Mr. Schuette.

116. Industrial Organic Analysis. I, II; *cr. Prerequisites: Chemistry 11 and one semester of organic chemistry. Lab. fee and deposit, 1 cr. $10.00; $5.00 per additional credit. Mr. Schuette.

117. Inorganic Preparations. I, II; 2-5 cr. Prerequisite: Chemistry 1b or 2b. Lab. fee and deposit, 1 cr. $10.00; $5.00 per additional credit. Mr. Hurd.

118. Iron and Steel Analysis. I, II; 2-5 cr. Prerequisite: Chemistry 11 or 14. Lab. fee and deposit, 1 cr. $10.00; $5.00 per additional credit. Mr. Hurd.

119. Organic Analysis. I; 3 cr. Prerequisites: Chemistry 11 and one semester of organic chemistry. Lab. fee and deposit, $20.00. Lecture 8 MW; lab. 1:30-4:30 MW. Mr. Schuette.

120. Organic Chemistry. Yr; 2 cr. Prerequisite: Chemistry 1 or 2. Courses 120 and 121 should be taken concurrently. Lecture 8 TT; quiz. Mr. Fischer and staff.

121. Organic Chemistry. Yr; 1-3 cr. Prerequisite: Credit or concurrent registration in Chemistry 120. Lab. fee and deposit, 1 cr. $15.00; $5.00 per additional credit. Lab. 3 to 8 hrs. Mr. Fischer and staff.

123. Characterization of Organic Compounds. I; 3 cr. Prerequisites: Chemistry 120 and 121. A study of homologous reactions, separation, and identification of organic compounds. Designed as an aid to research involving organic compounds. Lab. fee and deposit, $15.00. Conference 1:30 T; lab. 1:30-5:30 TT. Mr. McElvain.

124. Advanced Survey of Organic Chemistry. Yr; 2 cr. Prerequisite: Chemistry 120. Lecture 10 TT. Mr. Adkins.

125. Advanced Organic Preparations. Yr; *cr. Prerequisite: Chemistry 121. Lab. fee and deposit, 1 cr. $10.00; $5.00 per additional credit. Mr. Fischer, Mr. Adkins, Mr. McElvain, Mr. Klein.

126. Chemistry of Coal-Tar Dyes. I; 2 cr. Prerequisite: Chemistry 120. Given when demand warrants. Lecture 4:30 MW. Mr. Fischer.

130. Physical Chemistry. Yr; 2 cr. Prerequisites: Chemistry 1 and 11, and Physics 1 or 31. A course in calculus is desirable. Courses 130 and 131 should be taken concurrently. Lecture 11 MWF. Mr. Mathews, Mr. Daniels, Mr. Roseveare, and staff.

131. Physical Chemistry. Yr; 1-3 cr. Prerequisite: Credit or concurrent registration in Chemistry 130. Lab. fee and deposit, 1 cr. $15.00; $2.50 per additional credit. Lab. 3 to 8 hrs. Mr. Mathews, Mr. Daniels, Mr. Roseveare, and staff.

132. Thermal Chemistry. I; 2 cr. Prerequisites: Chemistry 130 and 131. Offered 1931-32 and in alternate years. Lecture 9 TT. Mr. Mathews.

133. Photo-Chemistry. I; 2 cr. Prerequisites: Chemistry 130 and 131. Offered 1932-33 and in alternate years. Lecture 9 TT. Mr. Mathews.

134. Electro-Chemistry. II; 2 cr. Prerequisites: Chemistry 130 and 131. Offered 1931-32 and in alternate years. 9 TT. Mr. Roseveare.

135. Chemistry of Solutions. II; 2 cr. Prerequisite: Chemistry 130. Lecture 9 MW. Mr. Kahlenberg.

136. Relation of Physical Chemistry to Other Sciences. II; 2 cr. Prerequisite: Chemistry 130. Given when demand warrants. Mr. Kahlenberg.

142. Atomic Structure. II; 2 cr. Prerequisite: Chemistry 130. Offered 1931-32 and in alternate years. 8 TT. Mr. Daniels.

143. Molecular Structure. II; 2 cr. Prerequisite: Chemistry 130. Offered 1930-31 and in alternate years. Mr. Roseveare.

146. Chemistry of Foods and Their Adulterations. II; 2 cr Prerequisites: Chemistry 11a and Chemistry 20. Lecture 8 MWF. Mr. Schuette.

147. Chemistry of Foods and Their Adulterations. II; 1-3 cr. Prerequisite: Credit or concurrent registration in Chemistry 146. Lab. fee and deposit, 1 cr. $10.00; $5.00 per additional credit. Lab. 3 to 9 hrs. Mr. Schuette.

148. Introduction to Physical and Colloid Chemistry. I; 3-5 cr. Particularly for students in the biological sciences. Lab. fee and deposit, 1 cr. $15.00; 2 cr. $17.50. Prerequisite: Chemistry 20 or 120. Lecture 8 MWF. Mr. Williams and staff.

149. Colloid Chemistry. Yr; 2 cr. Prerequisites: Chemistry 130 and 131. Lecture 11 MW. Mr. Williams.

151. Advanced Inorganic Chemistry. Yr; 2 cr. Offered 1930-31 and in alternate years. Lecture 11 TT. Mr. Hall.

155. Advanced Quantitative Analysis. Yr; 2 cr. Offered 1931-32 and in alternate years. Lecture 11 TT. Mr. Hall.

161. The Phase Rule. I; 1 cr. Offered 1931-32 and in alternate years. Prerequisite: Chemistry 130. Mr. Sorum.

162. Chemical Dynamics. I; 1 cr. Offered 1932-33 and in alternate years. Mr. Sorum.

200. Research in Organic Chemistry. Yr; *cr. Mr. Fischer, Mr. Adkins, Mr. McElvain, Mr. Klein.

201. Research in General Chemistry. Yr; *cr. Mr. Kahlenberg. Mr. Walton, Mr. Krauskopf, Mr. Calderwood, Mr. Sorum.

202. Research in Physical Chemistry. Yr; *cr. Mr. Mathews, Mr. Daniels, Mr. Roseveare.

203. Research in Foods and Sanitation. Yr; *cr. Mr. Schuette.

205. Research in Colloid Chemistry. Yr; *cr. Mr. Williams.

206. Research in Inorganic Chemistry. Yr; *cr. Mr. Hall, Mr. Meloche, Mr. Hurd.

209. Lives of Great Chemists. II; 2 cr. Offered when demand warrants. Mr. Kahlenberg.

224. Advanced Organic Chemistry. 2 cr. Prerequisite: Chemistry 120. A cycle of four semesters which students may enter any semester. 7 p. m. TT. Mr. Fischer.

238. Chemical Seminary. Yr; 1 cr. 4:30 W. Mr. Kahlenberg, Mr. Calderwood.

239. Seminary in Physical Chemistry. Yr; 1 cr. Prerequisite: Chemistry 130. 7:15 p. m. M. Mr. Mathews, Mr. Daniels, Mr. Roseveare.

244. Thermodynamics. II; 2 cr. Prerequisites: Chemistry 130 and calculus. Offered 1932-33 and in alternate years. 8 TT. Mr. Daniels.

247. Seminary in Organic Chemistry. Yr; 1 cr. 10 W. Mr. Fischer, Mr. Adkins, Mr. McElvain, Mr. Klein.

250. Seminary in Colloid Chemistry. Yr; 1 cr. Prerequisite: Consent of instructor. 4:30 F. Mr. Williams.

252. Seminary in Inorganic Chemistry. Yr; 1 cr. Mr. Hall, Mr. Meloche, Mr. Hurd.

254. Seminary in Foods and Sanitation. Yr; 1 cr. Mr. Schuette.

263. Seminary in General Chemistry. Yr; 1 cr. Mr. Walton, Mr. Krauskopf, Mr. Sorum.

TEACHERS' COURSE

The Teaching of Chemistry. See School of Education.

CLASSICS

Arthur Gordon Laird, Ph.D., *Professor of Greek, Chairman*
Walter Raymond Agard, B.Litt., *Professor of Greek* (on leave II)
Harold Bennett, Ph.D., *Professor of Classics*
Grant Showerman, Ph.D., *Professor of Classics* (on leave I)
Alban Dewes Winspear, M.A., *Associate Professor of Classics*
John P. Heironimus, Ph.D., *Assistant Professor of Classics.*
John Jacob Schlicher, Ph.D., *Assistant Professor of Latin*

Major. In Greek, 28 credits, exclusive of Greek 1; in Latin, 28 credits exclusive of Latin 1-4 but including ten credits in courses of the 100 group. Seniors who, in the judgment of the department, have shown the ability to profit thereby, may elect to write a thesis in lieu of four credits of advanced reading.

For teaching major see School of Education.

GREEK

1. Elementary Greek. Yr; 4 cr. Study of forms and syntax, with translation and easy prose composition. Selections from Xenophon's *Anabasis.* 1:30 MTTF. Mr. Laird.

7. Xenophon and Prose Composition. Yr; 3 cr. Prerequisite: Greek 1. Mr. Agard.

10. Homer and Plato. Yr; 3 cr. *Iliad Apology, Crito.* Prerequisite: Greek 7, or a grade of B in Greek 1. 11 MWF. Mr. Laird.

20. Greek Drama and Lyric Poetry. Yr; 3 cr. During the first semester selections from the lyric poets and Aristophanes will be read. Euripides' *Medea* and Sophocles' *Antigone* will be read in the second semester. Prerequisite: Greek 10. 9 MWF. Mr. Agard, Mr. Bennett.

100. Senior Thesis. Yr; 2 cr.

106. Herodotus and Thucydides. Yr; 3 cr. A study of the sources for Greek fifth-century history by means of reading, essays, and lectures. Prerequisite: Greek 20 or concurrent registration. 1:30 MWF. Mr. Winspear.

108. PLATO. Yr; 3 cr. Prerequisite: Greek 20 or concurrent registration. Not offered 1931-32. Mr. Winspear.

109. ARISTOTLE. Yr; 3 cr. The *Nicomachean Ethics* and selected passages from the *Politics* and *Metaphysics*. Prerequisite: Greek 108 or consent of the instructor. Not offered 1931-32. Mr. Winspear.

110. ADVANCED GREEK COMPOSITION. Yr; 1 cr. Prerequisite: Greek 20. Mr. Laird.

111. GREEK DRAMA. Yr; 3 cr. Two plays each of Aeschylus, Sophocles, Euripides, and Aristophanes, with lectures and directed readings in the history of the Greek drama. Prerequisite: Greek 20. Not offered 1931-32. 9 MWF. Mr. Winspear.

112. CLASSICAL LIFE AND LETTERS. Yr; 1-3 cr. A general survey of ancient civilization; the life of the Greeks and Romans as seen in their literature and monuments. First semester, Greece; second semester, Rome. The course deals with the most famous Greek and Roman sites, is illustrated, and has a travel and archaeological interest. Prerequisite: Full sophomore standing. Not offered 1931-32. Mr. Showerman.

122. CLASSICAL ART AND ARCHAEOLOGY. II; 3 cr. A general survey of the architecture, sculpture, and painting of Greece and Rome, with travel background. The history of the various arts is continued up to the Renaissance, and in the case of architecture up to the present time. Prerequisite: Full sophomore standing. Mr. Showerman.

180. DIRECTED READING FOR SENIORS. A limited number of credits can be arranged for work done on the tutorial or honors system by seniors whose previous records have been satisfactory. Students who wish to arrange any part of their work in this way should consult the appropriate instructor and the chairman of the department before the end of the junior year.

215. PINDAR. I; 3 cr. Prerequisite: Graduate standing. Mr. Agard.

230. GREEK SEMINARY. Yr; 2 cr. The subject varies from year to year. In 1931-32 it will be Demosthenes. Prerequisite: Graduate standing. 10-12 S. Mr. Laird.

LATIN

1. ELEMENTARY LATIN. I, II; 5 cr. The elements of the language, including forms and syntax, with simple translation into Latin and English, equivalent to a full year of high-school work, and preparatory to reading Caesar in the second semester. First semester (three sections): 8, 10, 2:30 M—F. Second semester: 8 M—F.

2. CAESAR. I, II; 5 cr. The equivalent of the second year of high-school Latin. The reading of selections from the seven books of the *Gallic War*. Composition once a week. Prerequisite: Latin 1 or one year of high-school Latin. First semester: 9 M—F. Second semester (three sections); 8, 10, 2:30 M—F.

3. CICERO. I, II; 4 or 5 cr. Four of the shorter orations, or an equivalent amount selected from the orations and letters. Composition one day a week for those who take the course for five credits. Prerequisite: Latin 2 or two years of high-school Latin. First semester: 10 M—F. Second semester: 9 M—F.

4. VIRGIL. I, II; 4 or 5 cr. The parts read are taken from the first six books of the *Aeneid*. As in Latin 3, one day a week is given to composition for those who take the course for five credits. Prerequisite: Latin 3 or three years of high-school Latin. First semester: 3:30 M—F. Second semester: 10 M—F.

5. SALLUST. II; 4 cr. This course follows immediately upon Latin 4, and at the same hour. The reading consists of the *Jugurthine War*, with composition once a week. Prerequisite: Latin 4 or four years of high-school Latin. 3:30 MTTF. Mr. Heironimus.

6. TERENCE, CICERO, LIVY. Yr; 4 cr. In the first semester a play of Terence, and Cicero's *De Senectute* or selected Letters; in the second semester, selections from Livy. A systematic course in composition continues, once a week, throughout the year. Prerequisite: Latin 4 or four years of high-school Latin. Two sections: 8 MTTF, Mr. Bennett; 11 MTTF, Mr. Schlicher.

7. HORACE AND POETRY SURVEY. Yr; 3 or 4 cr. In the first semester, the Odes; in the second, select Satires and Epistles, and a general survey of Latin poetry. The fourth hour will be devoted to Latin composition. Students with a grade of A or B in composition may substitute all of Latin 7 for Latin 101. Prerequisite: Latin 6. 2:30 MWTF. Mr. Winspear.

10. CLASSICAL MYTHOLOGY. I; 1 or 2 cr. For one credit, text book and illustrated lectures. For two credits, the same with the addition of outside reading in English. A knowledge of Latin is not required. Prerequisite: Full sophomore standing. Offered 1931-32 and in alternate years. 9 TT. Mr. Agard.

100. SENIOR THESIS. Yr; 2 cr.

101. ADVANCED LATIN COMPOSITION. I; 2 cr. Written and oral translation into Latin of connected passages based on Latin authors, with special attention to sentence construction and idiom. Prerequisites: Latin 6 (with composition) and 7. 9 TT. Mr. Schlicher.

102. ADVANCED LATIN COMPOSITION. I, II; 2 cr. More advanced exercises of the same kind as in 101, leading to free composition and a comparative study of Latin prose style. Prerequisite: Latin 101, or composition work in Latin 7. 10 TT. Mr. Schlicher.

105. PLINY AND MARTIAL. II; 3 cr. Selected letters of Pliny and epigrams of Martial are read, with special attention to the various phases of Roman life reflected in them. Prerequisite: Latin 7. 11 MWF. Mr. Heironimus.

106. ROMAN ELEGIAC POETS. II; 3 cr. Selections from Tibullus, Propertius, and Ovid. Lectures and assigned reading on the Augustan age. Prerequisite: Latin 7. Not offered 1931-32. Mr. Bennett.

107. See Latin 101-102.

108. CICERO'S LETTERS. I; 3 cr. The life, times, and works of Cicero, with readings from the letters. Prerequisite: Latin 7. 10 MWF. Mr. Bennett.

109. ROMAN DRAMA. II; 3 cr. Selected comedies of Plautus and Terence. Lectures and assigned reading on the history of classical drama and its influence. Prerequisite: Latin 7. 9 MWF. Mr. Bennett.

110. Lucretius. II; 3 cr. As much as possible of the *De Rerum Natura,* with background of the history of philosophy in Greece and Rome. Prerequisite. Latin 7. Not offered 1931-32. Mr. Showerman.

111. Virgil. Yr; 2 cr. A review of the works of Virgil, with special attention to the literary art of the *Aeneid.* Prerequisite: Senior standing. 3:30-5:30 Tu. Mr. Bennett.

112. Classical Life and Letters. (See Greek 112.)

115. Roman Biography. I; 3 cr. Suetonius, lives of Caesar and Augustus, the *Agricola* of Tacitus, and several biographies of Nepos and the *Historia Augusta* are read, either in class or privately. Attention is given to ancient biography as a type, and to the use made of it in other fields. Prerequisite: Latin 7. 11 MWF. Mr. Heironimus.

118. Roman Satire. I; 3 cr. Selected satires of Horace, Persius, and Juvenal. Study of satire as a literary *genre.* Lectures and assigned reading on the social conditions at Rome in the time of the Empire. Prerequisite: Latin 7. Not offered 1931-32. Mr. Bennett.

119. Tacitus. II; 3 cr. Either the principate of Tiberius or the reign of Nero is studied by lectures, recitations, and reports. The ethical and literary ideals of Tacitus and his treatment of social, political, and economic movements will be considered. Prerequisite: Latin 7. Not offered 1931-32. Mr. Winspear.

120. Historians of the Republic. II; 3 cr. Selections from Livy, Sallust, and Caesar's *Civil War.* Study of Roman senatorial government and its overthrow. Prerequisite: Latin 7. 10 MWF. Mr. Schlicher.

122 Classical Art and Archaeology. (See Greek 122.)

130. Medieval Latin. Yr; 2 cr. Mr. Heironimus.

180. Directed Reading for Seniors. (See Greek 180.)

207. Latin Prose for Graduates. Yr; 1 cr. Mr. Winspear.

213. Cicero. I; 3 cr. Several of the longer orations and selections from the rhetorical and philosophical works, designed to give a comprehensive view of Cicero's literary activity. Not offered 1931-32. Mr. Schlicher.

225. Latin Sounds and Forms. Yr; 2 cr. Lectures on the history of Latin sounds and forms and their relation to those of other languages, supplemented by reports and class discussion. Offered 1931-32 and in alternate years. 10 TT. Mr. Laird.

230. Literature of the Late Empire. I; 3 cr. A survey of the two literatures, Pagan and Christian, from the early second century to the fall of Rome. Special studies of Minucius Felix and Apuleius. Not offered 1931-32. Mr. Showerman.

231. Latin Literature. I; 3 cr. A general survey, combined with the reading of selected works or illustrative passages from the various authors, and a consideration of their antecedents and relationships. Subject for 1931-32, the Early Empire; for 1932-33, the Republic. 2:30-4 MW. Mr. Schlicher.

233. LATIN SEMINARY. Yr; 2 cr. The work varies from year to year, according to the author or subject taken up. All seminaries, however, deal with the principles of textual criticism, as well as with literary, rhetorical, and historical interpretation. In 1931-32 the subject will be Tacitus and the historical problems of the Early Empire, under direction of Mr. Winspear. In 1932-33 the author will be Horace, with Mr. Bennett in charge. 3:30-5:30 Th.

TEACHERS' COURSE

THE TEACHING OF LATIN. See School of Education.

COMPARATIVE LITERATURE

PHILO MELVIN BUCK, JR., M.A., *Professor of Comparative Literature, Chairman*
WALTER RAYMOND AGARD, B.Litt., *Professor of Greek* (on leave II)
ROBERT ELKIN NEIL DODGE, M.A., *Professor of English*
ALEXANDER RUDOLPH HOHLFELD, Ph.D., *Professor of German*
BAYARD QUINCY MORGAN, Ph.D., *Professor of German*
JAMES FRANCIS AUGUSTINE PYRE, Ph.D., *Professor of English*
GRANT SHOWERMAN, Ph.D., *Professor of Classics* (on leave I)
CASIMIR DOUGLASS ZDANOWICZ, Ph.D., *Professor of French*
PAUL MILTON FULCHER, Ph.D., *Associate Professor of English*
RICARDO BECKWITH QUINTANA, Ph.D., *Associate Professor of English*
JOSEPH LOUIS RUSSO, Ph.D., *Associate Professor of Italian*
HYMAN CHONON BERKOWITZ, Ph.D., *Assistant Professor of Spanish*
ROBERT BELL MICHELL, Ph.D., *Assistant Professor of French*
JULIA GRACE WALES, Ph.D., *Assistant Professor of English*

Courses in comparative literature fall into two general classes: those in which the readings are mainly in English translation, and those in which an easy reading knowledge of one or more foreign literatures is required. Undergraduates majoring in the department must be able to do a portion of this work in at least one language other than English. There is also provision for graduate work in comparative literature, as outlined in the bulletins of the Graduate School. None of the courses in this department is open to freshmen.

MAJOR. The major in Comparative Literature is planned for those students who may be interested in the critical appreciation of literature or who may have literary ambitions; it will be found to be elastic enough to suit individual needs. The minimum requirements of the major are 46 credits, including the following:

(a) 16 credits in courses in the Department of Comparative Literature, including Course 9 and four or more credits from courses numbered over 100, not including 112.

(b) 14 credits in literature (not language or composition) courses in at least two other departments, one of which may be English. Not less than 9 of these credits shall be taken in one foreign literature, ancient, Romance, or German. Courses in the language departments below the following numbers are not accepted as part of the major: Latin 6, Greek 7 or 10, English 34, French 21, German 20, Spanish 21, Italian 20.

(c) 12 credits in related courses in at least two of the following departments: art history, philosophy, history.

(d) 4 credits of thesis.

An elementary course in psychology is usually recommended.

It is further required that the completed work show a degree of continuity; that is to say, the elections will necessarily be in the same or related periods of literary history, or will include the same or similar literary types. The exact grouping of courses for a major will be determined individually for each student.

In any of the possible coordinations of his work the Department of Comparative Literature asks the student so to plan his studies that in his senior year he can do a piece of original work in which the result of this survey of a period or related periods will be manifest. The student, if he has the ability, can register for such original work in addition to the thesis, for which purpose the proseminary (180) is designed.

9. TRADITION IN LITERATURE, IN TRANSLATION. Yr; 3 cr. Homer to the 19th century. 9 MW or 9 TT and one additional hour. Mr. Buck and staff.

10. CLASSICAL MYTHOLOGY. I; 1 or 2 cr. For one credit, text book and illustrated lectures. For two credits, the same with the addition of outside reading in English. A knowledge of Latin is not required. 9 TT. Mr. Agard.

48. THE OLD TESTAMENT IN ENGLISH. I; 3 cr. 10 MWF. Miss Wallerstein.

50. FRENCH MASTERPIECES IN TRANSLATION. Yr; 2 cr. No language prerequisite. 10 TT. Mr. Michell.

53. ITALIAN MASTERPIECES IN TRANSLATION. Yr; 2 cr. Lectures, class discussions, assigned reading. The first semester is devoted to Dante, Petrarch, and Boccaccio; the second semester begins with the Renaissance authors and ends with Pirandello. No language prerequisite. 10 TT. Mr. Russo.

55. SPANISH AND PORTUGUESE MASTERPIECES IN TRANSLATION. Yr; 2 cr. A review of the significant traits of Hispanic literatures, and of their relationship to other literatures, from the origins up to the present time; illustrated with selected representative masterpieces. Lectures, class discussions, and supplementary readings. No language prerequisite. 9 TT. Mr. Berkowitz.

67. CONTEMPORARY DRAMA. Yr; 2 cr. Offered 1931-32 and in alternate years. In translation. 11 TT. Mr. Pyre.

68. CONTEMPORARY NOVEL. Yr; 2 cr. The English, Continental, and American novel, 1875-1930, in translation. Offered 1930-31 and in alternate years. Mr. Fulcher.

72. PHILOSOPHY OF LITERATURE. II; 3 cr. Offered 1930-31. Mr. Lyons.

73. IBSEN'S SOCIAL DRAMAS. II; 2 cr. 1:30 TT.

74. IBSEN'S BRAND AND PEER GYNT. I; 2 cr. Lectures and readings in English, with a general survey of Norse literature, ancient and modern. 1:30 TT.

75. GERMAN CLASSICS IN TRANSLATION. Yr; 2 cr. A study of selected masterpieces of German literature, taken up entirely in English. Lectures, assigned reading, discussions, and topics. The first semester begins with the *Nibelungenlied* and ends with Schiller; the second semester begins with Goethe and comes down to modern times. Not offered 1931-32. Mr. Hohlfeld.

100. SENIOR THESIS. Yr; 2 cr.

102. RENAISSANCE EPIC. II; 2 cr. The epic form after Virgil; Ariosto, Tasso (in translation); Spenser, Milton. Offered 1930-31 and in alternate years. Mr. Dodge.

103. RENAISSANCE THOUGHT. II; 3 cr. 10 MWF. Mr. Quintana.

112. CLASSICAL LIFE AND LETTERS. Yr; 1-3 cr. A general survey of ancient civilization; the life of the Greeks and Romans as seen in their literature and monuments. First semester, Greece; second semester, Rome. The course deals with the most famous Greek and Roman sites, is illustrated, and has a travel and archaeological interest. Not offered 1931-32. Mr. Showerman.

141. PRINCIPLES AND PRACTICE OF TRANSLATION. II; 1 or 2 cr. For students with advanced training in French, German, Italian, or Spanish. Lectures on the principles of translation; detailed criticism of various types of translated material; original exercises in translation. The second credit is earned by a topic. Offered 1931-32 and in alternate years. Mr. Morgan.

165. LITERARY CRITICISM. Yr; 3 cr. The search for a critical theory. One foreign language required, except for English majors. 10 MWF. Mr. Buck.

170. LITERARY TYPE: TRAGEDY. Yr; 2 cr. A critical study. At least one foreign language required. Offered 1930-31 and in alternate years. Mr. Buck.

171. LITERARY TYPE: COMEDY. Yr; 2 cr. A critical study. At least one foreign language required. Offered 1931-32 and in alternate years. 2:30 TT. Mr. Buck.

176. THE ROMANTIC MOVEMENT IN FRANCE, GERMANY, AND ENGLAND. Yr; 2 cr. From Rousseau to Goethe and Chateaubriand. Ability to read German and French necessary. Mr. Buck.

177. RENAISSANCE SATIRE. I; 3 cr 10 MWF. Mr. Quintana.

180. PROSEMINARY. Yr; *cr. Individual studies made by students under the direction of the instructor. Thesis students and others wishing to do original work will register for this course. Mr. Buck.

201. SEMINARY IN LITERARY CRITICISM. Yr; 1-2 cr. Mr. Buck.

250. THE RENAISSANCE IN ROMANCE COUNTRIES. Yr; 2 cr. A study of the development of the Renaissance spirit and its main manifestations, especially in France. Offered 1931-32 and in alternate years. Mr. Zdanowicz.

COMPARATIVE PHILOLOGY

(INDO-EUROPEAN)

ARTHUR GORDON LAIRD, Ph.D., *Professor of Greek, Chairman*
ALFRED SENN, Ph.D., *Professor of Germanic and Indo-European Philology*

101. INTRODUCTION TO COMPARATIVE INDO-EUROPEAN LINGUISTICS. I; 3 cr. Offered in 1931-32. Mr. Senn.

108. OLD NØRSE. See Scandinavian 108.

140. ELEMENTARY SANSKRIT. II; 2 cr. Offered in 1931-32. Mr. Senn.

141. ADVANCED SANSKRIT. I; 2 cr. Offered in 1932-33. Mr. Senn.

154. GOTHIC. I; 2 cr. Offered in 1931-32. Mr. Senn.

158. OLD SAXON. See German 156.

170. INTRODUCTION TO SLAVONIC PHILOLOGY: OLD CHURCH SLAVONIC. II; 2 cr. Offered in 1931-32 or 1932-33. Mr. Senn.

172. INTRODUCTION TO SLAVONIC PHILOLOGY: LITHUANIAN. II; 2 cr. Offered in 1931-32 or 1932-33. Mr. Senn.

185. INTRODUCTION TO PHONETICS. See English 185.

225. LATIN SOUNDS AND FORMS. Yr; 2 cr. Offered in 1931-32. Mr. Laird.

250. SEMINARY IN COMPARATIVE INDO-EUROPEAN LINGUISTICS. Yr; 2 cr. Offered in 1932-33. Mr. Senn.

DRAWING

Courses 1-9 are offered by the Department of Drawing and Descriptive Geometry in the College of Engineering; the others are offered by the Department of Art Education in the School of Education. Starred courses (⋆) do not count toward the 120 credits required for graduation from the general courses in the College of Letters and Science, but the others are open to qualified freshmen, sophomores, and upperclassmen without restriction.

1. ELEMENTS OF MECHANICAL DRAWING. I, II; 3 cr. Lab. fee $1.00. 10-12 MWF. Mr. Doke.

2. ELEMENTS OF MECHANICAL DRAWING. II; 3 cr. Prerequisite: Drawing 1. Lab. fee $1.00. Mr. Orth and staff.

3. DESCRIPTIVE GEOMETRY. I, II; 3 cr. Prerequisite: Drawing 2. Mr. Millar and staff.

⋆7. FREEHAND LETTERING. I, II; 1 or 2 cr. Construction and composition of Classic Roman capitals, lower-case letters, English Gothic, black letter, and modern script. Special emphasis given to the choice of lettering styles in advertising design. 8-10 TT. Lab. fee $0.75. Mr. Doke.

*8. Advanced Freehand Lettering. I, II; 2 cr. Prerequisite: Drawing 7. 10-12 TT. Lab. fee $0.75. Mr. Doke.

*9. Advanced Freehand Lettering. II; 2 cr. Prerequisite: Drawing 8. 10-12 TT. Lab. fee $0.75. Mr. Doke.

*18. Architectural Drawing. II; 3 cr. Prerequisite: Drawing 1. 10-12 MWF.

50. Freehand Drawing and Perspective. I; 3 cr. Open to freshmen. Lab. fee $1.25. 3 sections. Mr. Zozzora.

51. Freehand Drawing; Light and Shade. II; 3 cr. Prerequisite: Drawing 50. Lab. fee $3.00. 3 sections. Mr. Zozzora.

55. Advanced Drawing and Anatomy. Yr; 2 cr. Prerequisite: Drawing 51 or consent of instructor. Lab. fee $4.00 per semester. 1:30-3:30 TT. Mr. Stebbins.

*57. Mechanical Perspective and Architectural Rendering. II; 3 cr. Prerequisites: Drawing 1, 18, and 50. Lab. fee $2.00. 8-10 MWF. Not offered in 1931-32. Miss Wilson.

ECONOMICS

Harry Jerome, Ph.D., *Professor of Economics, Chairman*
Robert Ray Aurner, Ph.D., *Professor of Business Administration*
John Rogers Commons, M.A., LL.D., *Professor of Economics*
Fayette Herbert Elwell, B.A., C.P.A., *Professor of Accounting*
Martin Gustav Glaeser, Ph.D., *Professor of Economics*
Benjamin Horace Hibbard, Ph.D., *Professor of Agricultural Economics*
William Henry Kiekhofer, Ph.D., *Professor of Economics*
Don Divance Lescohier, Ph.D., *Professor of Economics*
Chester Lloyd Jones, Ph.D., *Professor of Economics and Political Science*
Preston Essex McNall, M.S., *Professor of Agricultural Economics*
Selig Perlman, Ph.D., *Professor of Economics*
William Amasa Scott, Ph.D., LL.D., *Professor of Economics*
Henry Roscoe Trumbower, Ph.D., *Professor of Economics*
George Simon Wehrwein, Ph.D., *Professor of Agricultural Economics*
Arthur Altmeyer, M.A., *Lecturer in Economics*
Edwin Emil Witte, Ph.D., *Lecturer in Economics*
Donald Ross Fellows, M.A., *Associate Professor of Business Administration*
Philip Gorder Fox, M.A., *Associate Professor of Business Administration*
Henry Harrison Bakken, M.A., *Assistant Professor of Agricultural Economics*
John Currie Gibson, B.A., C.P.A., *Assistant Professor of Accounting*
Harold Martin Groves, Ph.D., *Assistant Professor of Economics*
William Peter Mortenson, M.S., *Assistant Professor of Agricultural Economics*
Walter Albert Morton, Ph.D., *Assistant Professor of Economics*
Margaret Pryor, Ph.D., *Assistant Professor of Economics*
Paul Raushenbush, M.A., *Assistant Professor of Economics*
Russell Baugh, M.A., *Instructor in Economics*
Elizabeth Brandeis, Ph.D., *Instructor in Economics*
Alma Louise Bridgman, M.A., *Instructor in Economics, Executive Secretary*
Marvin Arnold Schaars, M.A., *Instructor in Agricultural Economics*

MAJOR

For a major in economics thirty credits are required, including the following: eight credits in Economics 1a and 1b, three credits in Economics 30, and nineteen additional credits. These additional credits shall be selected in conference with the major adviser. Four of the nineteen additional credits may be met by the writing of a thesis if a student is invited to do so by the faculty in charge of the field of concentration. Students must earn as many grade-points as credits in the work of the major in order to be eligible for graduation. Courses marked by a star (★) may not be included in this minimum and, if elected, must be taken in addition to the 120 credits required for graduation from the College of Letters and Science.

Theses may be written in any one of the fields designated in Fields II-X as described on subsequent pages. A minimum of two related courses in the field selected is required as a background for the thesis. Students not writing theses must, however, offer three courses in any one of the fields of specialization, II-X, into which the work of the department is divided.

APPLICATION OF ECONOMICS TO SPECIAL COURSES

SCHOOL OF COMMERCE

PROFESSOR CHESTER LLOYD JONES, DIRECTOR

The importance of professionally trained men and women for business was recognized in the establishment of the Course in Commerce in 1900. The Course has now become the School of Commerce with work extending over three years, the junior, senior, and first graduate years, and consisting in large part of courses offered by the Department of Economics. See pages 81-85 of this announcement for details.

LAND ECONOMICS

PROFESSOR G. S. WEHRWEIN IN CHARGE

Realizing that the proper utilization and development of our land resources—agricultural, forest, mineral, and urban—constitute one of the most important problems of society, courses in land economics dealing with the public and private aspects of land are offered. Land economics in its public aspects is concerned with public policies in utilization of lands, as, for instance, the public domain, reforestation, taxation, zoning, and city and regional planning. In its private aspects it deals with the problems of the land owner, such as the selection of land for agricultural, commercial, or residential purposes, the principles underlying the economic use of land, tenure relationships, and the appraisal of land values.

These courses are of interest to every property owner and especially to those who are looking forward to entering the real estate profession, city planning, or research and teaching in land economics.

AGRICULTURAL ECONOMICS

PROFESSOR B. H. HIBBARD IN CHARGE

The courses in agricultural economics are intended to give the student a knowledge of the economic principles which relate to the production and marketing of farm products, and to the economic and social condition of the agricultural classes. The department prepares its students for positions as teachers, and research and extension workers in the field of agricultural economics, for positions in agricultural marketing, and for practical work as farm managers.

INDUSTRIAL RELATIONS

PROFESSOR J. R. COMMONS IN CHARGE

The Department of Economics has arranged a sequence of courses preparing students for positions as employment managers with business concerns, or for positions as factory inspectors, statisticians, special investigators with state and federal departments concerned with industrial labor, and employment agents in state and federal employment service.

A list of suggested courses follows:

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Econ. 1a—General economics	4	Econ. 1b—General economics	4
Psych. 1—Introductory psychology	3	Psych. 1—Introductory psychology (rep.)	3

JUNIOR AND SENIOR YEARS

Econ. 30—Economic statistics	3	Phys. Ed. 16—First aid to the injured	1
Econ. 122—Labor problems	3	Econ. 30—Economic statistics (repeated)	3
Econ. 119—Evolution of industry	3	Econ. 132—Statistical analysis of business cycles	3
Econ. 123—Labor legislation	3	Econ. 145—American labor history	3
Pol. Sci. 112—Introduction to constitutional law	3	Econ. 148—Foreign labor movements	3
Econ. 131—Wages and prices	3	Sociol. 140—Principles of sociology	3
Sociol. 141—Poverty and relief	3	Econ. 172—Immigration and race problems	3
Econ. 174—The labor market	3	Econ. 144—Capitalism and socialism	3

SPECIAL COURSES

Educ. 183—Job and occupational analysis	2	Educ. 226—Test construction	2
Speech 25—Correction of speech disorders	3	Econ. 171—Labor management	3
Educ. 225—Test construction	2	Econ. 121—Property insurance	2
Shop work	1-3	Shop work	1-3
Econ. 100—Thesis in labor legislation, labor problems, labor history, labor market, industrial management	2	Econ. 100—Thesis	2

COURSES OF INSTRUCTION IN ECONOMICS

I. ECONOMIC THEORY

1a. General Economics. I, II; 4 cr. Fundamental economic principles and the problems of modern economic society; production; the modern exchange system; value and price. Prerequisite: Full sophomore standing. I, lecture 9 TT; II, lecture 9 MW; two discussion periods. Mr. Kiekhofer and staff.

1b. General Economics. I, II; 4 cr. Distribution, consumption, public finance, economic policies and politics. Prerequisite: Economics 1a. I, lecture 9 MW; II, lecture 9 TT; two discussion periods. Mr. Kiekhofer and staff

18. Economics of Social Control. I, II; 3 cr. Basic present institutions, property, contract, competition. Government rules limiting economic activity in the United States. Control of combinations. Need for and objectives of control; extent, types, possibilities, limits. Prerequisite: Economics 1b. 2:30 MWF. Mr. Raushenbush.

19. Economic History of the United States. II; 3 cr. Development of agriculture, industry, commerce, and transportation from colonial times to the present. Growth in size and complexity of economic and business units. Problems raised by economic evolution in the United States. Prerequisite: Economics 1a. 11 MWF. Miss Brandeis.

100. Senior Thesis. Yr; 2 cr.

143. Public Value. Yr; 2 cr. Legal and economic history. Development of custom and common law relative to economic changes. Prerequisite: Senior standing. 4-6 Tu. Mr. Commons.

173. The Economics of Consumption. I, II; 3 cr. Position of the consumer in modern economic life with special reference to selling methods, tariffs, credits, and relative costs of basic services, such as medicine. Prerequisite: Economics 1b. Lect. 11 F; discussion 9 or 10 TT. Miss Pryor.

180. Independent Reading in Economics. Yr; *cr. Reading may be in any field for which student has an adequate background. Prerequisite: Candidacy for degree with honors in major. Students electing this work will be expected to pass comprehensive examinations in the field of their major. Staff.

201. Development of Economics. Yr; 2 cr. Development of the classical political economy; its critics; attempts at reconstruction; recent trends. Prerequisites: Economics 1b and graduate standing. 10 TT. Mr. Scott.

210. Value and Valuation. Yr; 2 cr. Presuppositions of economic theory. Theories of reasonable value. Applications to present-day problems. 4-6 Th. Mr. Commons.

218. Economic Institutions. I; 3 cr. Historical development of the institutional organization of economic activity with special reference to such fundamental economic institutions as property, contract, associations, etc. Discussion of specific works which illustrate the institutional method of treating economic problems. 1:30-3:30 W. Mr. Glaeser.

250. Seminary in Economic Theory. Yr; 2 cr. Critical discussion of debatable topics in the field of economic theory, together with the presentation of seminary papers and reports on controversial questions that have been investigated. Prerequisites: Graduate standing and consent of instructor. 10-12 W. Mr. Kiekhofer.

280. Reading and Research in Economics. Yr; *cr. Both during the regular session and in the inter-session periods individual work suited to the needs of graduate students may be arranged. Prerequisite: Advanced graduate standing. Staff.

II. AGRICULTURAL ECONOMICS

107. Farm Cost Accounting. II; 2 cr. Methods of distributing the various items of cost among the farm enterprises, and principles determining the use of the different methods. Prerequisite: Agr. Econ. 8 or equivalent. 1:30-3:30 TT. Mr. McNall.

126. International Trade in Agricultural Products. II; 3 cr. Review of theories of international trade and foreign exchange; domestic and world markets and prices; world survey of population and agricultural production; history of foreign trade in agricultural products; analysis by commodities and countries; barriers to foreign trade. Prerequisite: Economics 1a. 1:30 MWF. Mr. Schaars.

127. Cooperative Marketing. II; 3 cr. The economic and legal basis of farmers' marketing organizations, their historical and current development, organization set-up, scope and purpose, special problems, possibilities and limitations, progress and future. Prerequisite: A course in marketing or concurrent registration. 11 TTS. Mr. Schaars.

128. Marketing Agricultural Products. II; 3 cr. Development of agricultural marketing; services, agencies, methods; emphasis on principles and practices; price factors; commodity exchanges; current marketing problems; governmental relations; weaknesses and suggestions for improvement. Prerequisite: Economics 1a. 10 MWF. Mr. Schaars.

152. Farmer Movements. I; 2 cr. History of the efforts of farmers to better their economic condition by forming general, even nation-wide, organizations designed to control markets and influence legislation in the interest of fairness. Prerequisite: Agr. Econ. 1. 8 TT. Mr. Hibbard.

155. Prices of Agricultural Products. II; 3 cr. An analysis and interpretation of the factors affecting the prices of agricultural products, together with a study of price movements—trends, cycles, and minor fluctuations. The inter-relationship of price, demand and supply of various types of agricultural products. Attention given to the interpretation of materials contained in public and private outlook reports. Prerequisite: Economics 1a. 9 MWF. Mr. Mortenson.

228. Seminary: History of Markets and Marketing. II; 2 cr. A study of the historical development of markets from early continental fairs; the practices and customs of auctions, clearing houses, exchanges, and boards of trade; the emergence of modern sales agencies operating under cooperative, private, and governmental initiative. 3:30-5:30 M. Mr. Bakken, Mr. Schaars.

229. Advanced Agricultural Economics. Yr; 2 cr. The field of agricultural economics with respect to its origin and the main issues around which the thinking of those interested in agriculture revolves. Prerequisite: Agr. Econ. 1 or Econ. 1a. 8 MW. Mr. Hibbard.

III. ACCOUNTING

*8a. Elements of Accounting. I, II; 3 cr. Principles of double-entry bookkeeping. The use of the fundamental books, the treatment and proper statement of sole proprietorship, partnership, and corporation accounts. Prerequisite: Junior standing. Lab. fee $1.50. Lecture 11 Th., Lab.—I, 10-12 Lecture 11 Tu. Lab. I, 1:30-3:30 MWF; II, 10-12 MWF. Mr. Elwell, MWF; II, 1:30-3:30 MWF. Mr. Gibson, Miss Hensey, Miss Lins.

*In the College of Letters and Science this course may be counted as part of the credits required for graduation only by students in the School of Commerce and in the Chemistry-Commerce Course.

*8b. ELEMENTS OF ACCOUNTING. I, II; 3 cr. The theories of general financial accounting with problems illustrating their application. Particular attention to the preparation and analysis of profit and loss statements and balance sheets. Prerequisites: Economics 8a and Mathematics 7. Lab. fee $2.50. Lecture 11 Tu., Lab.—I, 1:30-3:30 MWF; II, 10-12 MWF. Mr. Elwell, Mr. Gibson, Miss Hensey, Miss Lins.

181. ADVANCED ACCOUNTING PROBLEMS. I; 2 cr. Theories underlying advanced financial accounting with problems illustrating their application. The more important subjects are amortization, capitalization, accounts of receivers and bankrupts, statements of affairs and deficiency accounts, real estate development accounts, executors' accounts. Prerequisite: Minimum grade of C in Economics 8b. Lab. fee $1.50. 8-10 MW. Mr. Gibson.

182. COST ACCOUNTING. I; 2 cr. Theories underlying cost accounting, its relationship to financial books, accounting for materials, labor and indirect expense, and treatment of selling and administrative expenses. Prerequisite: Minimum grade of B in Economics 8b. Lab. fee $1.50. 8-10 TT. Mr. Gibson.

183. ACCOUNTS OF CONSOLIDATIONS AND INCOME TAXES. II; 2 cr. Accounts of amalgamations, mergers, and holding companies; consolidated balance sheets and profit and loss statements. Study of, and problems based upon, the federal and Wisconsin income tax laws. Prerequisite: Minimum grade of B in Economics 8b. Lab. fee $1.50. 8-10 TT. Mr. Gibson.

184. AUDITING. II; 2 cr. The general principles of auditing, including a detailed study of different kinds of audits, the preparation of reports, and the consideration of special points in different classes of audits. Prerequisite: Minimum grade of C in Economics 8b. Lab. fee $1.50. 8-10 MW. Mr. Elwell.

185. ANALYSIS OF FINANCIAL REPORTS. I; 1 cr. Analysis of corporation reports with particular reference to statement structure, meaning of accounts, and ratios. Prerequisite: Minimum grade of C in Economics 8 b. 9 F. Mr. Elwell.

186. ACCOUNTING SYSTEMS. II; 2 cr. The general principles of constructive accounting and the designing of systems for various industries. Each student must design a complete and practicable accounting system for some industry. Prerequisites: Upper-group status and minimum grade of B in Economics 8b. 10 TT. Mr. Elwell.

187. GOVERNMENTAL ACCOUNTING. I; 2 cr. The requirements of accounting systems of governmental units, federal, state, county, and municipal. Special study of budgets and reports. Prerequisites: Upper-group status and minimum grade of B in Economics 8b. 10 TT. Mr. Elwell.

208. ACCOUNTING PRINCIPLES. I; 2 cr. An introductory course in accounting, open only to graduate students not enrolled in the School of Commerce. More attention is given to the theory of the subject than to the technique. Prerequisite: Graduate standing. 2:30-4:30 M. Mr. Elwell.

283. SEMINARY IN ACCOUNTING. Yr; 2 or 4 cr. Graduate students conduct and report upon researches on various accounting problems; in addition, lectures and assignments on advanced accounting topics. Prerequisites: Graduate standing and consent of instructor. 3:30-5:30 Tu. Staff.

THE TEACHING OF BOOKKEEPING. See School of Education.

IV. BUSINESS ADMINISTRATION

**6. Business Letters and Reports. I, II; 2 cr. The creation of effective letters, with emphasis upon basic plan, underlying tone, the essential qualities of each important type. Divisions treated: requests, inquiries, orders, acknowledgments, adjustments, credits, collections, applications, sales, mailing lists, business reports, and methods of bibliographical citation. Prerequisite: Junior standing. 11 Th; one hour discussion. Mr. Aurner.

*11. Business Management. II; 2 cr. Problems of business administration; basic functions of design, production, personnel, finance, purchasing, selling, and record keeping, and their place in the business structure. Prerequisites: Economics 1b and junior standing.

*13. Marketing Methods. I, II; 3 cr. Activities of producer, wholesaler, and retailer in the distribution of goods to the consumer, including presentation of how efficient advertising and selling reduce distribution costs. Prerequisite: Economics 1b and junior standing. Lecture 9 M; two discussion periods. Mr. Fellows.

*14. Sales Administration. II; 2 cr. Purpose, development, and scope of personal selling from the standpoint of the sales executive; discussion of methods of selecting, training, and paying salesmen. Prerequisite: Economics 13. 2:30 TT. Mr. Fellows.

*15. Principles of Advertising. I; 2 cr. An introductory course in advertising including an explanation of its importance in the distribution of consumers' goods. Description of the various methods of advertising and the development of copy and layout of the complete advertisement are presented. Prerequisite: Junior standing. 8 W and one discussion period Mr. Fellows, Mr. Aurner.

*16. Advertising Campaigns. I; 2 cr. Principles and practice of advertising procedure with special reference to national campaigns. Among topics considered are mail order, farm paper, trade paper, direct mail, magazine, and newspaper campaigns. Prerequisites: Economics 13 and 15. 10 TT. Mr. Aurner.

*17. Merchandising. II; 2 cr. Principles and problems in retail store management with attention to consumer habits; store organization; buying, planning, and control; expense distribution; sales promotion; personnel administration; store operation. Prerequisite: Economics 13. 10 TT. Mr. Aurner.

213. Seminary in the Marketing of Manufactured Goods. Yr; 2 cr. Studies in advertising, sales promotion, and merchandising activities necessary in the distribution of manufactured commodities from producer to consumer. Constructive marketing problems are worked out from current business procedure. 11-12:30 M. Mr. Fellows, Mr. Aurner.

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*In the College of Letters and Science this course may be counted as part of the credits required for graduation only by students in the School of Commerce and in the Chemistry-Commerce Course. Economics 11 also counts in the Chemistry Course and Economics 15 and 16 also count in the School of Journalism.

**May be taken for credit only by students in a technical course or by students who have taken English 2a or 2b.

V. FINANCE

5. Money and Banking. I, II; 3 cr. Monetary and banking principles and practice; price theories; banking systems and their operation. Prerequisite: Economics 1a. Lecture 9 F; two discussion periods. Mr. Scott and staff.

103. Public Expenditures and Tax Distribution. II; 2 cr. The tax system as a whole; shifting and incidence; public expenditures; the public debt. Prerequisite: Economics 124 or consent of instructor. Lab. fee $1.00. 11 TT. Mr. Groves.

110. Pro-Seminary in Investments. II; 2 cr. Criteria of an ideal investment; types of securities; investment institutions; valuation of securities; investment theory and practice. Prerequisites: Economics 137, senior standing, upper-group status, and consent of instructor. 2:30-4:30 M. Mr. Kiekhofer.

124. Taxation. I, II; 3 cr. Specific taxes which make up the national, state, and local systems with special emphasis upon the practical social problems involved. Prerequisite: Economics 1b. Lab. fee $1.00. Lecture 8 F; two discussion periods. Mr. Groves.

137. Business Finance. I, II; 3 cr. The internal administration of the financial function dealing with sources of capital, the handling of incoming and outgoing funds, and the most efficient utilization of capital. Prerequisite: Economics 1b. Lecture 10 F; two discussion periods. Mr. Ganong.

151. Latin America. I, II; 3 cr. The economic development and foreign trade of Latin America, with emphasis on the stabler republics. The outlook for increased foreign trade and investment. Prerequisite: Economics 1b. 11 MWF. Mr. Jones.

154. Risk and Profit. I; 3 cr. Nature and sources of risk and profit in business and industry; the price system, its functions and defects; financial aspects of business cycles; business forecasting; the stock market. Prerequisite: Minimum grade of C in Economics 1b. Not offered in 1931-32. Mr. Morton.

191. The Credit System. II; 3 cr. Financial institutions from the private and public viewpoints. Commercial banking, functions and operations, profits, loans, discounts, investments, and deposits. Federal Reserve operations, discount and open market policies. Prerequisite: Minimum grade of C in Economics 5. 10 MWF. Mr. Morton.

205. Seminary in Private Finance. Yr; 2 cr. Monetary and banking theory. 2:30-4:10 F. Mr. Scott.

224. Seminary in Public Finance. Yr; 2 cr. A study of tax systems with emphasis on the Wisconsin tax system. Prerequisites: Graduate standing and Economics 124 or consent of instructor. 4-6 Th. Mr. Groves.

237. Seminary in Business Finance. Yr; 2 cr.

251. Seminary in Latin-American Development and Trade. Yr; 2 cr. Subject for 1930-31: The development of the production of staple products in Latin America. Foreign investments in government securities and local enterprises. Changes in the course of foreign trade. 4-6 Tu. Mr. Jones.

253. SEMINARY IN INTERNATIONAL FINANCE. I; 2 cr. Foreign trade, foreign exchange, foreign investments including international debts and reparations, tariff policies. Prerequisites: Training in both private and public finance, and consent of instructor. Open on same terms to senior majors with upper-group status. 3:30-5:30 M. Mr. Kiekhofer.

VI. INSURANCE

121. PROPERTY INSURANCE. II; 2 cr. Major principles and practices of the various forms of miscellaneous insurance: Fire, marine, automobile, corporate bonding, fidelity, windstorm, burglary and theft, public liability, hail, plate glass, steam boiler, etc. Prerequisite: Economics 1a. 1:30-3:30 M.

138. LIFE INSURANCE. I; 2 cr. A study of the economic function of life insurance through an analysis of its principles and practices. Mortality tables, premium rates, policy forms, investments, accounting practices, legal principles, organization forms, state supervision. Prerequisite: Economics 1a. 1:30-3:30 M.

VII. LABOR

119. EVOLUTION OF INDUSTRY. I; 3 cr. The development of industrial society viewed in its technological, marketing, and institutional aspects. A consideration of the several theories of industrial evolution. Prerequisite: Economics 1b. 9 MW; one discussion period. Mr. Perlman.

122. LABOR PROBLEMS. I; 3 cr. A comparison of the typical psychologies of the business group and of the labor groups. Types of unionism. The structure and policies of unionism. "Welfare capitalism" and unionism. Prerequisite: Economics 1b. Lab. fee $1.00. 10 MW; one discussion period. Mr. Perlman.

123. LABOR LEGISLATION. I; 3 cr. State activity in relation to labor; legal status of trade unions; operation of protective legislation dealing with hours, child labor, workmen's compensation. Special reference to Wisconsin statutes and their administration. Prerequisite: Economics 1 b. 8 MWF. Miss Brandeis, Mr. Altmeyer, Mr. Witte.

131. WAGE AND PRICES. I; 3 cr. Analysis of wage and cost of living trends, and forces governing wage movements in this and foreign countries. Various theories of wages tested with actual wage facts. Prerequisites: Senior standing, Economics 1b and 30. 9 TT and third hour. Mr. Lescohier.

144. CAPITALISM AND SOCIALISM. II; 3 cr. Capitalism, unionism, socialism, and individualistic anti-capitalism, each viewed under the headings of conditions, theories, and movements. Prerequisite: Economics 1b. 9 MW; one discussion period. Mr. Perlman.

145. AMERICAN LABOR HISTORY. II; 3 cr. The American labor movement viewed as an historical experiment with the temper of the American community, the country's political and legal institutions, and the psychology of labor itself. Prerequisite: Economics 1b. 10 MW; one discussion period. Mr. Perlman.

171. Personnel Management. II; 3 cr. Study of the handling of labor relations by industrial and commercial concerns. Industrial government, employment management, scientific management, wage policies, accident prevention, industrial hygiene, profit-sharing, pensions, and similar topics. Prerequisite: Economics 1b or a major in industrial education or engineering. 11 TT; one discussion period. Mr. Lescohier.

172. Immigration and Race Problems. II; 3 cr. Migrations of mankind in modern times. Particular attention to American immigration. Governmental immigration policies; economic, social, and political immigration problems, race problems. Prerequisites: Econ. 1a or American history, and junior standing. 9 TT; one discussion period. Mr. Lescohier.

174. The Labor Market. I; 3 cr. An analysis of problems centering around employment and unemployment, business cycles, seasons, technological evolution, basic changes in industrial structure, relief and prevention of unemployment, unemployment insurance. Prerequisite: Economics 1b. 11 TT; one discussion period. Mr. Lescohier.

265. Seminary in Labor and Industry. Yr; 2 cr. A research seminary in the problems of organized labor in industry. 4-6 W. Mr. Commons, Mr. Perlman, Miss Brandeis.

274. Seminary in Business Cycles and Unemployment. Yr; 2 cr. 4-6 W. Mr. Lescohier.

VIII. LAND ECONOMICS

117. Outlines of Land Economics. I; 3 cr. Principles underlying land classification, characteristics, relation to population, tenure, settlement, and policies. Prerequisite: Economics 1b. 9 MWF. Mr. Wehrwein.

179. Urban Land Economics. II; 3 cr. Urbanization, the location and structure of cities, the principles underlying urban land utilization, home ownership and tenancy, housing and credit, zoning, city and regional planning. Prerequisite: Economics 1 b. 11 MWF. Mr. Wehrwein.

221. Land Income. II; 3 cr. The characteristics of land as a factor of production, spatial element of land, economics of land utilization, theories of rent, principles of land valuation and taxation. 1:30 MWF. Mr. Wehrwein.

226. Seminary in Land Problems. Yr; 2 cr. Land tenure of the principal countries studied in a two year cycle: tenure in new countries including the United States (1931-32); land tenure in countries with a feudal heritage (1932-33); 7:30 M. Mr. Hibbard, Mr. Wehrwein.

IX. PUBLIC UTILITIES

135. Railway Transportation. I; 2-3 cr. History and development of railway transportation and regulation in the United States. Prerequisite: Economics 1b. 9 MWF. Mr. Trumbower.

136. Transportion Problems. II; 3 cr. Survey and analysis of present day problems relating to railway transportation, development of waterways, and air transport. Prerequisite: Economics 1 b. 11 MWF. Mr. Trumbower.

142. Public Utilities. I, II; 3 cr. The development of public utilities in the United States. Financial and corporate structure. Legal basis of public utility regulation. Development of regulatory agencies, franchises, administrative commissions, contractual arrangements. Valuation, depreciation, security issues and rates of return. Public ownership. Prerequisite: Economics 1b or consent of instructor. Lecture 8 M; two discussion periods. Mr. Glaeser.

168. Highway Transportation. I; 3 cr. Economic aspects of highway development, financing of highway construction, supervision of motor vehicle traffic, and regulation of highway common carriers. Prerequisite: Economics 1b. 2:30 MWF. Mr. Trumbower.

189. Railway Rates and Traffic. II; 2-3 cr. Freight rate structure, adjustment of rates by the Interstate Commerce Commission, traffic control and management. Prerequisite: Economics 1b. 9 MWF. Mr. Trumbower.

195. Public Utility Management. II; 3 cr. Survey of management problems of local utilities; accounting and statistical controls; economics of regulated monopoly price, cost analyses and differential rates; service and labor problems; standards of operating efficiency. Prerequisite: Economics 142. 1:30 M, 1:30-3:30 W. Mr. Glaeser.

266. Seminary in Public Utilities. Yr; 2 cr. Research investigations in the field of local public utilities and transportation. Prerequisite: Graduate standing or senior standing with consent of instructor. 3:30-5:30 W. Mr. Glaeser, Mr. Trumbower.

X. STATISTICS

30. Economic Statistics. I, II; 3 cr. Sources of statistical data, tabulation, charting, averages, dispersion, sampling, index numbers, trends, seasonal variation, economic cycles, correlation. Prerequisites: Economics 1a and major in economics. Lab. fee $1.50. I, lecture, 9 Th; II, lecture, 1:30 Th; 4 hours lab. and discussion. Mr. Jerome and staff.

31. Business Statistics. I, II; 3 cr. Elementary theory and technique of statistical methods, with application to typical problems of business organizations. Prerequisites: Economics 1a and registration in the School of Commerce. Lab. fee $1.50. Lecture 9 W; 4 hours lab. and discussion. Mr. Fox and staff.

130. Statistical Methods. I; 3 cr. The elementary principles and technique of the quantitative method in the analysis of social and economic phenomena: the collection, tabulation, charting, and numerical analysis of statistical data. Prerequisite: Graduate standing. Lab. fee $1.50. Lecture and discussion 1:30 F, 8 S; lab. 9-12 S. Mr. Jerome.

132. Statistical Analysis of Business Cycles. II; 3 cr. The quantitative aspects of business cycles and the statistical methods used in their analysis. Prerequisites: A course in statistics and upper-group status or graduate standing. Lab. fee $1.50. Lecture 1:30 WF; lab. 3:30-5:30 F. Mr. Jerome.

196. Advanced Statistical Technique. II; 3 cr. The technique of numerical and graphical analysis, with particular attention to curve fitting, sampling, index numbers, analysis of time series, and measures of relationship, including partial and multiple correlation. Prerequisite: A course in statistics. Lab. fee $1.50. Not offered 1931-32. Mr. Jerome.

230. Seminary in Statistical Research. Yr; 2 cr. Cooperative research in one or more economic problems, each member of the class concentrating on a selected phase of the common subject. Reports on current developments in statistical method. 7:15-9:15 Th. Mr. Jerome.

See also Mathematics 136, 137, and 238 for courses in the mathematics of statistics.

EDUCATION

C. J. Anderson, Ph.M., *Professor of Education, Chairman*
Wayland Johnson Chase, M.A., *Professor of Education*
Frank Leslie Clapp, Ph.D., *Professor of Education*
Michael Vincent O'Shea, B.L., *Professor of Education*
Matthew H. Willing, Ph.D., *Associate Professor of Education*
Clarence Edwin Ragsdale, Ph.D., *Assistant Professor of Education*

This is a department of the co-ordinate School of Education, but the following courses, including those in Educational Psychology on the next page, are open to students in Letters and Science; those numbered under 100 are open to sophomores.

31. Principles of Secondary Education. I, II; 3 cr. Historical development of American secondary schools, present magnitude, European comparisons, modern objectives, curriculum reorganization, professionalization of teachers. Should be elected as the first course in the Department of Education. Required of candidates for the University Teachers' Certificate. 9, 10, 11, and 1:30 MWF. Mr. Willing, Mr. Clapp.

101. History of Modern European Education. II; 2-3 cr. 8 MWF. Mr. Chase.

102. History of Ancient and Medieval Education. I; 2-3 cr. 8 MWF. Mr. Chase.

103. History of American Education. I, II; 2-3 cr. 10 MWF. Mr. Chase.

117. Philosophy of Education. II; 2 cr. The political philosophy that determines the character of national systems of education. The social philosophy which justifies different plans of school organization and various types of schools. The philosophy underlying the various methods of teaching and of organizing subject matter. 1:30 MW. Mr. Clapp.

202. Proseminary, Medieval Education. I; 2-3 cr. Open also to seniors. 3:30-5:30 Th. Offered 1931-32 and in alternate years. Mr. Chase.

203. Proseminary, History of American Education. II; 2-3 cr. Open also to seniors. 3:30-5:30 Th. Mr. Chase.

204. Proseminary, European School Systems. I; 2-3 cr. 3:30-5:30 Th. Offered 1932-33 and in alternate years. Mr. Chase.

EDUCATIONAL PSYCHOLOGY

11. MENTAL DEVELOPMENT AND EDUCATION. I, II; 2 or 3 cr. The development of mind in the normal individual from birth to maturity, with special emphasis on the adolescent period and on training for adjustment to American life. 9 MW and quiz. Mr. O'Shea.

41. EDUCATIONAL PSYCHOLOGY. II; 3 cr. An elementary survey of the field of psychology with emphasis upon everyday school problems. Importance of instincts in motivation; types of learning; methods of teaching according to learning types; attention, how to study; economy in learning; elementary concepts in educational statistics. Students should have some acquaintance with the field of elementary general psychology. Not open to students registered in the School of Education. 2:30 MWF. Mr. Ragsdale.

112. SOCIAL DEVELOPMENT AND EDUCATION. I, II; 2 or 3. The social traits and training of the individual with particular reference to the requirements for social efficiency in American life. 8 MWF. Mr. O'Shea.

121. PHYSICAL DEVELOPMENT. II; 2 cr. Physical development from birth to maturity, showing the bearing of the physical changes during childhood upon the principles of education. 1:30 MW. Mr. Ragsdale.

123. PSYCHOLOGY AND TRAINING OF THE PRE-SCHOOL CHILD. I, II; 2 cr. A study of the development and education of children from infancy to the fifth year. 2:30-4:30 Th. Mr. O'Shea.

ENGLISH

ROBERT ELKIN NEIL DODGE, M.A., *Professor of English, Chairman*
ARTHUR BEATTY, Ph.D., *Professor of English*
HENRY BURROWES LATHROP, B.A., *Professor of English*
WILLIAM ELLERY LEONARD, Ph.D., *Professor of English*
JAMES FRANCIS AUGUSTIN PYRE, Ph.D., *Professor of English*
FREDERICK WILLIAM ROE, Ph.D., Litt. D., *Professor of English*
WARNER TAYLOR, M.A., *Professor of English*
WILLIAM B. CAIRNS, Ph.D., *Associate Professor of American Literature*
PAUL MILTON FULCHER, Ph.D., *Associate Professor of English*
MILES LAWRENCE HANLEY, M.A., *Associate Professor of English* (on leave 1931-32)
RICARDO BECKWITH QUINTANA, Ph.D., *Associate Professor of English*
HARRY GLICKSMAN, LL.B., Ph.D., *Lecturer in English*
HARRY HAYDEN CLARK, M.A., *Assistant Professor of English* (on leave 1931-32)
CHARLES WRIGHT THOMAS, B.S., M.A., *Assistant Professor of English*
ETHEL THORNBURY, Ph.D., *Assistant Professor of English*
JULIA GRACE WALES, Ph.D., *Assistant Professor of English*
RUTH C. WALLERSTEIN, Ph.D., *Assistant Professor of English*
HELEN CONSTANCE WHITE, Ph.D., *Assistant Professor of English*

INSTRUCTORS

Russell Barker, M.A.
Phyllis Bartlett, B.Litt.
Catharine Beatley, M.A.
William M. Card, M.A.
Ira Thorne Clement Dissinger, M.A.
James Duff, M.A.
Maxwell M. Freeman, M.A.
H. Harry Giles, B.A.
Allan Gates Halline, M.A.
George C. Johnson, M.A.
John Jacob Lyons, M.A.
Ernest Marchand, M.A.
Ralph A. McCanse, M.A.
Katherine McMullen, M.A.
Margaret I. Pope, M.A.
Helen Ramsperger, M.A.
H. Melville Sayre, M.A.
Harold Stein, B.A.
Macklin Thomas, M.A.
David H. Webster, M.A.
Malcolm L. Wilder, Ph.D.
Charlotte Robertson Wood, M.A.
Zea Zinn, M.A.

Major. A minimum of 23 credits, in addition to whatever credits are required in English 1. A student may win entire exemption from this course by passing special tests at the outset of his freshman year, or he may be excused after one semester of it, if his grade for that semester is A. Whatever credits he takes in it, 3 or 6, are counted as part of his English major. In addition, a student must earn as prerequisite to the advanced courses of the major, 6 credits in English 30 or 4 credits in either 29 or 33. Advanced courses are arranged in three groups, corresponding to the three sets of comprehensive examinations held at the close of the senior year.

(1). Either 37 or 136 or 137; and either 31 or 57. The first comprehensive examination will cover Shakespeare and either Chaucer or Milton, whichever of these two the student elects.

(2) One, and only one, of the following group: 63, 161, and 162. The second comprehensive examination will cover either the period 1580-1700 or the eighteenth century, according to the student's election.

(3) One, and only one, of the following group: 34, 35, and 40. The third comprehensive examination will cover nineteenth-century literature, English and American.

The final requirement, included in the minimum of 23 credits, is a thesis or its equivalent. The thesis, written in the senior year, is required of all students whose grades in English courses taken at the University of Wisconsin average B. Students of a lower grade must substitute four credits in courses of the one-hundred group not listed above under (1) and (2). No senior transfer may write a thesis unless his record at the institution from which he transfers convinces the chairman of the department that he has the requisite capacity.

Students intending to choose English as their major study are urged to complete the introductory course (30, 33, or 29) not later than the close of the sophomore year. Of these three courses that specially designed for English majors is 30, but either of the others will be accepted. Prospective majors should have done better than average work in their preliminary courses in English and in foreign languages. Students entering with advanced standing are generally required to earn 20 credits in English in residence at the University of Wisconsin.

Honors. Students reading for honors in English will enter upon their work in the first semester of their junior year, under the direction of tutors. They will be expected to devote much of the following summer to assigned general reading and will continue the work through the senior year. Prerequisites: High standing in previous courses, consent of the chairman of the department and of the Dean. Every student will be assigned to a special tutor. For further information consult Professor Quintana.

Teaching Major and Minor. See School of Education.

RHETORIC AND COMPOSITION

A. ENGLISH COMPOSITION. Three hours a week; no credit. For students who have failed to pass the preliminary test.

1a. FRESHMAN ENGLISH. I, II; 3 cr. Required of freshmen in all colleges. Mr. Taylor and staff; engineers under Mr. Thomas and staff.

1b. FRESHMAN ENGLISH. I, II; 3 cr. Continuation of English 1a. Required of all freshmen excepting those who receive a grade of A in English 1a. On the completion of this course, a provisional pass mark is given; if subsequently a student is reported deficient or careless in English composition, he may be required to take additional work in that subject. Mr. Taylor and staff; engineers under Mr. Thomas and staff.

2. INTERMEDIATE COMPOSITION. I, II; 2 cr. Prerequisite: English 1b. 2a, description and narration; 2b, exposition. Ten or more sections at various hours. Mr. Wilder and staff.

3. INTERMEDIATE COMPOSITION. Yr; 2 cr. For freshmen exempted from English 1, who may wish a course in composition and may prefer not to enter English 2. Limited enrollment. 11 MW. Mr. Taylor.

5. ADVANCED COMPOSITION. Yr; 2 cr. Prerequisite: Consent of instructor. 10 TT. Miss White.

7. NARRATIVE COMPOSITION. Yr; 2 cr. Prerequisites: Junior standing and consent of instructor. 10 TT. Mr. Fulcher.

8. CRITICAL WRITING. Yr; 2 cr. Each member of the class takes up a particular author or topic as the center of his writing for the semester. Prerequisite: Consent of instructor. Not offered 1931-32. Miss Thornbury.

INTRODUCTORY LITERATURE COURSES

Students may fulfill the B.A. requirement of 4-6 credits in literature by taking any one of three courses hereinafter described—29, 30, or 33. Whichever of these courses is once entered upon must be continued for two semesters; that is, a student may not shift from one course to another. Only one of the three courses may be credited toward a degree. No advanced course in English literature is open to students who have not taken one of these introductory courses.

29. ENGLISH HISTORY, ENGLISH LITERATURE. Yr; 5 cr. The historical part of this course will present an analysis of the successive social experiences of the English people; against this background the development of English literature is considered, the emphasis falling upon the great literary movements and their outstanding representatives. Satisfies the B.A. requirements of six credits in history and four credits in English literature. Open to freshmen exempt from English 1 and to sophomores. Lectures 9 TT; quizzes 9 or 1:30 MWF. Limited to 150 students. Mr. Quintana, Mr. Saunders.

30. SURVEY OF ENGLISH LITERATURE. Yr; 3 cr. This course, the material in which is arranged in historical sequence, is designed for students who have a special interest in the study of literature, and is recommended to sophomores who contemplate making English their major subject. 8, 10, 11, or 2:30 MWF. (First semester's work repeated in second semester, and second semester's work given during first semester, 2:30 TTF.) Mr. Pyre and staff.

33. INTRODUCTION TO ENGLISH LITERATURE. Yr; 2 cr. This course, the material in which is not taken up in historical order, is primarily a course in the appreciation of literature. It is provided especially for sophomores who are candidates for the general B.A. degree. 9, 10, or 11 TT. (First semester's work repeated in second semester and second semester's work given during first semester, 1:30 TT.) Mr. Beatty and staff.

ENGLISH LANGUAGE AND LITERATURE

31. CHAUCER. I; 3 cr. 10 MWF. Mr. Beatty.

32. ENGLISH BIOGRAPHY. I; 3 cr. Not offered 1931-32. Mr. Glicksman.

34. THE ROMANTIC MOVEMENT. I; 3 cr. 9 or 10 MWF. Mr. Roe, Miss White.

35. THE VICTORIAN ERA. II; 3 cr. 9 or 10 MWF. Mr. Roe, Miss White.

37. SHAKESPEAREAN DRAMA. Yr; 3 cr. Open to juniors. A broad course for undergraduates. 11 MWF. Mr. Beatty.

39. THE ENGLISH NOVEL. Yr; 2 cr. Richardson to Meredith. Offered 1931-32 and in alternate years. 9 TT. Mr. Fulcher.

40. AMERICAN LITERATURE. Yr; 2 cr. A general survey. This course should be preceded or accompanied by English 30. 9 or 10 TT. (First semester's work repeated in second semester and second semester's work given during the first semester, 9 TT; Miss Pope.) Mr. Cairns.

48. THE OLD TESTAMENT IN ENGLISH. I; 3 cr. 10 MWF. Miss Wallerstein.

54. CARLYLE AND RUSKIN. I; 3 cr. 9 MWF. Mr. Roe.

55. EMERSON AND ARNOLD. II; 3 cr. 9 MWF. Mr. Roe.

57. MILTON. II; 3 cr. 10 MWF. Mr. Quintana.

63. NON-DRAMATIC LITERATURE 1580-1660. I; 3 cr. 2:30 MWF. Mr. Dodge.

67. CONTEMPORARY DRAMA. See Comparative Literature 67.

68. CONTEMPORARY NOVEL. See Comparative Literature 68.

72. PHILOSOPHY OF LITERATURE. See Comparative Literature 72.

100. SENIOR THESIS. Yr; 2 cr.

102. RENAISSANCE EPIC. See Comparative Literature 102.

103. RENAISSANCE THOUGHT. See Comparative Literature 103.

104. HARDY AND MEREDITH. II; 2 cr. 1:30 TT. Miss Thornbury.

108. OLD NORSE. See Scandinavian 108.

114. EMERSON. II; 2 cr. Not offered 1931-32. Mr. Clark.

118. PRE-SHAKESPEAREAN DRAMA. Yr; 3 cr. Not offered 1931-32. Mr. Fulcher.

120. ANGLO-SAXON. I; 3 cr. 9 MWF. Mr. Beatty.

121. MIDDLE ENGLISH. II; 3 cr. Not offered 1931-32. Mr. Hanley.

122. BEOWULF. II; 3 cr. 10 MWF. Mr. W. E. Leonard.

123. History of the English Language. I, II; 3 cr. Should be taken in the junior year by candidates for the teachers' certificate. 1:30 MWF. Mr. Twaddell.

125. Contemporaries and Immediate Successors of Chaucer. I; 3 cr. 10 MWF. Mr. W. E. Leonard.

129. Swift. I; 3 cr. Considerable attention is given to English thought in the seventeenth century as it bears upon Swift. 11 MWF. Mr. Quintana.

136. Elizabethan Drama Including Shakespeare. Yr; 3 cr. In this course practically all of the plays of Shakespeare are read, with representative plays by important contemporaries. 11 MWF. Mr. Pyre.

137. Shakespeare. Yr; 3 cr. In this course about half the plays of Shakespeare are read, four of them being studied in minute detail. Prerequisite: Senior standing. 11 MWF. Mr. Lathrop.

138. English Prose Style. Yr; 2 cr. Offered 1930-31 and in alternate years. 10 TT. Mr. Taylor.

141. Tennyson. I; 3 cr. 10 MWF. Mr. Thomas.

142. Versification. II; 2 cr. Offered 1930-31 and in alternate years. Mr. Pyre.

143. Familiar Essay. I; 2 cr. Offered 1931-32 and in alternate years. 10 TT. Mr. Taylor.

144. Wordsworth. II; 3 cr. 9 MWF. Mr. Beatty.

145. Browning. I; 2 cr. Not offered 1931-32. Mr. Beatty.

147. English Essayists. II; 2 cr. Offered 1931-32 and in alternate years. 10 TT. Mr. Taylor.

149. The American Short Story. I; 2 cr. 1:30 MW. Mr. Cairns.

150. The American Novel. II; 2 cr. 1:30 MW. Mr. Cairns.

152. Later Victorian Poetry. I; 3 cr. Not offered 1931-32. Miss Wallerstein.

156. The Early Seventeenth Century. II; 3 cr. Not offered 1931-32. Miss Wallerstein.

159. The Age of Pope. I; 3 cr. Not offered 1931-32. Miss Wallerstein.

160. The Sixteenth Century. I; 3 cr. Not offered 1931-32. Mr. Dodge.

161. Literature 1660-1745. I, II; 3 cr. 10 MWF. Mr. Lathrop.

162. Literature 1745-98. I; 3 cr. 11 TT; quiz. Miss Thornbury.

169. American Poetry of the Nineteenth Century. Yr; 2 cr. 11 TT. Mr. Cairns.

177. Renaissance Satire. See Comparative Literature 177.

180. Reading for Honors. 4 cr.

185. Introduction to Phonetics. II; 3 cr. 1:30 MWF. Mr. West.

200. Research in English. II; 2 cr. Mr. Beatty.

209. MILTON. II; 3 cr. 11 MWF. Mr. Dodge.

227. SEMINARY, HISTORY OF THE ENGLISH LANGUAGE. Yr; 2 cr. 7:30-9:30 M. Mr. W. E. Leonard.

232. INTRODUCTORY SEMINARY. Yr; 2 cr. Chaucer. 1:30-3:30 Th. Mr. W. E. Leonard.

233. INTRODUCTORY SEMINARY. Yr; 2 cr. 1:30-3:30 F. 1930-31, Shakespearean Criticism, Mr. Pyre; 1931-32, Shakespeare's Use of His Sources, Miss Wales.

234. INTRODUCTORY SEMINARY. Yr; 2 cr. English Comedy. 1:30-3:30 W. Mr. Pyre.

240. INTRODUCTORY SEMINARY. Yr; 2 cr. 1930-31, Problems in Anglo-American Literary Relations, 1783-1833; 1931-32, Poe and Whitman. 3:30-5:30 W. Mr. Cairns.

244. SEMINARY. Yr; 2 cr. 1:30-3:30 Tu. 1930-31, Some Movements in Thought in Seventeenth-Century Poetry, Miss White; 1931-32, Classical Influences in the Sixteenth Century, Mr. Lathrop.

TEACHERS' COURSES

THE TEACHING OF ENGLISH. See School of Education.

FINE ARTS

(See Art History, page 104)

FORESTRY AND FOREST PRODUCTS

ARTHUR KOEHLER, M.S., *Lecturer in Forest Products*
HARRY DONALD TIEMANN, M.E., M.F., *Lecturer in Forest Products*

These courses are given in cooperation with the United States Forest Products Laboratory, as described under that heading, to which students interested in the utilization of wood, chemistry of forest products, etc., are referred for further information. The three courses here listed may be elected by juniors and seniors in Letters and Science with the consent of the Dean.

1. GENERAL FORESTRY. I; 2 cr. A non-technical course on identification of native trees; the forest condition and the forest policy of the United States. 11 TT. Mr. Tiemann.

101. PROPERTIES OF WOOD. I; 2 cr. Physical, mechanical, and chemical properties of wood; structure of wood fibers; seasoning, gluing, finishing, and pulping characteristics; relation of defects and fungi to wood properties. Prerequisite: Forestry 1 or equivalent. Offered 1931-32 and in alternate years. 4:40 TT. Mr. Koehler, et al.

102. WOOD TECHNOLOGY. II; 2 cr. The structure and identification of commercial species of wood. 11 TT. Mr. Tiemann.

FRENCH AND ITALIAN

HUGH ALLISON SMITH, M.A., *Professor of French, Chairman*
FREDERICK DANIEL CHEYDLEUR, Ph.D., *Professor of French*
WILLIAM FREDERICK GIESE, M.A., *Professor of French, Emeritus*
EDWARD BUNKER SCHLATTER, Ph.D., *Professor of Romance Languages*
CASIMIR DOUGLASS ZDANOWICZ, Ph.D., *Professor of French*
LUCY MARIA GAY, B.L., *Associate Professor of French* (on leave 1931-32)
CHARLES FREDERICK GILLEN, Ph.D., *Associate Professor of French*
SAMUEL GREENE ARNOLD ROGERS, M.A., *Associate Professor of French*
JOSEPH LOUIS RUSSO, Ph.D., *Associate Professor of Italian*
ROBERT FOSTER BRADLEY, JR., M.A., *Assistant Professor of French*
JEANNE HAROUEL GREENLEAF, B.L., *Assistant Professor of French*
JULIAN EARLE HARRIS, Ph.D., *Assistant Professor of French*
ROBERT BELL MICHELL, Ph.D., *Assistant Professor of French*
DE VAUX DE LANCEY, M.A., *Lecturer in French*

INSTRUCTORS

CHARLES T. CADDOCK, JR., M.A.
CHARLES HUNT GREENLEAF, M.A.
ALDEN RICHARDSON HEFLER, M.A.
J. PROCTOR KNOTT, M.A.
ANDRÉ LÉVEQUE, Licencié en Droit
ESTHER MARHOFER, M.A.
GERMAINE MERCIER, M.A.
EDWARD ELGIN MILLIGAN, M.A.
JOSEPH ROSSI, M.A.
FRANCIS ROY, Licencié ès lettres
JOHN MICHAEL SULLIVAN, M.A.

The elementary courses in French and Italian have been planned to meet the needs of those who have begun the language in high school, as well as of those who take it up for the first time in college. One unit (year) of high-school work is assumed to be the equivalent of 4 credits, or one semester, of college work, but all entering students continuing their work in language are assigned to courses on the basis of placement tests given during Freshman Period (for transfers at end of first week of classes). These tests may permit a student to go into a more advanced course but will not give credit toward graduation.

See also page 55 for attainment tests. Lists of suggested readings in preparation for the proficiency test may be obtained from the department office.

French 13 and 15 and Italian 15 are second-year practice courses intended to supplement the training in French or Italian 10, which emphasize the acquiring of reading knowledge. They may be taken only in conjunction with some other course in the language, except by special permission. French 16, 124, and 127, and Italian 116 afford more advanced training in writing and speaking.

French 20 and 21 are both third-year courses. Only one may be taken for credit, as prescribed below under the announcements of these courses. French 20 is mainly a reading and translation course; French 21 includes translation, study of the literary aspect of the work read, and literary history. One of these two courses, or its equivalent, is prerequisite to advanced courses in French literature. Italian 20 is similarly designed to be introductory to other courses in Italian literature, although students receiving a grade of B, or above, in fourth-semester Italian should go directly into the advanced courses in literature.

Students are advised to consult the foreign-language requirements for the B.A. degree, page 64.

MAJOR. In French, 28 credits in advance of 1b, including thesis, thesis course, or substitute. In Italian, 24 credits in advance of 1b. Lower-group students are required to take 4-6 credits in literature courses numbered above 100 in lieu of writing a thesis.

The comprehensive examination for majors in French will consist of two parts: (1) literature and culture, (2) language. Part one will require a general knowledge of French literature and culture from the Renaissance to the present, according to the list of readings furnished by the department. Part two will require (a) a reasonable proficiency in pronouncing, understanding, and speaking French, (b) ability to comprehend classic and modern writers, including translation into idiomatic English; (c) ability to translate simple English into French. The examination will be written, except for (a) of part two, which will be oral.

These requirements are not designed to prevent a student from concentrating either on literature or on language, nor from more intensive study of a given period, provided a minimum test be met in each field.

By faculty requirement, students choosing a foreign-language major must present a second foreign language.

All who intend to specialize in French or Italian are urged to elect related courses in history, art, other languages and literature, and philosophy. Those who expect to continue work for advanced degrees should note that knowledge of another foreign language is required for the M. A., and that for satisfactory work in Romance philology some knowledge of Latin is indispensable. Both Latin and German, as well as another Romance language, are required for the Ph.D. and should be acquired as early as possible.

TEACHING MAJOR AND MINOR. See School of Education.

FRENCH HOUSE. *La Maison Française,* intended especially for intensive training in speaking French, is maintained under the auspices of the department. It is open to women students for room and board, and both men and women rooming outside may take their meals there. Women of French birth reside in the house to aid in conversation, and they, with regular instructors, preside at the tables, where French only is spoken. Prospective teachers of French, and all others desirous of acquiring practice in the spoken language, are urged to room or board at the French House. With approval of the departmental faculty, a part of the prescribed training in conversation, necessary for the teachers' certificate, may be done in this house. Requests for further information and application for rooms and board should be directed to the Chairman, Department of French and Italian, and sent well in advance, both for summer session and regular year. The house is also headquarters for the French Club.

ITALIAN TABLE. An Italian table is conducted several times a week at *La Maison Française.* Inquiries should be addressed to Professor Russo.

CLUBS. French and Italian clubs at the University afford students opportunities to hear talks about the country whose language they are studying, to participate in short plays and games, and to converse in the language in which they are interested. Modern and classical plays are presented in public from time to time.

FRENCH

LANGUAGE

1a. First-Semester French. I, II; 4 cr. For students who have had no French. 20 sections I; 6 sections II. Mr. Cheydleur and staff.

1b. Second-Semester French. I, II; 4 cr. Prerequisite: French 1a or one year of high-school French. Based on an examination, or their previous record of B or above, the better students are assigned to special sections. 6 sections I; 19 sections II. Mr. Cheydleur and staff.

3. Reading Course for Graduate Students. I, II; 0 cr. Mr. Gillen.

10a. Third-Semester French. I, II; 3 cr. Largely a reading course. Prerequisite: French 1b or two years of high-school French. Based on an examination, or a previous record of B or above, the better students are assigned to special sections. 20 sections I; 6 sections II. Mr. Bradley and staff.

10b. Fourth-Semester French. I, II; 3 cr. Largely a reading course. Prerequisite: French 10a or three years of high-school French. Based on an examination, or a previous record of B or above, the better students are assigned to special sections. 7 sections I; 18 sections II. Mr. Bradley and staff.

13. Rapid Reading. Yr; 1 cr. Emphasis on sight translation; contemporary prose. To be taken only with French 10a or 10b; not open to students with two years of college French (except by special permission). Does not count toward French teaching major or minor. 6 sections. Mr. Bradley and staff.

15. Elementary Composition and Conversation. Yr; 2 cr. Review of grammatical principles with oral and written exercises. Supplementary course to be taken with French 10a and 10b. Not open to students who have had the equivalent of two years of college French, except by special permission. 8 sections. Mr. Bradley and staff.

16. Intermediate Composition and Conversation. Yr; 2 cr. Prerequisite: Grade of at least C in 10b or in 15b. 8 sections. Miss Gay and staff.

18. France of Today. Yr; 2 cr. Reading and discussion of books, newspapers, and periodicals. Open only to students in journalism and commerce, except by special permission. Prerequisite: French 10b and sophomore standing. 8 TT. Mr. Harris.

20. Third-Year Reading. Yr; 3 cr. Mainly a reading and translation course. Prerequisite: French 10b or four years of high-school French. Not open to those whose grade in French 10b was B or above; such students take French 21. If the results of an examination warrant, students who have had their preparation elsewhere may be transferred to French 21. Mr. Cook, Miss Covert, Mr. Hefler, Mr. Knott, Mr. Milligan, Mr. Roy, Mr. Sullivan.

124. Composition and Conversation. Yr; 2 cr. Prerequisite: French 16 or grade of A or B in 10b and 15. Conducted in French. 3 sections. Miss Gay, Mlle Mercier, Mlle Verrier.

127. Advanced Composition and Conversation. Yr; 2 cr. Prerequisite: French 16 with grade of A, or French 124. Conducted in French. 10 TT. Mme Greenleaf.

141. History of the French Language. Yr; 1 cr. Lectures and assigned reading. Prerequisite: French 20 or 21. 2:30 W. Mr. Schlatter.

190. Phonetics. I, II; 2 cr. Theory of French sounds, with practice in pronunciation. Prerequisite: Three years of college French. 11 TT or 11 MW. Mme Greenleaf.

191. French Diction. II; 2 cr. Study of stress, quantity, rhythm, breathing, articulation, voice, intonation. Prerequisite: French 190 or consent of instructor. Mme Greenleaf.

227. Graduate Course in Composition. Yr; 1 cr. Open to students who have had French 127 or equivalent. Conducted in French. Mme Greenleaf.

240. Old French. Yr; 2 cr. An introductory course, phonology and grammar. Lectures and reading. Miss Gay.

244. Old Provençal. Yr; 2 cr. Offered 1930-31 and in alternate years. Miss Gay.

TEACHERS' COURSE

The Teaching of French. See School of Education.

LITERATURE

Six credits in French 20 or 21 are prerequisite to all other courses in French literature.

21. Elementary Survey. Yr; 3 cr. Prerequisite: Grade of B or above in French 10b. If the results of an examination show inadequate preparation on the part of students whose preparatory work has been taken elsewhere, they may be transferred to French 20. Translation, assigned reading, study of literary aspects of works read, and literary history. 8 sections, two of which are conducted in French. Mr. Bradley, Miss Gay, Mr. Gillen, Mr. Harris, Mr. de Lancey, Mr. Lévêque, Mr. Michell, Mr. Sullivan.

50. French Masterpieces in Translation. See Comparative Literature 50.

100. Thesis Course. Yr; 2 cr. Open only to seniors and graduates in groups not exceeding 10. Students must register with the chairman of the department for individual theses or thesis courses. 2 sections: 1. Rousseau—Mr. Rogers; 2. Letters and biography—Mr. Gillen.

122. French Literature of the Nineteenth Century. Yr; 3 cr. 10 MWF. Mr. Giese.

123. Modern French Drama. Yr; 3 cr. From the Romantic period to the present. 9 or 10 MWF. Mr. Smith.

125. Contemporary French Literature. Yr; 3 cr. This course should be preceded by some general course on a century or a genre. 1:30 MWF. Mr. Rogers.

126. EXPLICATION DE TEXTES. II; 2 cr. Reading of texts, prose and poetry, with a careful study of the contents, author, background, etc. Conducted in French. 9 TT. Mme Greenleaf.

131. GENERAL SURVEY OF FRENCH LITERATURE. Yr; 3 cr. 8 MWF. Mr. Cheydleur.

132. FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. Yr; 2 cr. Especially Voltaire, Diderot, Rousseau. 11 TT. Mr. Michell.

133. VICTOR HUGO. I; 2 cr. Not offered 1931-32. Mr. Michell.

134. BALZAC. I; 2 cr. Offered 1931-32 and in alternate years. Mr. Bradley.

136. FRENCH NOVEL FROM THE SEVENTEENTH CENTURY TO THE TWENTIETH. Yr; 3 cr. 11 MWF. Mr. Cheydleur.

137. MOLIÈRE. Yr; 2 cr. 9 TT. Mr. Zdanowicz.

139. FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. Yr; 3 cr. Conducted in French. 8 MWF. Mr. de Lancey.

145. FRENCH LITERATURE OF THE SIXTEENTH CENTURY. Yr; 2 cr. Offered 1930-31 and in alternate years. Mr. Zdanowicz.

150. FRENCH CIVILIZATION. Yr; 1-2 cr. The background of history, art, and institutions as an aid to the understanding of the principal movements of French literature. Lectures, readings, and reports. 8 TT. Mr. Gillen.

157. FRENCH LYRIC POETRY. Yr; 2 cr. 10 TT. Mr. Gillen.

200. INDIVIDUAL RESEARCH IN FRENCH. Yr; *cr. Superior graduate students, with special permission, may do individual research, under supervision, in some definite field. Staff, on consultation with chairman of department.

242. OLD FRENCH EPIC POETRY. Yr; 2 cr. The history of the *Chanson de Geste* traced, and several representative poems read during the year. Offered 1931-32 and in alternate years. Mr. Smith.

243. SEMINARY, OLD FRENCH LITERATURE. Yr; 2 cr. A general survey of the Arthurian Cycle; with special emphasis on *Tristan, Marie de France,* and *Chrétien de Troyes.* Offered 1932-33 and in alternate years. Miss Gay.

250. THE RENAISSANCE IN FRANCE. Yr; 2 cr. A study of the development of the Renaissance spirit and its manifestations in France, with special study of some representative 16th-century author. Offered 1931-32 and in alternate years. Mr. Zdanowicz.

252. SEMINARY, ANCIENT FRENCH DRAMA. Yr; 2 cr. Offered 1932-33 and in alternate years. Mr. Smith.

253. SEMINARY, FRENCH LITERATURE. Yr; 2 cr. The growth of Classicism and its general spirit, with special study of some representative author each semester. Offered 1932-33 and in alternate years. Mr. Zdanowicz.

254. SEMINARY, FRENCH LITERATURE. Yr; 2 cr. Realism and Naturalism in the French drama. Offered 1930-31. Mr. Smith.

255. SEMINARY, FRENCH LITERATURE. Yr; 2 cr. Realism and Naturalism in the novel and short story. Offered 1932-33 and in alternate years. Mr. Smith.

256. SEMINARY, MODERN FRENCH LITERATURE. Yr; 2 cr. Romanticism. Offered 1931-32 and in alternate years. Mr. Giese.

ITALIAN

LANGUAGE

1a. FIRST-SEMESTER ITALIAN. I, II; 4 cr. For students who have not studied Italian. 4 sections I; 2 sections II. Miss Cotton, Miss Marhofer, Mr. Rossi.

1b. SECOND-SEMESTER ITALIAN. I, II; 4 cr. Prerequisite: Italian 1a or one year of high-school Italian. 1 section I; 4 sections II. Miss Cotton, Miss Marhofer, Mr. Rossi.

9. BEGINNING ITALIAN FOR GRADUATES. Yr; two hours per week; no credit. A very rapid course aiming at a reading knowledge. 3:30 TT. Miss Cotton.

10a. THIRD-SEMESTER ITALIAN. I; 3 cr. Prerequisite: Italian 1b or two years of high-school Italian. 2 sections. Miss Marhofer, Mr. Rossi.

10b. FOURTH-SEMISTER ITALIAN. II; 3 cr. Prerequisite: Italian 10a or three years of high-school Italian. 2 sections. Miss Marhofer, Mr. Rossi.

15. ELEMENTARY COMPOSITION AND CONVERSATION. Yr; 2 cr. Supplementary course to be taken with Italian 10a and 10b. 2 sections. Mr. Rossi, Mr. Russo.

19. ITALY OF TODAY. Yr; 2 cr. Lectures alternated with a study of the elements of the Italian language for the purpose of quickly acquiring a reading knowledge of simple, journalistic Italian. Lectures on the present social, economic, cultural, and political conditions in Italy; language study based on reading of current periodicals as soon as the few essential linguistic elements have been acquired. 9 TT. Mr. Russo.

20. THIRD-YEAR READING. Yr; 3 cr. Prerequisite: Italian 10b. Not open to those whose grade in Italian 10b was B or above; such students should take literature courses. 9 MWF. Miss Marhofer.

116. ADVANCED COMPOSITION AND CONVERSATION. I; 2 cr. Prerequisite: Italian 15 with grade of B. 11 TT. Mr. Russo.

LITERATURE

Two years of Italian in college, or the equivalent, are prerequisite to advanced courses in Italian, except, by special permission of the instructor.

100. SENIOR THESIS. Yr; 2 cr. Mr. Russo.

102. ITALIAN LITERATURE OF THE LAST FIFTY YEARS. Yr; 3 cr. Especially Carducci, D'Annunzio, Pascoli, Fogazzaro, Verga, and Pirandello. Conducted in Italian. Not offered 1931-32. Mr. Russo.

122. Risorgimento. Yr; 3 cr. A study of the authors who, from the time of the French Revolution to 1870, inspired the struggle for the rebirth of Italy. Offered 1930-31. Mr. Russo.

123. Italian Drama. Yr; 3 cr. The development of Italian drama from its origins to the present. Conducted in Italian. Not offered 1931-32. Mr. Russo.

131. General Survey of Italian Literature. Yr; 3 cr. Lectures, reports and reading of representative works from the thirteenth century to the present. Offered 1930-31 and in alternate years. Mr. Russo.

136. Italian Novel. Yr; 3 cr. A study of the short story and the novel from the *Novellino* to Pirandello. Not offered 1931-32. Mr. Russo.

141. Italian Literature of the Seventeenth Century. I; 2 cr. Spanish influence, *marinismo*, new thought; Bruno and Campanella. Conducted in Italian. Not offered 1931-32. Mr. Russo.

142. Italian Literature of the Eighteenth Century. II; 2 cr. Arcadia and Rinnovamento; Goldoni, Parini, and Alfieri. Conducted in Italian. Not offered 1931-32. Mr. Russo.

152. Italian Renaissance. Yr; 3 cr. From Petrarch to Tasso. Humanism and classicism; particular emphasis on the poems of chivalry, Machiavelli and Guicciardini. Conducted in Italian. Offered 1931-32. 11 MWF. Mr. Russo.

160. Dante's Divina Commedia. Yr; 3 cr. Lectures on Dante's life and times, reading of the *Divine Comedy*, comment, discussions, reports. Offered 1931-32 and in alternate years. 2:30 MWF. Mr. Russo.

161. Trecento. Yr; 2 cr. The literature of the fourteenth century, excluding the *Divine Comedy*. Not offered 1931-32. Mr. Russo.

PHILOLOGY

171. Introduction to Italian Philology. I; 2 cr. Derivation of the Italian language from medieval Latin; elementary phonology and morphology. Offered 1931-32. 3:30 MW. Mr. Russo.

172. Early Italian Writers. II; 2 cr. The Italian literature before Dante. Offered 1931-32. 10 MW. Mr. Russo.

GEOGRAPHY

VERNOR CLIFFORD FINCH, Ph.D., *Professor of Geography, Chairman* (on leave I)
RAY HUGHES WHITBECK, B.A., *Professor of Geography*
GLENN THOMAS TREWARTHA, Ph.D., *Associate Professor of Geography*
LOYAL DURAND, JR., Ph.D., *Assistant Professor of Geography*
JOE RUSSELL WHITAKER, Ph.D., *Assistant Professor of Geography*

The introductory courses in geography are 1-2 and 5-6. For a general survey of geography either of these courses should be followed by one or more of the regional courses, 101, 102, 103, 104, 107, 110, and 111, and by one or more of the topical courses, 106, 127, 128, and 145. Course 1-2 (formerly numbered 4) is the only course in geography that satisfies the science requirement for the B.A. degree. Geography 5-6, an introductory course in general geography, is intended primarily for those expecting to enter the School of Commerce or desiring a general cultural background of world geography without laboratory training.

MAJOR. An undergraduate major in geography requires a minimum of 30 credits, including 12 credits of regional and topical courses and 4 credits of thesis. Courses 1-2 or 5-6 will normally be followed by course 140 and that by a selection of the regional and topical courses together with such special courses (126, 131, 132, and 135) as the student may elect. Geography majors are urged to elect Geology 130, Physiography of the United States, concurrently with Geography 140, or as soon as may be after completing course 2 or 6. Geology 109, 134, 143, and 150 are also recommended. Senior theses are written only by upper-group students and at the request of the department.

HISPANIC STUDIES AS A FIELD OF CONCENTRATION. Students interested in this major field should consult page 58.

1–2. ELEMENTS OF NATURAL ENVIRONMENT. Yr; 5 cr. A general survey of the characteristics of the major types of land surfaces, climates, soils, and resources that comprise the natural environment of man. Open to freshmen. Students who have taken Geology 1 may receive but three credits for the work in Geography 1 because of certain duplications in subject matter. Lab. fee $1.50. Lecture 11 TT; 6 hrs. lab. and field work; 2 hrs. quiz. Mr. Finch, Mr. Durand, and staff.

5–6. REGIONAL ECONOMIC GEOGRAPHY. Yr; 3 cr. A brief survey of the elements of natural environment; economic geography of the United States; study of the continents. Open to freshmen. Sections at 9 and 2:30 MWF. Mr. Trewartha and staff.

100. SENIOR THESIS. Yr; 2 cr. Staff.

101. GEOGRAPHY OF NOTHERN EUROPE. II; 3 cr. Prerequisite: Sophomore standing. 11 MWF. Mr. Durand.

102. GEOGRAPHY OF SOUTH AMERICA. II; 3 cr. Prerequisite: Sophomore standing. 9 MWF. Mr. Whitbeck.

103. GEOGRAPHY OF NORTH AMERICA. II; 3 cr. Prerequisite: Geography 1 or 5 or consent of instructor. 10 MWF. Mr. Finch.

104. GEOGRAPHY OF WISCONSIN. I; 2 cr. Prerequisite: Sophomore standing. 1:30 TT. Mr. Durand.

106. Agricultural Geography. I; 3 cr. Prerequisite: Geography 1 or 5, or consent of instructor. 1:30 MWF. Not offered 1931-32. Mr. Finch.

107. Geography of the Mediterranean Region. I; 3 cr. Prerequisite: Sophomore standing. 1:30 MWF. Mr. Whitaker.

110. Geography of Asia. I; 3 cr. Prerequisites: Geography 1 or 5, and consent of instructor. 11 MWF. Mr. Trewartha.

111. Geography of Middle America. I; 2 cr. Includes Mexico, Central America, and the West Indies. Prerequisite: Sophomore standing. 9 TT. Mr. Whitbeck.

126. Cartography and Graphics. I; 2 cr. Prerequisite: Geography 1 or 5, or consent of instructor. 1:30-3:30 TT. Not offered 1931-32. Mr. Finch.

127. Industrial Geography. I; 3 cr. Prerequisite: Sophomore standing. 10 MWF. Mr. Whitbeck.

128. Conservation of Natural Resources. II; 3 cr. Prerequisite: Sophomore standing. 9 MWF. Mr. Whitaker.

131. Summer Field Course in Physiography and Geography. 3 to 6 cr. During or following the summer session. Enrollment only by previous arrangement with the instructor. Mr. Durand.

132. Seminary in Geography. Yr; 2 cr. Prerequisite: Senior standing. 3:30-5:30 Tu. Mr. Whitbeck, Mr. Finch, Mr. Trewartha.

135. Field Practice in Economic Geography. II; 3 cr. Geography major or consent of instructor. 3:30-5:30 Th. and six Saturdays in field. Mr. Trewartha, Mr. Finch.

140. Climatography. Yr; 2 cr. Prerequisite: Geography 2 or 6. 11 TT. Mr. Trewartha.

145. The Geography of Foreign Markets. II; 2 cr. Primarily a lecture course. Lectures by the members of the geography staff on geographic aspects of ocean transportation and the markets and trade of the commercial regions of the world. Certain readings are required. Prerequisite: Sophomore standing. 3:30 MWF. Mr. Finch and staff.

180. Special Work in Geography. Yr; 1-3 cr. Staff.

TEACHERS' COURSE

The Teaching of Geography. See School of Education.

GEOLOGY

CHARLES KENNETH LEITH, Ph.D., *Professor of Geology, Chairman*
WARREN JUDSON MEAD, Ph.D., *Professor of Geology*
WILLIAM HENRY TWENHOFEL, Ph.D., *Professor of Geology* (on leave I)
ALEXANDER NEWTON WINCHELL, M.S., Sc. D., *Professor of Geology*
RICHARD CONRAD EMMONS, Ph. D., *Associate Professor of Geology*
FREDRICK TURVILLE THWAITES, M.A., *Lecturer in Geology*
RICHARD JACOB LUND, Ph.D., *Instructor in Geology*
ROBERT RAKES SHROCK, Ph.D., *Instructor in Geology*

MAJOR. A minimum of 30 credits, including thesis, is required. For students wishing a survey of the field for general educational purposes, courses 1, 2, 6, 7, and 8 are suggested. Course 1, General geology, is the principal introductory course. Short courses in geology and mineralogy (2,7, and 8) are offered without prerequisites, except for elementary knowledge of chemistry, to students not intending to take further work in these subjects. Students who take these short courses will be allowed to enter advanced courses only by special arrangement. Field work is given in connection with Geology 1, 11, 112, 114, 125, and 133.

GENERAL GEOLOGY

1. GENERAL GEOLOGY. Yr; 5 cr. Students who have taken Geography 1 may receive but 3 credits for the work of the first semester in order to offset certain duplications of subject matter. The first semester is a study of the materials and structure of the earth, the surface of the earth, and the processes which modify materials, structure, and surface. Second semester, a study of earth history through geologic time and elementary paleontology. Lab. fee $1.50 each semester. Lecture 10 MTWTF; 2 hrs. lab. Mr. Twenhofel and staff.

2. SHORT COURSE IN GEOLOGY. II; 3 cr. 9 MWF. Mr. Shrock.

9. ENGINEERING GEOLOGY. Yr; 3 cr. A course in elementary geology for students in engineering. First semester required of juniors in civil engineering; both semesters required of students in mining engineering. Lab. fee $1.50 per semester. Lecture 9 MWF; lab. Mr. Mead, Mr. Lund.

11. MAPPING. II; 3 cr. Not open to freshmen. Application of plane table and other instruments to geologic and topographic mapping. Lab. fee $3.00. Mr. Thwaites.

100. SENIOR THESIS. Yr; 2 cr.

125. FIELD WORK FOR ADVANCED STUDENTS. II; 1 cr. One week in May in alternate years is spent in geologic mapping of some selected area, usually in the iron or copper districts of Lake Superior or the zinc district of Wisconsin. Offered 1931-32 and in alternate years. In the semester following course 117, a ten-day trip is taken to the Lake Superior district, offering a survey of the region. Mr. Leith, Mr. Mead.

134. REGIONAL GEOLOGY. Yr; 2 cr. Prerequisites: Geology 1 or 9, 114, and senior standing. A study of world geology. Western hemisphere first semester, eastern hemisphere second semester. Offered 1931-32 and in alternate years. 8 TT. Mr. Twenhofel.

135. HISTORY OF GEOLOGY. I; 1 cr. Prerequisites: Geology 1 or 9 or Geography 4; senior standing. Offered 1931-32 and in alternate years. 1:30 W. Mr. Twenhofel.

143. GLACIAL GEOLOGY. II; 3 cr. Prerequisite: Geology 1 or 9, or Geography 1 or 4. 3:30 MWF. Mr. Thwaites.

200. RESEARCH. Yr; *cr. Staff.

PALEONTOLOGY

22. ELEMENTARY PALEONTOLOGY. II; 2 cr. A study of extinct organisms. To be preceded by or taken with Geology 1 or 9 unless student has taken Zoology 1. Mr. Shrock.

112. HISTORICAL GEOLOGY AND STRATIGRAPHY. II; 5 cr. Prerequisites: Geology 1 and 121. Offered 1932-33 and in alternate years. 8 TT; 8-10 MWF. Mr. Twenhofel.

121. PALEONTOLOGY. I; 5 cr. Prerequisite: Geology 22. Lab. fee $1.00. Not offered 1931-32. Mr. Shrock.

PHYSICAL GEOLOGY

52. ELEMENTARY ECONOMIC GEOLOGY. I; 3 cr. Prerequisites: Geology 1, 2, or 9, and 6 or 7. A study of the manner of occurrence, origin and uses of the metallic ores and the non-metallic mineral products. 10 MWF; 2 hrs. lab. Mr. Mead, Mr. Lund.

114. STRUCTURAL GEOLOGY. I; lect. 3 cr.; lab. 2 cr. The laboratory work includes map interpretation. Prerequisite: Geology 1. Lab. fee $3.00. Lect. 11 MWF; lab. 1:30-3:30 TT. Mr. Leith, Mr. Mead.

115. METAMORPHIC GEOLOGY. II; 5 cr. Prerequisites: Geology 1 and 6. Offered 1930-31 and in alternate years. Lab. fee $3.00. Lect. 11 MWF; lab. 1:30-3:30 TT. Mr. Mead, Mr. Emmons.

117. PRINCIPLES OF PRE-CAMBRIAN GEOLOGY. I; 2 cr. Prerequisite: Geology 114. Offered 1930-31 and in alternate years. For field trips see course 125. 11 TT. Mr. Leith.

123. OIL GEOLOGY. II; 2 cr. Prerequisites: Geology 1 or 9, 114, and senior standing. Offered 1931-32 and in alternate years. Mr. Twenhofel.

133. SEDIMENTATION. I; 5 cr. Prerequisites: Geology 1 or 9, 6, 114, and senior standing. Lect. 8 MWF; lab. Lab. fee $3.00. Mr. Twenhofel.

148. SEMINARY IN TECTONIC GEOLOGY. II; 1 cr. A review of current theories dealing with the causes and mechanics of major earth deformations. Offered 1931-32 and in alternate years. Mr. Mead.

149. METHODS OF MINERAL EXPLORATION. II; 2 cr. Deals with the geological and physical field methods employed in the search for and development of mineral deposits. Offered 1930-31 and in alternate years. 10 TT. Mr. Mead.

150. Economic Aspects of Geology. I; 2 cr. A general survey of the field of mineral resources from the standpoint of geographic and commercial distribution, valuation, taxation, conservation, and international relations. The international phase of the discussion will cover questions of foreign exploition, the "open door," tariffs, and relations to war. This course is introductory to Geology 151. Offered 1931-32 and in alternate years. 11 TT. Mr. Leith, Mr. Mead.

151. Geology of Mineral Deposits. II; 5 cr. Prerequisites: Chemistry 1, Geology 6 or 7, and Geology 1, 2, or 9, and 52. Metallic and non-metallic mineral deposits are studied from the standpoint of mineralogy, field occurrence, and genesis. The principal mineral deposits will be taken up topically. It is desirable, but not essential, that this course be preceded by course 150. Lab. fee $3.00. Lect. 11 MWF; lab. 1:30-3:30 TT. Offered 1931-32 and in alternate years. Mr. Mead.

233. Studies of Sediments. II; 2 cr. Prerequisites: Geology 133, 108. Lab. fee $5.00. Mr. Shrock.

MINERALOGY AND PETROLOGY

6. General Mineralogy. Yr; 5 cr. Prerequisite: Chemistry 1 or a high-school course in chemistry. Lab. fee $10.00 per semester. I; Lect. 8 MWF; lab. 8-10 TT. II; Lect. 8 TT; lab. 8-10 MWF. Mr. Winchell, Mr. Emmons.

7. Short Course in Mineralogy. I; 2 cr. Prerequisite: Chemistry 1 or high-school course in chemistry. Lab. fee $10.00. 10-12 TT. Mr. Emmons.

8. Short Course in Lithology. II; 2 cr. The megascopic study of igneous and sedimentary rocks. Prerequisite: Chemistry 1 or a high-school course in chemistry. 3:30-5:30 MW. Mr. Emmons.

108. Petrology. Yr; 5 cr. Prerequisite: Geology 6 or 7. Lab. fee $10.00 per semester. 9-11 MTWTF. Mr. Winchell.

119. Petrology of Lake Superior Rocks. Yr; 1-3 cr. Prerequisite: Geology 108. Offered 1932-33 and in alternate years. Lab. fee $6.00 per semester. Mr. Winchell.

120. Advanced Mineralogy. Yr; 2-4 cr. The relations between composition and optical properties in isomorphous groups. Prerequisite: Geology 6. Mr. Winchell.

129. Petrogeny. Yr; 2 or 3 cr. Prerequisite: Geology 108. Lab. fee $1.00 per semester. Mr. Winchell.

138. Immersion Methods. I; 3 cr. Prerequisite: consent of instructor. The identification of crystalline materials by means of the polarizing microscope and immerson liquids. (Formerly entitled Soils Mineralogy.) Lab. fee $10.00. Mr. Emmons.

141. Mineragraphy. II; 2 cr. Prerequisite: Geology 6. Lab. fee $6.00. Mr. Emmons.

PHYSIOGRAPHY

109. Advanced Physiography. I; 3 cr. Prerequisite: Geology 130 or consent of instructor. Offered 1932-33 and in alternate years. An advanced analytical study of land forms. 3:30 MWF. Mr. Thwaites.

130. Physiography of the United States. Yr; 3 or 5 cr. Prerequisite: Geology 1, 2, or 9, or Geography 1 or 4. Lab. fee $1.00 per semester for 5 cr. only. 1:30 MWF; lab. Mr. Thwaites.

230. Advanced Physiography of the United States. I; 3 cr. Prerequisites: Geology 130, 134, or 114. Offered 1931-32 and in alternate years. Mr. Thwaites.

GERMAN

Alexander Rudolph Hohlfeld, Ph.D., *Professor of German, Chairman*
Friedrich Bruns, Ph.D., *Professor of German* (on leave 1931-32)
Max Griebsch, Ph.D., *Professor of German*
Bayard Quincy Morgan, Ph.D., *Professor of German, Secretary*
Alfred Senn, Ph.D., *Professor of Germanic and Indo-European Philology*
Ernst Karl J. H. Voss, Ph.D., *Emeritus Professor of Germanic Philology*
Adolphine Bianca Ernst, Ph.D., *Associate Professor of German*
Ewald Paul Appelt, Ph.D., *Assistant Professor of German*

INSTRUCTORS

Heinz Bluhm, M.A.
Arthur L. Davis, M.A.
Esther C. Feddersen, M.A.
Stella M. Hinz, Ph.D.
Rolf E. P. King, M.A.
Paula Margaretha Kittel, M.A.
Bertha Mueller, M.A.
Gertrude Krafft, M.A.
Erika M. Meyer, M.A.
Herman Ramras, M.A.
Ralph P. Rosenberg, M.A.
Rudolph J. Schlueter, M.A.
Erna Schneck, M.A.
W. Freeman Twaddell, Ph.D.

For Attainment Tests see section 11, page 55.

The Elementary Courses represent the work normally done in the first and second years, and are graded to meet the needs of high-school graduates with different degrees of preparation. One year of high-school work is considered as equivalent to one semester (4 credits) of college work; but freshmen, as well as students transferring from other colleges, are assigned to the various courses and given credit for the work done elsewhere on the basis of placement and attainment examinations. Students who show superior ability in their elementary work are given permission to complete courses 1a to 2b in three or possibly even two semesters, and to enter more advanced courses that much sooner. Moreover, there are special sections for beginners in which practically as much work is done in one year as the regular classes do in two years. They are open to students who have had four years of Latin in high school or similar training in other languages. On the other hand, students in elementary courses who are experiencing difficulty, especially in grammar and pronunciation, are given an opportunity to receive special group aid once a week.

The ADVANCED PRACTICE COURSES are intended for specific practical ends, definitely stated in each case. None of these courses is required of students wishing to study German for purely literary purposes.

The LITERARY COURSES are of very different degrees of advancement. The less advanced courses are divided into two groups designated A and B. Ordinarily students may not enter group B unless they have taken at least one course in group A, or its equivalent. About eight credits in these two groups combined are prerequisite for the higher courses (beyond 100) in literature or philology. Students intending to specialize in German literature are advised to do related work in English literature, in medieval and modern history, especially German history, in the history of art, and in philosophy. They should also pursue, to a fair degree of advancement, the study of at least one other foreign language and literature, ancient or modern. Their attention is also called to the courses mentioned under Comparative Literature.

The PHILOLOGY COURSES are primarily intended for graduate students working for a higher degree, but some of them are well suited to the needs of advanced undergraduates. This is especially true of courses 150, 151, and 191, which are so conducted as to be of direct benefit to properly qualified seniors, especially those preparing to teach.

MAJOR: 32 credits, including at least 8 credits beyond course 100. Students who are requested to write a thesis need take only 4 credits beyond course 100. All students offering a foreign-language major are required to pass the "intermediate knowledge" test in a second language. Those intending to work for the degree of M.A. with a major in German should note that they will also be required to prove such knowledge.

For the requirements for a teaching major and minor, see School of Education.

DER DEUTSCHE VEREIN. All students and instructors who are interested in the German language and literature and in German life and culture are eligible to membership in the German Club, which meets in general twice a month while the University is in session. The programs comprise lectures, recitations, singing, dramatic and musical performances, and social entertainments. A special "mixed chorus" meets for song practice once a week.

DAS DEUTSCHE HAUS. The German House, which is intended primarily for the benefit of students who wish to maintain or improve their speaking knowledge of German, is open to women students for room and board, and both men and women residing outside the house may take their meals there. The house is in charge of a regular member of the German Department, and German is spoken at meals and is the official language of the house. Members of the teaching staff live and board at the house and preside at the tables. Especially those students who intend to teach German are urged to room or board at the house, but all others who desire practice in hearing and speakng German are eligible to full membership and are welcome as table boarders. A few undergraduate German House scholarships are available for students majoring in German who could otherwise not afford to live or board at the House. For further information, apply to German House, 508 North Frances Street, Madison.

ELEMENTARY COURSES

ASSISTANT PROFESSOR APPELT IN CHARGE

1a. First-Semester German. I, II; 4 cr. For students who have had no German. Pronunciation, grammar foundation, oral and written exercises. 23 sections I; 5 sections II.

1b. Second-Semester German. I, II; 4 cr. Continuation of the practice work of the first semester, systematic work in translation, extensive reading begun. Prerequisite: German 1a, or one year of high-school German. 5 sections I; 19 sections II. (Special sections of 1a and 1b for students with four years of high-school Latin or similar training in another language.)

2a. Third-Semester German. I, II; 3 cr. Chief emphasis on reading. Grammar review, oral practice, and written work. Normally to be taken in connection with 4 or 5. Prerequisite: German 1b, or two years of high-school German. 14 sections I; 4 sections II.

2b. Fourth-Semester German. I, II; 3 cr. Continuation of the work of 2a. The reading in class includes one Schiller drama. Normally to be taken in connection with 4 or 5. Prerequisite: German 2a, or equivalent. 5 sections I; 13 sections II.

4. Rapid Reading. Yr; 1 cr. Modern prose, narrative and descriptive. Practice in reading at sight. Open only in connection with 2a or 2b. Recommended to those who are chiefly aiming at a reading knowledge. 8, 9, 1:30, or 2:30 TT.

5. Elementary Composition and Conversation. Yr; 2 cr. Review of grammar, with oral and written work. Recommended to those who expect to do advanced work in the language. Open only in connection with 2a or 2b. 10, 11, or 1:30 TT.

9. Beginning German for Graduates. Yr; two hours per week; no credit. Leads up to German 16. Miss Hinz.

ADVANCED PRACTICE COURSES

10. Intermediate Composition and Conversation. Yr; 2 cr. Prerequisite: Four credits in advance of German 2b, or a grade of B or better in German 2b. Required of all teaching majors and minors, unless 112 is substituted. Written exercises and grammar review, with discussion in German. 2 sections. 8 TT. Mr. Bluhm, Mr. Ramras.

14. Germany of Today. Yr; 2 cr. Reading and discussion of books, newspapers, and periodicals. Primarily for students in journalism and commerce. Prerequisite: German 2b or equivalent. 11 TT. Mr. Appelt

16. Prose Reading for Graduates. Yr; two hours per week; no credit. For students preparing to secure the certificate of reading knowledge. Prerequisite: Two years of college German or equivalent. Miss Hinz.

19. Scientific German. Yr; 2 cr. Translation course for students specializing in science. Especially desirable for students of medicine and chemistry. Prerequisite: German 2b or equivalent. 8 or 9 MW. Miss Ernst.

41. Intermediate Conversation. Yr; 1 cr. Prerequisite: Four credits in advance of German 2b, or sufficient ability in speaking German. Open only in connection with some other course in German. 11 TT. Miss Kittel.

80. Supervised Individual Reading. Yr; 2 or 3 cr. For upper-group students who have passed the "intermediate" test and desire further practice in reading, not in German literature, but in subject matter related to their major field of study, e.g. history, philosophy, other literatures, economics, or even science. Texts of general and not too technical character are to be agreed upon in consultation with the student's major professor. Each individual arrangement requires the approval of the Dean and of the chairman of the department of German.

100. Senior Thesis. Yr; 2 cr. Students must register with the chairman of the department either in the second semester of their junior year or at the beginning of their senior year. The executive committee will decide whether a student is to be requested to write a thesis or assigned to a substitute course in the 100 group of courses.

112. Advanced Composition and Conversation. Yr; 2 cr. For students who have a good command of German grammar and fair conversational ability and who wish to achieve fluency and ease in the writing and speaking of German. Strongly recommended to teaching candidates working for an M.A. degree. 2:30 TT. Mr. Griebsch.

SUPPLEMENTARY COURSES

These courses do not count toward the minimum of 32 credits required for a German major.

75. German Classics in English Translation. See Comparative Literature 75.

76. Goethe and Goethe's Faust. II; 3 cr. English lectures, and reading and discussion of the most important of Goethe's works, especially Faust, in translation. A special course in commemoration of the 100th anniversary of the death of Goethe (March 22, 1832). Mr. Hohlfeld.

110. Kulturkunde. I; 3 cr. A study of characteristic periods and movements of the cultural development of Germany, with lectures on the general history of German civilization. Considerable outside reading. Especially recommended to prospective teachers of German. 11 MWF. Mr. Appelt.

111. Germany and Her Institutions. II; 2 cr. Lectures; collateral reading (in German for graduate credit). Especially recommended to those who prepare to teach German. The geography, political organization, educational system, and cultural institutions of modern Germany and their historical background. 9 TT. Mr. Griebsch.

141. Principles and Practice of Translation. See Comparative Literature 141.

GERMAN LITERATURE—GROUP A

The courses in group A are intended primarily for students who have had German 2b or its equivalent. Students having more than four credits in advance of German 2b will be required to do additional work to receive full credit, and not more than six credits may be elected from this group. Courses 17, 18 (or 19) would be the normal courses for students preparing for the "intermediate knowledge" examinations in German.

To make suitable three-, four- or five-hour combinations, the courses in this group may be combined with 10, 40, or 41.

German is used to some extent as the language of the classroom in courses in group A.

3. Fifth-Semester German. II; 4 cr. Prerequisite; German 2b, or four years of high-school German. Reading, composition, oral practice. Especially for students finishing 2b in the first semester. 8 MWFS. Miss Hinz.

15. Classical and Modern Writers. Yr; 3 cr. Prerequisite: Same as course 3. Reading, composition, oral practice. The regular third-year course for students working for "proficiency" or intending to do advanced work in German. Not open to students who have had German 3. 8 MWF, Miss Hinz; 9 TTS, Miss Schneck.

17. Modern German Drama. Yr; 2 cr. A rapid reading course in the 19th-century drama. Not offered 1931-32.

18. Modern German Novel. Yr; 2 cr. A rapid reading course in 19th and 20th-century fiction. Offered 1931-32. 8 MW, Mr. Bluhm; 11 MW, Mr. Morgan.

GERMAN LITERATURE—GROUP B

These courses are open to students who have had at least four credits in advance of German 2b. The chief emphasis is laid upon the reading and interpretation of literature. Not more than 6 credits may be taken in this group for full credit. German is used as the language of the classroom even more than in group A.

20. Schiller. Yr; 2 cr. An intensive reading course. First semester, *Die Braut von Messina,* life of Schiller. Second semester, *Wallenstein.* Outside reading. 10 MW, Miss Hinz; 10 TT, Miss Kittel.

21. German Poetry. II; 2 cr. The study of one lyric poet (e.g., C. F. Meyer or Mörike) and an anthology of nineteenth-century lyrics. Mr. Appelt.

22. Hebbel. I; 2 cr. The chief tragedies; study of Hebbel's tragic theory. Not offered 1931-32. Mr. Bruns.

24. Lessing. Yr; 2 cr. First semester, *Minna von Barnhelm, Emilia Galotti,* early dramas, life of Lessing; second semester, *Nathan der Weise, Erziehung des Menschengeschlechts.* Not offered 1931-32. Mr. Voss.

25. Goethe. Yr; 3 cr. First semester, *Laune des Verliebten, Götz,* Life of Goethe; second semester, *Egmont, Tasso.* Outside reading. Offered 1931-32. 11 MWF. Mr. Voss.

27. Nineteenth-Century Drama. Yr; 2 cr. First semester, Grillparzer; second semester, Hauptmann, Hofmannsthal. Not offered 1931-32. Mr. Bruns.

31. The Eighteenth and Nineteenth Centuries. Yr; 3 cr. Extensive reading in the most important authors, together with a study of the literary, historical, and cultural movements of these two centuries. Satisfactory work in this course should enable a student to pass the "proficiency" test in German. Students should have had course 15 and at least one semester of course 10 before entering. Only A and B students should attempt it with less. Not intended for students required or otherwise planning to take course 131. 8 MWF, Mr. Appelt; 10 MWF, Mr. Morgan.

GERMAN LITERATURE—ADVANCED COURSES

130. Goethe's Faust. Yr; 2 cr. Interpretation of both parts of *Faust* in connection with a general study of Goethe's life and works. Offered 1931-32. 10 MW. Mr. Hohlfeld.

131. Survey of German Literature. Yr; 2 or 3 cr. Lectures in German, with outside reading of representative works from the eighth century to the present. Emphasis on the relation of literature to other fields of German culture and to the literatures of England and France. Required for the teaching major and for M.A. 9 MWF. Mr. Hohlfeld.

134. Lyric Poetry of the Nineteenth Century. Yr; 2 cr. The development of German lyric poetry since 1750, with special emphasis on parallel movements in art and philosophy. Lectures in German, assigned reading, and semester topics. Not offered 1931-32. 11 TT. Mr. Bruns.

149. The Romantic Movement in Germany. Yr; 2 cr. The precursors, the Romantic School proper, and the later romanticists. Lectures in German, assigned reading, and semester topics. Not offered 1931-32. Mr. Bruns.

180. Special Reading. Advanced study in a given literary field under the guidance of a member of the department. Credit and conference hours to be arranged. Candidates should consult the chairman of the department.

200. Individual Research. Investigations not related to any particular course or seminary, carried on in consultation with a member of the department. Credit and conference hours to be arranged. Candidates should consult the chairman of the department.

246. Bibliography and Methods. Yr; once a week; no cr. Required of all members of the proseminary or seminary in literature. 1:30 W. Mr. Hohlfeld.

247. Proseminary in German Literature. Yr; 2 cr. Investigations of limited compass to prepare graduate students for the more advanced work of the seminary proper. In 1931-32 the field of study will be the novel of the 19th century. 3:30 MW. Mr. Morgan.

248. Seminary in German Literature. Yr; 2 cr. The general fields from which problems are chosen for investigation form a cycle of three years. In 1931-32 the work will be in Goethe and the age of Goethe. 4-6 Th. Mr. Hohlfeld.

GERMAN PHILOLOGY

Courses 154, 158, and 191 are given English; 150, 151, and 155 partly in German and partly in English; and the others in German.

150. HISTORY OF THE GERMAN LANGUAGE. II; 2 cr. Reading of selected texts to illustrate the historical development of the language, especially during the Modern High German period. 11 MW. Mr. Senn.

151. ELEMENTARY MIDDLE HIGH GERMAN. I; 2 cr. Lectures on the German folk epics and on German life in the twelfth century. Study of the *Nibelungenlied*. 11 TT. Mr. Senn.

152. ADVANCED MIDDLE HIGH GERMAN. I; 2 cr. Studies in the language and literature of the twelfth and thirteenth centuries. Lectures and critical study of texts. 10 MW. Mr. Voss.

153. EARLY MODERN HIGH GERMAN. I; 2 cr. Not offered 1931-32.

154. GOTHIC. I; 2 cr. Grammar and readings from the gospels. Offered 1931-32. 4:30 MW. Mr. Senn.

155. OLD HIGH GERMAN. II; 2 cr. Grammar and readings from Braune's *Althochdeutsches Lesebuch*. Offered 1931-32. Mr. Twaddell.

158. OLD SAXON. I; 2 cr. Grammar and readings, chiefly from *Heliand*. Offered 1931-32. 10 TT. Mr. Twaddell.

161. HISTORICAL GRAMMAR OF THE GERMAN LANGUAGE. Yr; 2 cr. First semester: phonology; second semester: morphology. Offered in 1932-33. Mr. Senn.

164. MODERN AND MIDDLE LOW GERMAN. II; 2 cr. *Sachsenspiegel* and *Reinke de Vos*. Offered 1931-32. Mr. Voss.

191. PHONETICS. II; 2 cr. With special reference to the teaching of German. 2:30 MW. Mr. Twaddell.

269. PHILOLOGICAL PROSEMINARY. II; 2 cr. In 1931-32 the work will be in Gothic. Mr. Senn.

270. PHILOLOGICAL SEMINARY. Yr; 2 cr. The work varies from year to year. During 1931-32 it will be in Wolfram von Eschenbach, in 1932-33 in Gottfried von Strassburg. 4:20-6 Tu. Mr. Senn.

The special attention of students in German philology is called to the courses in Anglo-Saxon, Old Norse, and general phonetics (offered by the department of English), and to the various courses listed under Comparative Philology.

GREEK

(See Classics, page 114.)

HISTORY

FREDERIC LOGAN PAXSON, Ph.D., *Professor of History, Chairman*
CARL RUSSELL FISH, Ph.D., *Professor of History*
CHESTER PENN HIGBY, Ph.D., *Professor of History*
PAUL KNAPLUND, Ph.D., *Professor of History*
GEORGE CLARKE SELLERY, Ph.D., LL.D., *Professor of History*
ALEXANDER ALEXANDER VASILIEV, Ph.D., *Professor of History*
LAURANCE JAMES SAUNDERS, M.A., *Associate Professor of History*
CHESTER VERNE EASUM, Ph.D., *Assistant Professor of History*
CURTIS PUTNAM NETTELS, Ph.D., *Assistant Professor of History*
DELOS SACKETT OTIS, Ph.D., *Assistant Professor of History*
ROBERT LEONARD REYNOLDS, Ph.D., *Assistant Professor of History*

When history is offered as one of the required studies in the general course leading to the degree of Bachelor of Arts (see page 65), the requirement must be satisfied by a continuous three-credit course extending through two semesters.

The courses in history are divided into three groups: (a) Courses numbered under 100 carry only undergraduate credit. The introductory courses 1, 5, 29, 10, are the courses open to freshmen. (b) Courses numbered in the 100 series continue in the direction of greater specialization the work begun in the introductory courses; they may be elected by students who have the necessary preparation. (c) Courses numbered above 200 are open only to graduate students.

MAJOR. FIELDS OF CONCENTRATION:—

(a) European History
(b) American History
(c) Hispanic Studies (See page 58).
(d) History of Culture (consult the announcement of the Department of Sociology and Anthropology).

Students with a major in Social Sciences electing to work in history will select one of these fields of concentration, and offer not less than 32 nor more than 40 credits in history, including 6 credits in one of the freshman courses, History 1, 5, 10, or 29; 4 credits in History 2; 6 credits in History 4; and at least 16 credits in advanced history courses taken in the University of Wisconsin and confined to European history or American history. Of the 16 credits in advanced courses, 2 in each semester of the senior year may, in the judgment of the adviser, be assigned to the preparation of a thesis in the field of concentration. In addition to the courses in history, the major requires Economics 1a and Political Science 1 or 7. Sociology 110 (Pre-history) and Geography 1-2 are strongly recommended.

TEACHING MAJOR AND MINOR. See School of Education.

INTRODUCTORY COURSES NOT OPEN TO FRESHMEN

2. MODERN EUROPEAN HISTORY. Yr; 3 or 2 cr. Prerequisite: Sophomore standing. 8 TT; quiz. Mr. Higby.

4a-b. HISTORY OF THE UNITED STATES. Yr; 3 cr. Seniors may elect for two or three credits. Prerequisite: Sophomore standing. 11 MWF. Mr. Fish and staff.

4b-a. HISTORY OF THE UNITED STATES. Yr; 3 cr. Seniors may elect for two or three credits. This course commences in the second semester but is otherwise identical with History 4a-b. Prerequisite: Sophomore standing. Not offered 1931-32. Mr. Otis.

INTRODUCTORY COURSES OPEN TO FRESHMEN

Students may take only one of these courses for three credits a semester, since each contains introductory training for which credit will not be given twice; that is, if they have had or are taking one of these courses for full credit, another may be taken from this group for two credits a semester only, omitting the supplementary reading and a topical report. Students not registered in the College of Letters and Science may take any of the introductory courses for two credits each semester.

1. MEDIEVAL HISTORY. Yr; 3 or 2 cr. Course in Humanities students who elect this course must take it for 4 credits. 10 MW; quiz. Mr. Reynolds and staff.

5a-b. ENGLISH HISTORY. Yr; 3 or 2 cr. 10 TT, or 1:30 MW; quiz. Mr. Knaplund, Mr. Easum, and staff.

5b-a. ENGLISH HISTORY. Yr; 3 or 2 cr. This course commences in the second semester but is otherwise identical with History 5a-b. 8 MW; quiz. Staff.

10. ANCIENT HISTORY. Yr; 3 or 2 cr. 9 TT; quiz. Mr. Vasiliev and staff.

29. ENGLISH HISTORY, ENGLISH LITERATURE. Yr; 5 cr. The historical part of this course will present an analysis of the successive social experiences of the English people; against this background the development of English literature is considered, the emphasis falling upon the great literary movements and their outstanding representatives. Satisfies the B.A. requirements of six credits in history and four credits in English literature, and is accepted as a prerequisite for advanced courses in English. Open to freshmen exempt from English 1 and to sophomores. Lectures 9 TT; quizzes 9 or 1:30 MWF. Limited to 150 students. Mr. Quintana, Mr. Saunders.

TRAINING COURSES AND SPECIAL WORK

100. SENIOR THESIS. Yr; 2 cr.

180. SPECIAL WORK. Upper-class history major students of known capacity, may, by agreement with the major professor, arrange for special out-of-class work, for which credit may be allowed on the basis of one credit for each week, or its equivalent, devoted exclusively to the special project.

252. HISTORICAL METHOD. Yr; 1 cr. Introductory course. Graduate students in their first year are expected to take this course. 3:30 W. Mr. Nettels and others.

280. SPECIAL WORK. During the recesses of the University, and in regular terms, by agreement with the major professor, properly qualified graduate students may undertake special out-of-class work, generally upon research problems, for which credit may be allowed on the basis of one credit for each week, or its equivalent, devoted exclusively to the special project.

THE TEACHING OF HISTORY AND THE SOCIAL STUDIES. See School of Education.

ADVANCED COURSE IN THE TEACHING AND SUPERVISION OF HISTORY AND THE SOCIAL STUDIES. See School of Education.

ANCIENT AND MEDIEVAL HISTORY

126. LIFE AND WORK IN ANCIENT ROME. II; 2 cr. Prerequisite: Junior standing or consent of instructor. 10 TT. Mr. Vasiliev.

127. HELLENISTIC CIVILIZATION. I; 2 cr. Prerequisite: Junior standing or consent of instructor. Not offered 1931-32. Mr. Vasiliev.

129. THE FALL OF BYZANTIUM. II; 2 cr. Prerequisite: Junior standing or consent of instructor. Not offered 1931-32. Mr. Vasiliev.

131. MEDIEVAL CIVILIZATION. II; 3 cr. Prerequisites: History 1 or 5, and junior standing. Offered 1931-32 and in alternate years. 10 TT; conference. Mr. Sellery.

134. THE RENAISSANCE. I; 3 cr. Prerequisites: History 1, 2, or 5, and junior standing. Offered 1930-31 and in alternate years. 10 TT; conference. Mr. Sellery.

135. HISTORY OF THE LATER ROMAN EMPIRE. Yr; 2 cr. Prerequisite: Junior standing or consent of instructor. Offered 1930-31 and in alternate years. 10 TT. Mr. Vasiliev.

141. ENGLISH CONSTITUTIONAL HISTORY. Yr; 3 cr. Prerequisite: History 1, 5, or 10. 11 MWF. Mr. Reynolds.

253. LATIN PALEOGRAPHY. II; 1 cr. Elements of paleography, with practical exercises in reading of manuscripts. Not offered 1931-32.

254. SEMINARY IN ANCIENT HISTORY. Yr; 2 cr. Prerequisite: A reading knowledge of Greek and Latin. 2:30-4:30 Tu. Mr. Vasiliev.

257. SEMINARY IN MEDIEVAL HISTORY. Yr; 2 cr. Studies in the economic history of the Middle Ages. Prerequisite: A reading knowledge of Latin, French, and German. Not offered 1931-32.

MODERN HISTORY

136. HISTORY OF FRANCE. Yr; 2 cr. Prerequisite: History 1 or 5, or junior standing. 11 TT. Mr. Saunders.

138. THE FRENCH REVOLUTION AND NAPOLEON. Yr; 3 cr. Prerequisite: Junior standing or consent of instructor. 11 MWF. Not offered in 1931-32.

139. EUROPE SINCE 1815. Yr; 3 cr. Prerequisite: Junior standing. 11 MWF. Mr. Higby.

140. THE REFORMATION. I; 3 cr. Prerequisites: History 1, 2, or 5, and junior standing. Offered 1931-32 and in alternate years. 10 TT; conference. Mr. Sellery.

142. ENGLAND UNDER THE TUDORS AND STUARTS. Yr; 3 cr. Prerequisite: Junior standing or consent of instructor. Not offered 1931-32. 9 TT; conference. Mr. Knaplund.

143. THE BRITISH EMPIRE SINCE 1815. Yr; 3 cr. Prerequisite: Junior standing or consent of instructor. 9 TT; conference. Mr. Knaplund.

145. The Rise of Prussia. Yr; 2 cr. A pro-seminary in the history of the German people. Prerequisite: Consent of instructor. 7-9 M. Mr. Easum.

146. History of the German People. Yr; 2 cr. Prerequisite: Sophomore standing. 1:30 TT. Mr. Easum.

147. Modern Britain, 1815-1925. Yr; 3 cr. Not offered 1931-32. Mr. Knaplund.

177. Europe: The Old Order and the Enlightened Despots, 1715-1789. I; 3 cr. Prerequisite: Junior standing. May not be taken with History 136. 2:30 MWF. Mr. Saunders.

258. Seminary in History of the British Empire. Yr; 2 cr. A study of aspects of Britain's foreign relations, 1895-1914. 1:30-3:30 Tu. Mr. Knaplund.

267. Seminary in Modern European History. Yr; 2 cr. 3:30-5:30 F. Mr. Higby.

AMERICAN HISTORY

111. History of the West, 1763-1893. II; 3 or 4 cr. Prerequisite: Junior standing. 9 MWF. Mr. Paxson.

112. Representative Americans. II; 3 cr. Prerequisite: History 4a or junior standing. 1:30 MWF. Mr. Fish.

116. American Colonial History. Yr; 3 or 2 cr. Prerequisite: An elementary course or junior standing. 8 MWF. Mr. Nettels.

117. American Constitutional History, 1600-1925. Yr; 3 or 2 cr. Prerequisite: An elementary course or junior standing. 1:30 MWF. Mr. Otis.

118. Civil War and Reconstruction, 1860-1876. I; 3 cr. Prerequisite: History 4 or junior standing. 1:30 MWF. Mr. Fish.

120. American Foreign Policy, 1783-1928. I; 3 cr. Prerequisite: History 4 or junior standing. Not offered 1931-32. 1:30 MWF. Mr. Fish.

122. American Economic Life. Yr; 3 or 2 cr. Prerequisite: An elementary course or junior standing. 10 MWF. Mr. Nettels.

124. Recent History of the United States, 1865-1931. Yr; 3 or 4 cr. Prerequisite: Junior standing. 11 MWF. Mr. Paxson.

128. The United States During the World War, 1914-1921. I; 3 or 4 cr. Prerequisite: Junior standing. 9 MWF. Mr. Paxson.

261. Seminary in American History. Yr; 2 cr. Sudies in social and economic problems of the Civil War and Reconstruction periods in their relation to politics. 3:30-5:30 Tu. Mr. Fish.

262. Seminary in American History. Yr; 2 cr. Two sections, concerned respectively with problems in recent and in western history. 2:30-4:30 M; 1:30-3:30 Tu. Mr. Paxson.

263. Seminary in American History. Yr; 2 cr. Studies generally relating to American economic history or to the history of the English colonies in America. 3:30-5:30 F. Mr. Nettels.

ITALIAN

(See page 145.)

JOURNALISM

WILLARD GROSVENOR BLEYER, Ph.D., *Professor of Journalism, Chairman*
GRANT MILNOR HYDE, M.A., *Professor of Journalism*
CHILTON ROWLETTE BUSH, M.A., *Associate Professor of Journalism*
HELEN MARGUERITE PATTERSON, M.A., *Assistant Professor of Journalism*
RALPH OTTO NAFZIGER, M.A., *Assistant Professor of Journalism*
BRUCE RIEGE MCCOY, B.A., *Lecturer in Journalism*

PURPOSE AND PLAN. The courses in journalism are designed to give the student instruction and practice in newspaper writing and editing, in some kinds of magazine writing, and in advertising, as well as to present current problems of journalism in the light of their origin and development. They have been arranged to meet the needs of students in the School of Journalism, and those in the Colleges of Letters and Science, Agriculture, and Engineering who desire training in journalistic writing.

LABORATORY EQUIPMENT. The department has a large laboratory equipped like the city room of a newspaper office, with typewriters, reference books, maps, and a copy-desk. Adjoining this are a reading room with current files of representative American newspapers and journalistic periodicals, and a lecture room. To familiarize students of journalism with the principles of typography, the department has a typography laboratory for practical work in connection with the courses in editing, advertising, and newspaper administration.

FEES. A laboratory fee of $1.00 per semester is charged each student taking courses in journalism, except those in Journalism 1.

MAJOR. The undergraduate major in journalism is offered only to candidates for the degree of Bachelor of Arts (Journalism). It requires not less than 31 credits, as outlined under the heading School of Journalism, on page 88.

*1. GENERAL SURVEY OF JOURNALISM. Yr; 1 cr. Required of freshmen in the pre-journalism sequence. Practical talks on the character and scope of journalistic work, including a consideration of newspapers, magazines, technical and trade journals, agricultural publications, advertising, etc. 2:30 Tu. or Th. Mr. Hyde.

2. NEWSPAPER REPORTING AND CORRESPONDENCE. Yr; 3 cr. Lectures and practice on the work of the reporter and the correspondent, including news gathering and writing. Students cover at least one newspaper assignment each week and have one weekly conference with the instructor. Required of all students in the School of Journalism excepting those in the Journalism-Advertising Group. 10 or 11 MWF. Mr. Hyde and staff.

*3. COPY READING. Yr; 3 cr. Prerequisite: Nine grade-points in Journ. 2. 8 M and lab. Lab. fee $1.50 per semester. Mr. Nafziger.

*4. ADVERTISING TYPOGRAPHY. II; 1 cr. Two hours a week of instruction and laboratory work in the typography of advertisements. Required of students in the Journalism-Advertising Group. Mr. Nafziger.

*Does not count toward the requirements for graduation from the College of Letters and Science except for students in the School of Journalism, and in other special courses as follows: Journalism 3 and 8 count also in the School of Commerce.

★7. THE COMMUNITY NEWSPAPER. I; 2 cr. Open only to juniors and seniors. 8 TT. Mr. McCoy.

★8. NEWSPAPER BUSINESS MANAGEMENT. II; 2 cr. Open only to juniors and seniors. 10 TT. Mr. McCoy.

★13. MARKETING METHODS. See Economics 13.

14. GERMANY OF TODAY. See German 14.

★15. PRINCIPLES OF ADVERTISING. See Economics 15.

★16. ADVERTISING CAMPAIGNS. See Economics 16.

17. SPAIN AND SPANISH AMERICA OF TODAY. See Spanish 17.

18. FRANCE OF TODAY. See French 18.

19. ITALY OF TODAY. See Italian 19.

22. NEWS WRITING AND REPORTING. II; 3 cr. Required of students in the Journalism-Advertising Group. Mr. Hyde.

50–51. FREEHAND DRAWING AND ILLUSTRATION. (See Drawing 50-51).

100. SENIOR THESIS. Yr; 2 cr. Staff.

104. EDITORIAL WRITING. I; 2 cr. Theory and practice of editorial writing; analysis of editorial policy; interpretation of current news. Required of all seniors in the School of Journalism. 9 TT. Mr. Bush.

105. WRITING OF SPECIAL ARTICLES. I; 2 cr. Lectures and practice in preparing special articles for newspapers and magazines. Not open to students below the junior year. Required of all students in the School of Journalism. 10 or 11 TT. Miss Patterson.

106. CRITICAL WRITING. II; 2 cr. The function of criticism in journalism; reviewing of motion pictures, plays, concerts, and books for newspapers. Open only to seniors. 9 TT. Mr. Bleyer.

107. TECHNICAL AND TRADE WRITING. II; 2 cr. Instruction and practice in the methods of popularizing scientific and technical material, including that in government and politics, economics, social service, and education. Prerequisite: Journalism 105. 11 TT. Mr. Bush, Mr. McCoy.

109. THE LAW OF THE PRESS. II; 1 cr. Lectures and readings on libel, constitutional guarantees, copyright, and other phases of the laws affecting newspapers and periodicals. Required of all seniors in the School of Journalism. 1:30 Th. Mr. Hyde.

110. HISTORY OF JOURNALISM. I; 3 cr. A study of the evolution of the newspaper in England and the United States, with special reference to the problems of present-day journalism. Required of all seniors in the School of Journalism. 9 MWF. Mr. Bleyer.

111. THE PRINCIPLES OF JOURNALISM. II; 3 cr. Lectures, reading, and discussion on the relation of the newspaper to government and society; the influence, ethics, and psychology of journalism. Required of all seniors in the School of Journalism. 9 MWF. Mr. Bleyer.

112. Reporting of Public Affairs. II; 2 cr. Instruction and practice in the methods of reporting local, state, and federal courts; municipal, state, and federal administration; bankruptcy, politics, finance, and public affairs. Prerequisite: Journalism 2. 9 TT. Mr. Bush.

120. Interpreting Foreign News. I; 2 cr. Social, political, and economic conditions in European countries. 1:30-3:30 Tu. Mr. Bush.

123. Women's Departments in Newspapers and Magazines. II; 2 cr. The writing and editing of material for women's departments in newspapers and magazines; publicity work for social service and educational institutions; syndicates, etc. 10 TT. Miss Patterson.

200. Research. I, II; 2-4 cr. Research work on newspaper problems. Staff.

201. Seminary in Journalism. Yr; 2 cr. Subject for 1931-32: American newspapers from 1914 to 1918. Mr. Bleyer.

202. Seminary in Journalism. Yr; 2 cr. Subject for 1931-32: Journalistic style. Mr. Bleyer.

LATIN

(See Classics, page 115.)

MATHEMATICS

Warren Weaver, Ph.D., *Professor of Mathematics, Chairman*
Mark Hoyt Ingraham, Ph.D., *Professor of Mathematics*
Rudolph Ernest Langer, Ph.D., *Professor of Mathematics*
Herman William March, Ph.D., *Professor of Mathematics*
Ernest Brown Skinner, Ph.D., *Professor of Mathematics*
Charles Sumner Slichter, Sc.D., *Professor of Applied Mathematics*
Theodore Bennett, Ph.D., *Assistant Professor of Mathematics*
Herbert Pulse Evans, Ph.D., *Assistant Professor of Mathematics*
Ivan Stephan Sokolnikoff, Ph.D., *Assistant Professor of Mathematics*
Alfred Edward Whitford, Sc.D., *Lecturer in Mathematics*

INSTRUCTORS

Florence Eliza Allen, Ph.D.
Alice May Austin, M.A.
James Joseph Barron, B.S.
Ray Ely, M.A.
Harold Daniel Larsen, B.A.
Robert Edward Lowney, M.A.
James Stuart McNair, M.S.
Albert Emil May, M.A.
Nathan Schwid, B.A.
Paul Leroy Trump, M.S.
Kenneth Warren Wegner, B.A.
Neill Gordon Whitelaw, M.A.

In this department, courses 1 to 7 inclusive are planned to give a working knowledge of elementary mathematics. Mathematics 7 is required of students in the School of Commerce. Students who elect the minimum amount of mathematics in fulfillment of the optional requirement for the B.A. degree may choose eight credits from any of the elementary courses.

MAJOR. 21 credits which shall consist of Math. 5, 6, 112 or 113, and other courses numbered 100 or above, with the exception of Math. 136. Majors in mathematics must earn at least as many grade-points as credits in the required work of the major. Upper-group seniors are required to take the thesis course, Math. 100; the four credits thus earned count toward the 21-credit requirement. Students entering the junior class with advanced standing who expect to complete a major in mathematics in four semesters should previously have completed the equivalent of Math. 5. Teaching major and minor. See School of Education.

THE JUNIOR MATHEMATICAL CLUB, open to all students interested in the subject, meets twice a month.

ELEMENTARY COURSES

1. ALGEBRA. I, II; 4 cr. For students presenting one unit of algebra for entrance. Prerequisite to all other courses. I—8, 9, 10, 11, 1:30, 2:30; II—10, 2:30. Mr. Skinner and staff.

2. TRIGONOMETRY AND ANALYTIC GEOMETRY. I, II; 4 cr. Prerequisite to all other courses except 1, 3, 7, and 24. I—10, 11, 2:30; II—8, 9, 11, 1:30. Mr. Skinner and staff.

3. ANALYTIC GEOMETRY. I, II; 3 cr. Prerequisite: Trigonometry. I—11, 1:30 MWF; II—2:30 MWF. Staff.

5a. DIFFERENTIAL CALCULUS. I, II; 3 cr. Prerequisite (or co-requisite): Math. 2 or 3. Students who intend to major in mathematics or science are advised to take this course, together with 5b, in the sophomore year. Corresponds roughly to Math. 54, 4 cr., offered primarily for engineering students but open to others. I—10, 11 MWF; II—9, 1:30 MWF. Staff.

5b. INTEGRAL CALCULUS. I, II; 3 cr. Prerequisite: Math. 5a. I—11 MWF; II—10 MWF. Staff.

6. DETERMINANTS AND ANALYTIC GEOMETRY OF THREE DIMENSIONS. I, II; 3 cr. Prerequisite: Math 5, 54, or concurrent registration. 2:30 MWF.

7. THEORY OF INVESTMENT. I, II; 4 cr. Prerequisite: Math. 1 or 51. I—2:30, 3:30 MTWF; II—8, 9, 11, 1:30, 2:30. Mr. Skinner and staff.

24. THEORY OF LIFE INSURANCE. II; 3 cr. Prerequisite: Math. 7 or equivalent. 2:30 MWF. Mr. Larsen.

50. SUBFRESHMAN ALGEBRA. I; no cr. For students who fail to pass the examination for admission to Math. 51. Staff.

51. ELEMENTARY MATHEMATICAL ANALYSIS. I, II; 5 cr. Required of freshmen in engineering. Mr. March, Mr. Weaver, and staff.

52. ELEMENTARY MATHEMATICAL ANALYSIS. I, II; 5 cr. A continuation of Math. 51. Required of freshmen in engineering. Mr. March, Mr. Weaver, and staff.

53. ELEMENTARY MATHEMATICAL ANALYSIS. I; 5 cr. A course for students whose work in the freshman year at other institutions has not included the entire content of Mathematics 51 and 52. Mr. March and staff.

54. DIFFERENTIAL AND INTEGRAL CALCULUS. I, II; 4 cr. Required of all sophomores in engineering. Mr. March, Mr. Weaver and staff.

55. Calculus. I, II; 4 cr. Continuation of Math. 54. Required of all sophomores in engineering. Mr. March, Mr. Weaver, and staff.

71. Mathematics for Agricultural Students. 1; 4 cr. Staff.

ADVANCED COURSES

These courses are offered every year unless an exception is specifically noted. Math. 5 or 55 is prerequisite to all courses in the following group, except 115, 125, 136, 137.

100. Senior Thesis. Yr; 2 cr. 9 TT. Mr. Bennett.

101. Advanced College Algebra. Yr; 3 cr. An advanced course in algebra covering such topics as determinants, elimination, permutation and combinations, interpolation, and the theory of equations. During 1931-32 the first semester of the course may be taken for credit by those who have had the theory of equations. Prerequisite: Mathematics 5b or concurrent registration. 8 MWF. Mr. Ingraham.

110. Higher Mathematics for Engineers. Yr; 3 cr. 8 MWF. Mr. Sokolnikoff.

111. Advanced Calculus. I; 3 cr. 9 MWF. Mr. Skinner.

112. Differential Equations. I, II; 3 cr. Primarily a working course for students in mathematics and physics. 10 MWF. Mr. March, Mr. Evans.

113. Theoretical Mechanics. Yr; 3 cr. 11 MWF. Mr. Slichter.

114. Modern Analytic Geometry. I; 3 cr. 1:30 MWF. Mr. Bennett.

115. Projective Geometry. II; 3 cr. 1:30 MWF. Mr. Bennett.

116. Higher Analysis. Yr; 3 cr. 9 MWF. Offered 1930-31 and in alternate years or more often. Mr. March.

117. Vector Analysis. II; 3 cr. Not offered 1931-32. Mr. Weaver.

118. The Theory of Probabilities and Methods of Least Squares. II; 3 cr. 11 TT and 3:30 M. Mr. Weaver.

119. Differential Geometry. II; 3 cr. Mr. Skinner.

125. Theory of Equations. II; 3 cr. Not offered 1931-32. Mr. Ingraham.

136. Mathematics Preparatory to Statistics. I; 3 cr. Prerequisites: College algebra and a course in statistics or its equivalent, or consent of instructor. A course in certain portions of calculus, analytic geometry, trigonometry, and interpolation which are used in statistics. This course is to prepare students, who can not take calculus, for Mathematics 137. Can not be counted toward the minimum requirement for a major in mathematics. 2:30 MWF. Mr. Ingraham.

137. The Mathematics of Statistics. II; 4 cr. Prerequisites: Math. 136 or calculus and consent of the instructor. A course in curve fitting, correlation, dispersion, frequency distributions, graphical calculation, and portions of the theory of probability, including a certain amount of laboratory work. 2:30 MWF and period to be arranged. Mr. Ingraham.

GRADUATE COURSES

The graduate courses in mathematics are varied from year to year according to the needs of the students, other subjects being introduced in addition to those here listed. When there is no indication in the description of a course that it is given every year or every other year, this lack of information should be interpreted to mean that the course is given at irregular times.

218. SEMINARY IN THEORY OF PROBABILITY. Yr; 1 cr. An advanced course treating topics lying beyond the material covered in Mathematics 118. Offered 1930-31. Mr. Weaver.

220. THEORY OF ANALYTIC FUNCTIONS. Yr; 3 cr. This course, like Course 221, is fundamental in analysis, but its content is restricted to functions of the complex variable. It has accordingly special interest in the application of mathematics to physics. Offered 1931-32 and in alternate years. Mr. Langer.

221. THEORY OF FUNCTIONS OF A REAL VARIABLE. Yr; 3 cr. The aim of this course is to develop the fundamental concepts and theorems of analysis. It includes an introduction to the theory of point-sets. Offered 1930-31 and in alternate years. Mr. Langer.

238. THE MATHEMATICS OF ECONOMIC STATISTICS. I; 3 cr. Deals with the mathematics of problems peculiar to economic statistics such as secular trends, seasonal variation, correlation of time series, and index numbers. Prerequisites: Math. 136 and 137, or consent of the instructor. Given when demand warrants. Mr. Ingraham.

243. MODERN THEORY OF DIFFERENTIAL EQUATIONS. I; 3 cr. A critical consideration of the ordinary differential equations in the domain of real variables. Existence theorems. Theorems of oscillation and comparison. Boundary conditions, the Green's function, and the development of functions in terms of solutions of differential equations. Offered 1931-32. Mr. Langer.

244. HIGHER GEOMETRY. Yr; 3 cr. First semester: The material of the elementary course, 115, will be rapidly covered and the course will then proceed to somewhat more advanced material fundamental to the analytic projective geometry of two, three, and n-dimensions. Course 115 not a prerequisite. Second Semester: A survey of various topics in advanced analytic projective geometry. With the consent of the instructor, students may take the second semester's work without the first. Offered 1931-32. Mr. Bennett.

245. ALGEBRAIC GEOMETRY. Yr; 3 cr. Algebraic curves and their singularities; the geometry of the curve and the associated Riemann surface. Not offered 1931-32. Mr. Bennett.

246. FINITE GROUPS. Yr; 3 cr. Offered 1930-31 and usually in alternate years. Mr. Skinner.

247. TENSOR ANALYSIS. Yr; 3 cr. Not offered 1931-32. Mr. Weaver.

249. THEORETICAL HYDRODYNAMICS. I; 2 cr. Mr. Slichter.

250. THEORY OF ELASTICITY. Yr; 3 cr. Mr. March.

251. THEORY OF POTENTIAL. Yr; 2 cr. Mr. Weaver.

255. Advanced Algebraic Theory of Equations. I; 3 cr. A course covering the Galois theory of the algebraic solution of equations, the properties of symmetric functions, and certain other algebraic topics in the theory of equations. Not offered 1931-32. Mr. Ingraham.

256. Advanced Analytic Theory of Equations. II; 3 cr. A course in the location of roots of a polynomial and certain related polynomials, including the derivative, with the extension of portions of the theory to entire functions. Not offered 1931-32. Mr. Ingraham.

257. Infinite Series of Functions. Yr; 3 cr. Not offered 1931-32. Mr. Langer.

258. Foundation of Analysis. Yr; 2 cr. Mr. Ingraham.

263. Higher Algebra. Yr; 3 cr. Matrices, linear dependence and independence, quadratic forms, elementary divisors. Offered 1932-33. Mr. Ingraham.

265. Harmonic Analysis. Yr; 3 cr. Boundary value problems connected with the partial differential equations of ordinary occurrence in mathematical physics. Fourier's series, series of Bessel's functions, and spherical harmonics. Offered 1931-32 and in alternate years. Mr. March.

266. Theory of Numbers. Yr; 3 cr. Theory of congruences and of algebraic integers. Offered 1931-32. Mr. Skinner.

267. Calculus of Variations. I; 3 cr. An introductory course devoted to the classical theory and problems. Prerequisite: Differential and integral calculus. Not offered 1931-32. Mr. Langer.

268. Partial Differential Equations. II; 3 cr. This course treats the theory of the partial differential equation of the first order and the various types of linear partial differential equations of second order which occur so commonly in the applications of mathematics. It presupposes no special knowledge other than an ordinary introductory course in differential equations, and some elementary knowledge of the theory of power series. Offered 1931-32. Mr. Langer.

269. Theory of Integral Equations. II; 3 cr. An introductory course. The classical approach to the equations of Volterra and Fredholm types. Not offered 1931-32. Mr. Langer.

270. Mathematical Bases of Theory of Relativity. II; 3 cr. Special and general relativity, the Lorentz transformation, quadratic differential forms, and the Absolute Calculus of Ricci and Levi-Civita. Not offered 1931-32. Mr. Weaver.

271. Linear Algebras. Yr; 3 cr. A course in the theory of linear associative algebras of finite order with an introduction to the recent work in algebras of infinite order. Offered 1931-32. Mr. Ingraham.

275. Second Course in Theory of Functions. Yr; 3 cr.

TEACHERS' COURSES

The Teaching of Mathematics. See School of Education.

The Content of Secondary Mathematics. See School of Education.

METEOROLOGY

ERIC REXFORD MILLER, M.S., *Lecturer in Meteorology*

1. WEATHER AND CLIMATE. I; 3 cr. Prerequisite: Physics 1 or high-school physics. Lecture, quiz, 10 MWF. Mr. Miller.

2. CLIMATE AND MAN. II; 3 cr. Prerequisite: Meteorology 1 or a course in physical geography. Lecture, quiz, 10 MWF. Mr. Miller.

103. METEOROLOGY. I; 3 cr. Prerequisites: Mathematics 5 or 54; Physics 2. Lecture, 2:30 MWF. Mr. Miller.

106. CLIMATOLOGY. II; 3 cr. Prerequisite: A course in statistics. Lecture, 2:30 MWF. Mr. Miller.

MUSIC

CHARLES HENRY MILLS, Mus.D., F.R.C.O., *Professor of Music, Chairman*
CECIL BURLEIGH, Professor of Music
EDGAR BERNARD GORDON, *Professor of Music*
LOUISE LOCKWOOD CARPENTER, B.M., *Associate Professor of Music*
LELAND AVERY COON, B.A., *Associate Professor of Music*
EDSON WILFRED MORPHY, *Associate Professor of Music*
EDWARD EARLE SWINNEY, B.A., B.M., *Associate Professor of Music*
ORIEN EMEAL DALLEY, B.M., *Assistant Professor of Music*
IRENE BELLE EASTMAN, B.M., *Assistant Professor of Music*
LEON LEONARD ILTIS, B.M., *Assistant Professor of Music*
FLORENCE BERGENDAHL, *Instructor in Music*
PAUL GEORGE JONES, B.M., *Instrutor in Music*
KATHLEEN ANN MCKITRICK, B.M., *Instructor in Music*
MARJORIE SCHOBEL, B.M., *Instructor in Music*
HELEN STRATMAN-THOMAS, B.M., M.A., *Instructor in Music*

See School of Music, page 101, for outline of four-year curriculum in music.

THEORY COURSES

1. HARMONY. Yr; 3 cr. Provides the student with a working knowledge of the chord material up to the dominant seventh.. Much attention is given during the first semester to such fundamentals of music theory as key signatures, major and minor scales, intervals, triads, and elementary chord progressions. From the first, the material of the course is used as a basis for keyboard harmony. All students are required to harmonize melodies and to transpose at the keyboard. The harmonizing of soprano melodies and the composition of original examples form a large part of the work of the second semester. 8, 9, or 1:30 MWF. Miss Eastman and staff.

5. FORM AND ANALYSIS. Yr; 2 cr. Prerequisite: Music 11. A study of the various musical forms and the application of the structural and harmonic principles involved to the survey of representative works of the masters. 3:30 MW. Miss Thomas.

11. Second-Year Harmony. Yr; 3 cr. Prerequisite: Music 1. 9 or 10 MWF. Miss Eastman and staff.

21. Counterpoint. Yr; 2 cr. Prerequisite: Music 1. 9 or 10 TT. Miss Thomas.

31. History of Music. Yr; 2 cr. An historical survey of the growth of music to the present day; the lectures are amply illustrated with examples of all music under survey. A student of this course should acquire a certain critical sense as to musical values, a keener sense of discrimination and taste, and the power to place a given piece of music in its historical period. 1:30 TT. Miss Thomas.

33. History of Public School Music. 1; 2 cr. A comprehensive study of the development of public school music. 11 TT. Mr. Gordon.

36. Pedagogy. (Piano, violin, voice, organ). I; 2 cr. An intensive analysis of technical and musical studies with reference to their use as teaching material. Evaluation of various means of presentation. Discussion of pedagogical theories of the past and present. Open only to juniors and seniors in School of Music. Prerequisites: Music 5, 31, 45, 75. Staff.

37. Applied Pedagogy. (Piano, violin, voice, organ). II; 2 cr. Actual private and class teaching under supervision. Lesson plans and weekly discussion of problems. Prerequisite: Music 36. Staff.

39. Theory and Practice of Supervision. I; 3 cr. Laboratory and conference. Prerequisites: Music 51 and 53. 8 TT; 11 or 1 MWF. Mr. Gordon.

45. An Introduction to Public School Music. Yr; 2 cr. An orientation course designed to acquaint students with the educational viewpoint with respect to school music. Elementary and intermediate grade school methods and materials considered. 10 MW. Mr. Gordon.

51. Theory and Practice of Grade School Music. Yr; 2 cr. Laboratory and conference. Prerequisite: Music 45. 8 F; 1 MWF. Mr. Gordon.

53. Theory and Practice of Secondary School Music. I; 2 cr. Lecture and observation work in high-school music—vocal, appreciation, and instrumental. Prerequisite: Music 51 or concurrent registration. 8 MW. Mr. Gordon.

65. Appreciation of Music. Yr; 1 cr. A general survey of the development of music with practical illustrations. Open to the general student body. Prerequisite: Sophomore standing. 11 TT. Mr. Mills.

66. Conducting. I; 2 cr. Prerequisite: Junior standing. 11 TT. Mr. Gordon.

67. The Community Festival and Pageant Movements. II; 2 cr. The relation of these artistic activities to the general problem of recreation and to their use as a social force. Problems of song leadership, organization of informal musical groups, and the development of musical programs, festivals, and pageants. Offered 1932-33 and in alternate years. 2:30 MF. Mr. Gordon.

71. Solfeggio. Yr; 1 cr. Class and individual drill; independent, accurate reading of all intervals of the diatonic scale; the more usual chromatics and easier rhythmic patterns; writing of simple melodies from dictation. Solfeggio may be fulfilled in one year or may require four or more years, according to the ability, preparation, or advancement of the student. 8 MW or 8 TT. Miss Schobel.

75. Advanced Solfeggio. Yr; 1 cr. Class and individual singing of different unison and part music involving all types of rhythms and intervals. Writing of two-part dictations. Prerequisites: Music 1 and 71. 9 or 10 TT. Mr. Dalley.

76. Orchestra. Yr; 1 cr. Membership decided by tryouts. Open to entire student body. Only after two semesters in the orchestra may a student register for credit. Prerequisite: Ability to play some instrument. 4:30 MF; 7 W. Mr. Morphy.

78. Community Music. II; 2 cr. The ways in which music may be made a more potent social force; important developments here and abroad; programs of vocal and instrumental activities adapted to different types of communities; selection of material. Daily practice in conducting. For teachers of music, school principals, social workers, and citizens generally. Offered 1931-32 and in alternate years. 1:30 TT. Mr. Gordon.

80. Bands. Yr. Prerequisite: Knowledge of some band instrument. 4:30 TT or 4:30 MWF. Mr. Morphy and staff.

89. Instrumental Class Instruction. II; 3 cr. A practical class for acquiring an elementary playing and teaching knowledge of orchestral instruments. Prerequisite: Music 1. 2:30 MTWTF. Mr. Dalley.

90. Instrumental Methods. I; 2 cr. A practical study of stringed and wind instrument methods. Prerequisite: Music 89. 2:30 MTWT. Mr. Dalley.

91. Instruction. II; 2 cr. A course in playing and writing for string, woodwind, and brass ensembles. Prerequisite: Music 90. 3:30 TT or MW. Mr. Dalley.

92. Instrumental Music Administration. (Orchestra) Yr; 3-4 cr. Problems of organizing instrumental classes, bands, and orchestras on the curricular or extra-curricular basis. Selection and care of instruments and music and practical experience in conducting and interpretation of music. Prerequisite: Music 89. Orhestra 4:30 TT; lab. 4:30 F. Mr. Dalley.

100. Senior Thesis. Yr; 2 cr. Staff.

102. Elementary Composition. Yr; 2-3 cr. The study of the higher discords and post-Wagnerian technique. A study and analysis of the work of Strauss and Debussy. The encouragement of original work. Prerequisite: Music 11. 10 MW. Miss Thomas.

112. Advanced Counterpoint. I, II; 2 cr. Prerequisite: Music 21. 10 TT. Mr. Mills.

122. Double Counterpoint, Canon and Fugue. Yr; 2 cr. Analysis and composition. Examples taken from Bach and others of the classical period, as well as from modern masters. Prerequisite: Music 21. Mr. Mills.

131. Advanced History of Music. Yr; 2-3 cr. This course is divided into periods such as the following: The Clavecin period; Bach and Handel; the Classical school; the Romantic school; the Modern French school; the development of chamber music; Wagner. Each period is a semester course. Prerequisite: Music 31. Staff.

152. Orchestration. Yr; 2 cr. A study in the history of orchestration. Representative orchestral works will be studied by means of scores and phonograph records. Attendance at rehearsals of the University orchestra. Texts by Forsyth, Rimsky-Korsakow, Widor, and others are used as reference. Scoring for orchestra. Mr. Morphy.

162. Composition. Yr; 2 cr. Small forms, etc. Prerequisite: Music 102. Mr. Burleigh.

165. Survey of Music. Yr; 2 cr. A critical course in the study of the various forms and masterpieces of music. Prerequisite: Senior or graduate standing. 1:30 TT. Mrs. Carpenter.

181. Artist Course in Applied Music. Yr; 1 or 2 cr. Prerequisite: Graduate standing in applied music. Staff.

200. Research in History of Music. Yr; 2 cr. Prerequisite: Graduate standing. Mr. Mills.

211. Modern Orchestration. Yr,; 2 cr. A further study of modern methods in orchestration. Original work in composition for orchestra will be required. Prerequisite: Music 152. Mr. Morphy.

265. Free Composition. Yr; *cr. Prerequisite: Music 162. Staff.

APPLIED MUSIC

Students registering for any of the courses listed below should consult the Assignment Committee before filling in any definite class hours on their study lists.

70. Piano Technic. Yr; 0 cr. The study of hand position, finger action, scales, and arpeggios. Required of all first-year students in piano and others whom the instructors designate. Classes of eight students meeting two hours per week. Lab. fee $4.00. 9, 10, 11, 1:30 TT. Mr. Jones.

81. Pianoforte. 0-2 cr. In addition to the private lessons, each first-year student taking piano for credit is required to enroll in a technic class. Fee $25-$45. Mrs. Carpenter, Mr. Coon, Mr. Iltis, Miss McKitrick.

82. The Art of Singing. 0-2 cr. The technique of tone production; correct principles of breathing; the vocal organs and their action; study of diction, English, French, German, and Italian; study of repertoire to cover all types of song literature; stage deportment; ensemble classes; recital and concert appearance. Fee $25-$45. Mr. Swinney, Miss Schobel, Miss Bergendahl.

83. Stringed and other Orchestral Instruments. 0-2 cr. Individual instruction. Fee $25-$45. Mr. Burleigh, Mr. Dalley, Mr. Morphy.

84. Organ. 0-2 cr. Individual instruction. Prerequisite: A satisfactory pianoforte technique, and some skill in polyphonic playing. Fee $25-$45 Miss Eastman, Mr. Jones, Mr. Mills.

85. Ensemble. 1 cr. Prerequisite: A degree of playing or singing ability determined by the instructor. This course is designed for pianists, singers, and players of orchestral instruments. Assignments in practical accompanying of the voice and violin or other instruments; violin and piano sonata playing; four and eight-hand arrangements of symphonies and orchestral works; two-piano compositons; string ensemble literature; string quartets; string and woodwind quintets and sextets. In the case of vocalists, the University Singers or the A Cappella Choir. Required of all applied music majors for both semesters of the senior year. Staff.

87. Class Piano for Public School Music Majors. 2 cr. One hour of technic in a class of eight, and two hours of piano in a class of four. Required of all public school music majors. Basic principles of technic, scales, and arpeggios in all major and minor keys; the complete cadence in all keys; sight reading; simple chord analysis; correct playing of folk songs, hymns, and the simpler choral literature, with a view to accompanying groups; transposition a second or third up or down; keyboard harmonization of simple melodies. Fee $45. 9, 10, 11, 1:30 MWF. Piano staff.

88. Class Voice for Public School Music Majors. 2 cr. A course primarily for those majoring in public school music and a prerequisite to Course 82 for all such majors. The work is given in classes of four meeting three hours per week and includes the fundamental principles of voice production, correct concept of tone, interpretation, and ensemble singing. Fee $45. 9, 11, 1:30 MWF. Voice staff.

181. Artist Course in Applied Music. Yr; *cr. Prerequisite: Graduate standing in Applied Music. Fee $25-$45. Staff.

NORSE

(See Scandinavian Languages, page 187.)

PHARMACY

Edward Kremers, Ph.D., Ph.M., Sc.D., *Professor of Pharmaceutical Chemistry, Chairman*
William Oscar Richtmann, Ph.D., *Associate Professor of Pharmacognosy*
Nellie Antoinette Wakeman, Ph.D., *Assistant Professor of Pharmacy*
Ralph William Clark, M.S., *Instructor in Pharmacy*
Charles Melbourne Johnson, M.S., *Instructor in Pharmacy*

PHARMACY

1. Pharmaceutical Technique. Yr; 3 cr. A study of the principles of physics applied to pharmacy. Open to freshmen. Lab. fee $9.00 per semester. 1:30 MW; 6 hours lab. Mr. Johnson.

20. Elementary Prescription Practice. Yr; 2 cr. The compounding and the study of simple prescriptions. Lab. fee $8.00 per semester. 11 TT; 3 hours lab. Mr. Clark.

30. Pharmaceutical Technology. I; 5 cr. An elementary course in the preparation of pharmaceutical products. Prerequisites: Chemistry 20 and Ph. Chem. 26 or concurrent registration. Lab. fee $15.00. 1:30 TT; 8 hours lab. Mr. Clark.

50. History of Pharmacy. Yr; 1 cr. The development of pharmacy in the principal countries of Europe, followed by a more detailed study of the development of pharmacy in the United States. Offered 1930-31 and in alternate years. 3:30 F. Mr. Kremers.

51. Drug-Store Practice. Yr; 1 cr. Lectures and topics on aspects of drug-store practice ranging from the planning and equipment of a store to salesmanship and the laws governing the practice of pharmacy. Offered 1931-32 and in alternate years. 3:30 F. Mr. Kremers and special lectures.

100. Senior Thesis. Yr; 2-3 cr. Staff.

121. Advanced Prescription Practice. II; 2 cr. A study of classes of modes of administration with special reference to incompatibilities. Prerequisites: Pharmacy 20, Ph. Chem. 26 and 27. Lab. fee $8.00. 1:30 Tu; 2 hours lab. Mr. Clark.

124. Dispensary Practice. I, II; 2 cr. Dispensary problems; hospital practice. Prerequisite: Consent of instructor. Lab. fee $3.00. 2:30-4:30 M. Mr. Clark.

131. Advanced Pharmaceutical Technology. Yr; 1-5 cr. Problems in the preparation of pharmaceutical preparations. Lab. fee $1.50 per credit. Mr. Clark.

160. Pharmaceutical Literature. Yr; 1 cr. Mr. Kremers.

232. Graduate Pharmaceutical Technology. Yr; 1-5 cr. Mr. Kremers.

250. Conference of Research Workers. Yr; 1 cr. Mr. Kremers.

PHARMACEUTICAL AND PLANT CHEMISTRY

26. Inorganic Pharmaceutical Chemistry. I; 5 cr. A review of the principles of inorganic chemistry with special attention to methods for preparing and testing medicinal chemicals. Prerequisites: General chemistry and quantitative analysis. Lab. fee $15.00. 9 MWF; 6 hours lab. Miss Wakeman.

27. Organic Pharmaceutical Chemistry. II; 5 cr. A review of the principles of organic chemistry with special reference to organic medicinal chemicals. Prerequisite: Organic chemistry. Lab. fee $15.00. 9 MWF; 6 hours lab. Miss Wakeman.

40. Plant Chemistry. Yr; 3 cr. An elementary study of plant products and plant chemical processes. Prerequisite: Consent of instructor. Lab. fee I, $15.00; II, $10.00. 11 TT; 6 hours lab. Miss Wakeman.

45. Alkaloidal Assay. II; 1 cr. A study of chemical methods for determining the alkaloidal content of crude drugs and pharmaceutical preparations. Lab. fee $5.00. Last six weeks of Ph. Chem. 40. Miss Wakeman.

100. Senior Thesis. Yr; 2 cr. Staff.

127. Synthetic Organic Remedies. Yr; 1-5 cr. The preparation and properties of synthetic organic remedies. Prerequisite: Consent of instructor. Lab. fee $2.50 per credit. Miss Wakeman.

200. Graduate Research. Yr; 2-6 cr. Volatile oils and other subjects of organic chemistry, with special reference to plant chemistry. Mr. Kremers.

241. Advanced Plant Chemistry. Yr; 2 cr. 10 TT. Mr. Kremers.

PHARMACOGNOSY

10. Crude Vegetable and Animal Drugs. Yr; 1 cr. An introductory course in pharmacognosy based upon a morphological arrangement. 10-12 Tu or Th. Mr. Richtmann.

21. Doses of Vegetable and Animal Drugs. I, II; 1 cr. A general consideration of the various items associated with doses of medicines. Prerequisites: Pharmacognosy 10, Botany 1, Chemistry 1. Mr. Richtmann.

22. Habitats of Crude Vegetable and Animal Drugs. I, II; 1 cr. A study of various factors influencing the geographic sources of natural remedial agents.

100. Senior Thesis. Yr; 2 cr. Mr. Richtmann.

110. Sources of Information of Crude Vegetable and Animal Drugs. I, II; 1-5 cr. The use of the library in locating the literature relating to drugs.

120. Natural History of Vegetarle and Animal Drugs. Yr; 3 cr. A monographic study of a considerable number of drugs, based on their natural relationships. Prerequisites: Pharmacognosy 10, Botany 1, Chemistry 1. 8-10 MWF. Mr. Richtmann.

130. Cultivation of Medicinal Plants. Yr; 1-5 cr. Mr. Richtmann.

200. Research in Medicinal Plants. Yr; 1-5 cr. Mr. Richtmann.

PHILOSOPHY

Evander Bradley McGilvary, Ph.D., *Professor of Philosophy, Chairman*
Alexander Meiklejohn, Ph.D., LL.D., *Professor of Philosophy*
Max Carl Otto, Ph.D., *Professor of Philosophy*
Frank Chapman Sharp, Ph.D., *Professor of Philosophy*
Philip Gorder Fox, M.A., *Associate Professor of Philosophy*
Carl Möller Bögholt, M.A., *Assistant Professor of Philosophy*
Adolph Theodore Haentzschel, Ph.D., *Lecturer in Philosophy*
Wilfred Payne, Ph.D., *Instructor in Philosophy*
John Walker Powell, B.A., *Instructor in Philosophy*
Albert Gustav Ramsperger, Ph.D., *Instructor in Philosophy*
Eliseo Vivas, M.S., *Instructor in Philosophy* (on leave I)

The student is at liberty to begin his work in philosophy with any of the courses numbered under one hundred, but beginners who desire to take three hours of work throughout the year in the department, whether they wish to continue with the subject or not, will ordinarily find it most profitable to select course 11, 21, 31, or 41 in the first semester, and either 11, 21, or 132 in the second semester. None of the courses in this department is open to freshmen.

Major. The minimum requirement is 25 credits including courses 31 and 132, and 9 additional credits in the 100 group. A thesis may be included in these 25 credits at the option of the department.

11. Elementary Logic. I, II; 3 cr. Ten sections. Prerequisite: Sophomore standing. Mr. Otto, Mr. Bögholt, Mr. Haentzschel, Mr. Payne, Mr. Ramsperger.

21. Introduction to Philosophy. I, II; 3 cr. Prerequisites: Sophomore standing and upper-group status. Lecture 10 WF; quiz. Mr. McGilvary.

25. The Relation of Man to Nature. II; 3 cr. Prerequisite: Junior standing. Lecture 10 TT; quiz. Mr. Otto and staff.

31. History of Ancient and Medieval Philosophy. I; 3 cr. Prerequisite: Sophomore standing. 11 MWF. Mr. Haentzschel.

41. Introductory Ethics. I; 3 cr. A study of our standards of right and wrong: their nature, source, and value. Prerequisite: Sophomore standing. 9 MW; quiz. Mr. Sharp.

43. Business Ethics. I, II; 2 cr. The rules of fair competition. Standards of fair service. Fair price, fair wage, and the justice of the present system of distributing wealth. Prerequisite: Sophomore standing. I—9, 10, 11 TT; II—9, 10, 11, 2:30 TT. Fee $1.00. Mr. Sharp, Mr. Fox.

53. Elements of Aesthetics. I; 3 cr. An attempt is made in this course to discuss some of the more fundamental problems of beauty and the relation of art to other expressions of human activity. Prerequisite: Sophomore standing. Not offered 1931-32.

100. Senior Thesis. Yr; 2 cr. Staff.

120. Philosophy of Science. I; 3 cr. A study of the extent to which science involves a theory of reality, a theory of knowledge, and a theory of values. Prerequisite: Philosophy 21, 25, 31, or 132. 10 MWF. Mr. Ramsperger.

122. The Philosophy of Naturalism. I; 3 cr. The contrast between ancient and contemporary descriptions of physical substance, including modifications of the theory of atomic structure introduced since 1925; modern theories of nature which avoid the definition of the concept of substance. Prerequisite: Philosophy 21, 25, 31, or 132. Not offered 1931-32.

124. Philosophical Bearings of Current Psychological Theories. II; 3 cr. With special reference to behaviorism and Gestalt psychology. Prerequisite: Philosophy 21, 25, 31, or 132. 10 MWF. Mr. Haentzschel.

132. History of Modern Philosophy. II; 3 cr. Prerequisite: Philosophy 31. 11 MWF.

134. Contemporary Philosophy. Yr; 3 cr. Prerequisite: Philosophy 21, 31, 25, or 132. 11 MWF. Mr. McGilvary.

135. Descartes, Spinoza, and Leibniz. II; 3 cr. Prerequisite: Philosophy 21, 25, 31, or 132. Not offered 1931-32. Mr. Ramsperger.

136. Locke, Berkeley, and Hume. I; 3 cr. Prerequisite: Philosophy 21, 25, 31, or 132. 11 TT and third hour. Mr. Ramsperger.

137. The Philosophy of Kant. II; 3 cr. Prerequisite: Philosophy 21, 25, 31, or 132. 1:30 TTF. Offered 1931-32 and in alternate years. Mr. Ramsperger.

139. American Philosophers. I; 3 cr. With special reference to William James and John Dewey. Prerequisite: 3 cr. in philosophy. 10 TT; quiz. Mr. Otto.

145. Plato's Republic. II; 2 cr. Prerequisite: Philosophy 21, 25, 31, or 41. 1:30 TT. Mr. Sharp.

146. Advanced Business Ethics. II; 2 cr. Prerequisite: Philosophy 43. 11 TT. Mr. Sharp.

213. Logical Seminary. Yr; 2 cr. Mr. Otto.

240. Metaphysical Seminary. Yr; 2 cr. Mr. McGilvary.

247. Ethical Seminary. Yr; 2 cr. Mr. Sharp.

PHYSICS

Charles Elwood Mendenhall, Ph.D., *Professor of Physics, Chairman*
Leonard Rose Ingersoll, Ph.D., *Professor of Physics*
John Ransom Roebuck, Ph.D., *Professor of Physics*
John Hasbrouck Van Vleck, Ph.D., *Professor of Physics*
William Frederick Steve, M.A., *Associate Professor of Physics*
Hugo Bernard Wahlin, Ph.D., *Associate Professor of Physics*
Robert James Havighurst, Ph.D., *Assistant Professor of Physics*
Julian Ellis Mack, Ph.D., *Assistant Professor of Physics*
John Gibson Winans, Ph.D., *Assistant Professor of Physics*
Leland John Haworth, M.A., *Instructor in Physics*
Ragnar Rollefson, Ph.D., *Instructor in Physics*
R. H. Fowler, Ph.D., University of Cambridge, *Special Lecturer in Physics* (Spring of 1931)

In order to adapt the instruction in physics to students of different purpose and degree of preparation, the introductory course is given in two divisions designated as courses 1 and 31. Course 1 is arranged primarily for those who are taking this subject for its general interest. Course 31 is intended for those who need or desire a more fundamental training, and presupposes either high-school physics or freshman mathematics, or concurrent registration in the latter.

Major. A minimum of 24 credits in approved courses, including the thesis.

1a. General Physics. I; 5 cr. Mechanics, heat, magnetism, static electricity. (See also Physics 31.) Lab. fee $7.00. Lecture 11 or 2:30 MW; 4 hrs. lab; 2 hrs. quiz. (Repeated second semester; lecture 2:30 TT.) Mr. Steve, Mr. Ingersoll and staff.

1b. General Physics. II; 5 cr. Current electricity, sound, and light. Prerequisite: Physics 1a. Lab. fee $7.00. Lecture 11 or 2:30 MW; 4 hrs. lab; 2 hrs. quiz. (Repeated first semester; lecture 2:30 TT.) Mr. Steve, Mr. Ingersoll, and staff.

2. Heat. I; 3 cr. Prerequisite: Physics 1 (or 31, 52, or 54). Lab. fee $6.50. Lecture-conference 9 Th; lab. 1:30-5:30 Th. Mr. Roebuck.

3. LIGHT. II; 3 cr. Prerequisite: Physics 1 (or 31, 52, or 54). Lab. fee $6.50. Lecture-conference 9 Th; lab. 1:30-5:30 Th. Mr. Roebuck.

4. ELECTRICITY AND MAGNETISM. Yr; 3 cr. Prerequisite: Physics 1 (or 31, 52, or 54). Lab. fee $6.00 per semester. Lecture-conference 9 Tu; lab. 1:30-5:30 Tu. Mr. Wahlin.

7. PHOTOGRAPHY. II; 2 cr. Prerequisite: Consent of instructor. Lab. fee $4.50. Lecture 11 Tu; lab. 1:30-4:30 Tu. Mr. Mack.

10. LABORATORY ARTS. I; 1 cr. Glass blowing and shop work. Required for Physics 100. Lab. fee $3.00. Mr. Roebuck.

31. GENERAL PHYSICS. Yr; 5 cr. Prerequisite: High-school physics or freshman mathematics, or concurrent registration in the latter. Recommended for students who expect to major in physics or chemistry. Lab. fee $7.00 per semester. Lecture 11 F; 4 hrs. lab; 3 hrs. quiz. Mr. Roebuck, Mr. Winans, Mr. Ingersoll, and staff.

51. GENERAL PHYSICS. I; 5 cr. Mechanics, wave motion, and heat. Required of sophomores in civil, chemical, mechanical, and mining engineering. Lab. fee $7.00. Lecture 3:30 M or W; 4 hrs. lab; 3 hrs. quiz. Mr. Ingersoll, Mr. Mack, and staff.

52. GENERAL PHYSICS. II; 5 cr. Magnetism, electricity, sound, and light. Continuation of Physics 51. Lab. fee $7.00. Lecture 3:30 M or W; 4 hrs. lab; 3 hrs. quiz. Mr. Ingersoll, Mr. Mack, and staff.

53. MECHANICS. I; 3 cr. Required of sophomores in electrical engineering. Lab. fee $3.60. Lecture 8 W; 2 hrs. lab; 1 hr. quiz; 2 hrs. comp. Mr. Wahlin and staff.

54. HEAT, WAVE MOTION, SOUND, AND LIGHT. II; 3 cr. Continuation of Physics 53. Lab. fee $3.60. Lecture 11 W; 2 hrs. lab; 1 hr. quiz; 2 hrs. comp. Mr. Wahlin and staff.

55. ADVANCED ELECTRICITY AND MAGNETISM. I; 3 cr. Required of juniors in electrical engineering. Lab. fee $6.00. Lecture-conference 1:30 F; 4 hrs. lab. Mr. Wahlin and staff.

56. ADVANCED ELECTRICITY AND LIGHT. II; 3 cr. Required of seniors in electrical engineering. Lab. fee $6.50. Lecture-conference 1:30 F; 4 hrs. lab. Mr. Roebuck, Mr. Wahlin, and staff.

61. GENERAL PHYSICS. II; 5 cr. For agricultural students. Lab. fee $7.00. Lecture 10 TT; 4 hrs. lab; 2 hrs. quiz. Mr. Steve.

65. GENERAL PHYSICS. Yr; 3 cr. Required of sophomores in physical education and home economics. Lab. fee $3.60 or $5.00 per semester. Lecture 11 Tu; 2 or 3 hrs. lab; 2 hrs. quiz. Mr. Winans, Mr. Ingersoll, and staff.

91. SOUND. II; 1 cr. Required of music students. Lecture-conference 2:30 F. Mr. Winans.

100. SENIOR THESIS. Yr; 2 cr. Lab. fee $3.00 per credit. Staff.

106. IONIZATION IN GASES AND RELATED PHENOMENA. I; 2-3 cr. 8 MW. Mr. Winans.

115. Introduction to Thermodynamics. I; 3 cr. 8 TTS. Mr. Roebuck.

116. Electric Circuits and Electromagnetic Waves. I; 3 cr. 10 MWF. Mr. Wahlin.

117. Physical Optics. II; 3 cr. 10 TTS. Mr. Ingersoll.

118. Kinetic Theory of Gases. I; 3 cr. 9 TTS. Mr. Ingersoll.

120. Colloquium. Yr; 1 cr. 4 F. Mr. Mendenhall.

124. Mathematical Theory of Heat Conduction. II; 3 cr. 9 TTS. Mr. Ingersoll.

200. Graduate Research. Yr; *cr. Lab. fee $3.00 per credit. Staff.

211. Advanced Dynamics. Yr; 3 cr. Offered 1931-32 and in alternate years. 11 MWF. Mr. Weaver.

212. Quantum Mechanics and Atomic Structure. Yr; 3 cr. 10 MWF. Mr. Van Vleck.

214. Application of Thermodynamics to the Properties of Matter. II; 3 cr. Offered 1931-32 and in alternate years. 8 TTS. Mr. Roebuck.

215. Theory of Electricity. Yr; 3 cr. Offered 1932-33 and in alternate years. 11 MWF. Mr. Weaver.

216. Electromagnetic Theory of Light. Yr; 3 cr. Offered 1931-32 and in alternate years. 8 MWF. Mr. Mendenhall.

219. Theory of Radiation. I; 3 cr. Offered 1932-33 and in alternate years. 8 MWF. Mr. Mendenhall.

225. Seminary, Electron Theory of Solids. II; 3 cr. 8 MWF. Mr. Mendenhall.

232. Advanced Quantum Mechanics. I; 2-3 cr. Hours to be arranged. Mr. Van Vleck.

TEACHERS' COURSE

The Teaching of Physics. See School of Education.

POLITICAL SCIENCE

Frederic Austin Ogg, Ph.D., LL.D., *Professor of Political Science, Chairman* (on leave II)

John Merriman Gaus, Ph.D., *Professor of Political Science*

Chester Lloyd Jones, Ph.D., *Professor of Economics and Political Science* (*on leave* 1931-32)

Pitman Benjamin Potter, Ph.D., *Professor of Political Science*

Ford Herbert Macgregor, M.A., *Associate Professor of Political Science*

John T. Salter, Ph.D., *Associate Professor of Political Science* (on leave 1931-32).

Walter Rice Sharp, Docteur en Droit, *Associate Professor of Political Science* (on leave 1931-32)

Grayson Louis Kirk, Ph.D., *Assistant Professor of Political Science*

Jacob Mark Jacobson, Ph.D., *Instructor in Political Science*

John Donald Lewis, M.A., *Instructor in Political Science*

The courses offered by the Department of Political Science are designed to afford a well-rounded view of the nature and activities of government and to give substantial acquaintance with public affairs, state and local, national, and international. Some of them are intended primarily to furnish information requisite for intelligent citizenship, along with the mental training which forms a part of any liberal education. Others involve more specialized study, with a view to expert knowledge of legislation, administration, judicial procedure, diplomacy, and public law. Except as qualified by the prerequisites indicated below, courses are open to students who have completed their freshman year; and all are elective. Courses 1 and 7 are given every semester, and, being designed primarily for sophomores, serve as alternative gateways to the more advanced and specialized courses. Except in unusual cases, students should not take both 1 and 7.

MAJOR IN SOCIAL SCIENCE WITH POLITICAL SCIENCE AS A FIELD OF CONCENTRATION. The requirements in political science when offered as a field of concentration are: (1) 25 credits, including thesis if one is written; (2) course 1 or course 7; (3) other courses so selected that the total political science offering will include at least one general course in each of the first four groups enumerated below. Students offering this field may be required to take courses outside of the department which are related to their political science programs.

THESIS. Students who, by their attainments in political science, and by personal characteristics, aptitudes, and interests, have shown that they can probably gain more from a thesis than from work for equivalent credits in courses, will be invited by their advisor to write a thesis (4-6 cr.).

HISPANIC STUDIES AS A FIELD OF CONCENTRATION. Students interested in this field should consult the announcement on page 58.

I. POLITICAL THEORY AND JURISPRUDENCE

1. INTRODUCTION TO GOVERNMENT AND POLITICS. I, II; 3 cr. Not open to freshmen. The meaning of citizenship in our modern world, as revealed by a survey study of public opinion, political parties and propaganda, political leadership, the legislative process, administrative areas and services, the judicial process, and civil liberty. Based primarly upon American problems, but with some reference to foreign states and world politics. Lectures by members of the department, discussions, laboratory problems. Lecture 9 F; two quizzes. Mr. Gaus and staff.

2. ELEMENTARY LAW AND JURISPRUDENCE. II; 3 cr. Prerequisite: Sophomore standing. The nature, origin, and development of our legal system; the general rules governing contracts, torts, crimes, etc.; administrative tribunals, and the liability of public officers; problems of judicial organization and procedure. 10 MWF. Not offered 1931-32.

101. ELEMENTS OF POLITICAL SCIENCE. I; 3 cr. Prerequisite: Sophomore standing. A survey of the principles of political organization and practice. 11 MWF. Mr. Lewis.

109. ROMAN LAW. I; 3 cr. Prerequisite: Junior standing. Not offered 1931-32 Mr. Potter.

165. HISTORY OF AMERICAN POLITICAL IDEAS. I, II; 3 cr. Prerequisite: Sophomore standing. An historical and analytical survey. The major political ideas of each historical period in relation to the social and economic environment and to the political controversies of the time. 9 MWF. Mr. Jacobson.

166. CONTEMPORARY AMERICAN POLITICAL THOUGHT. II; 2 cr. Mr. Jacobson.

239. SEMINARY IN PUBLIC OPINION. Yr; 2 cr. Not offered 1931-32.

245. HISTORY OF EUROPEAN POLITICAL THOUGHT. Yr; 3 cr. Prerequisite: Graduate standing or consent of instructor. The political thought developed out of the Greek city state, the Roman Empire, the medieval state, and the modern state. 2:30 WMF. Mr. Gaus.

II. AMERICAN GOVERNMENT

7. AMERICAN GOVERNMENT AND POLITICS. (NATIONAL). I, II; 4 cr. Not open to freshmen. A critical analysis of the chief problems of American national politics. Special emphasis given affairs of current importance. Lectures 10 TT; two quizzes. Mr. Kirk and staff.

13. MUNICIPAL GOVERNMENT. I; 2 cr. Prerequisite: Sophomore standing. The organization and politics of city governments, including the city as a political unit, home rule, the mayor, the city council, commission and city manager forms of government, and municipal politics. 8 TT. Mr. Salter.

112. INTRODUCTION TO CONSTITUTIONAL LAW. I; 3 cr. Prerequisite: Political Science 1, 2, or 7. The federal constitution as interpreted by the courts in actual controversies involving various sections and clauses. 2:30 MWF. Mr. Salter.

114. PRACTICAL PROBLEMS OF MUNICIPAL GOVERNMENT. I; 3 cr. Prerequisite: Political Science 1, 7, or 13, or consent of instructor. 8 MWF. Mr. MacGregor.

115. SOCIAL PROBLEMS OF MUNICIPAL GOVERNMENT. II; 3 cr. Prerequisites: Junior standing and Political Science 1, 7 or 13, or consent of instructor. 9 MWF. Mr. MacGregor.

122. POLITICAL PARTIES AND PARTY PROBLEMS. I, II; 3 cr. Prerequisite: Sophomore standing. The principal problems of politics and political parties, including party machines, the spoils system, nominating methods, political campaigning, expenditures, the conduct of elections, and participation in politics. 11 MWF. Mr. Salter.

123. AMERICAN DIPLOMACY: ORGANIZATION AND PRACTICE. I; 2 cr. Prerequisite: Political Science 7. State Department; foreign service, diplomatic and consular; treaty-making power; principles of foreign policy. Lectures, reading, discussions. Consultation regarding entrance to the foreign service. 9 TT. Mr. Potter.

126. PRINCIPLES OF LEGISLATION. II; 3 cr. Prerequisite: Political Science 1 or 7. The functions, organization, and procedure of legislative bodies; analysis of the problems and principles of lawmaking. Offered 1932-33 and in alternate years. Mr. Jacobson.

134. COUNTY AND TOWNSHIP GOVERNMENT IN THE UNITED STATES. I; 2 cr. Prerequisite: Sophomore standing. Emphasis upon the rural local institutions of the states of the Middle West. Mr. MacGregor.

135. Municipal Administration. II; 3 cr. Prerequisite: Political Science 1, 7, or 13, or senior standing. A survey of the work of city government: city planning, zoning, engineering problems, crime and police administration, parks and playgrounds, health, housing, poor relief, transportation, etc. 9 MWF. Mr. Salter.

139. Government of Wisconsin. I; 2 or 3 cr. Prerequisite: Political Science 1 or 7. The administrative activities of the state of Wisconsin; frequent comparisons with the governments of other states. 9 TT. Mr. Jacobson.

144. The Police Power and Social Legislation. II; 3 cr. Prerequisite: Political Science 112 with grade of B or above, or consent of instructor. Constitutional aspects of legislation the aim of which is to promote health, safety, morals, and the general social welfare. 4-5:30 TT. Mr. Salter.

248. Seminary in Political Parties. II; 2 cr. Prerequisite: Graduate standing or consent of instructor. Traits and techniques of outstanding party leaders. 3:30-5-30 Th. Not offered 1931-32. Mr. Salter.

261. Seminary in Legislation and Constitutional Law. II; 2 cr. Not offered 1931-32.

III. FOREIGN AND COMPARATIVE GOVERNMENT

124. Federalism in the British Dominions. II; 2 or 3 cr. Prerequisite: Political Science 1, 7, 127, or 128, or consent of instructor. A functional study of selected problems in the working of dominion federalism. Not offered 1931-32. Mr. Sharp.

127. Comparative Government: England. I; 3 cr. Prerequisite: Junior standing. Chiefly the English constitutional and governmental system, compared with other systems, but also some study of political parties and party phenomena. 11 TT and third hour. Mr. Lewis.

128. Comparative Government: Continental Europe. II; 3 cr. Prerequisite: Junior standing. Similar in type of content to 127, but dealing mainly with the French, German, Swiss, and other Continental political systems. 11 TT and third hour. Mr. Lewis.

143. Introduction to Public Administration. I; 3 cr. Prerequisite: Political Science 1, 7, or consent of instructor. The organization, management, and control of public administration, and the nature of public administration in the modern state. 11 TT, 9 S. Mr. Gaus.

250. Advanced Comparative Government. Yr; 3 cr. Courses 127 and 128 are designed primarily for undergraduates; graduate students are expected ordinarily to take course 250. Emphasis in the first semester on the governments of England and the United States compared; in the second, on the governments of Continental Europe, especially of France and Germany. 10 MWF. Mr. Ogg.

258. Seminary in Administration. II; 2 cr. Prerequisite: Graduate standing or consent of instructor. 3:30-5:30 W. Mr. Gaus, Mr. Sharp.

IV. INTERNATIONAL ORGANIZATION AND RELATIONS

118. PRINCIPLES OF INTERNATIONAL LAW. I; 3 cr. Prerequisite: Sophomore standing. Introductory survey of principles and rules of law of peace and war. Text and case reading, class discussion, hypothetical cases. 1:30 MWF. Mr. Potter.

121. DEPENDENCIES AND THEIR INTERNATIONAL STATUS. II; 2 cr. Prerequisite: Political Science 125 or 137 or consent of instructor. Types of colonies, American dependencies, British dominions, mandates. 9 TT. Mr. Potter.

125. GENERAL SURVEY OF WORLD POLITICS. I; 3 cr. Prerequisite: Sophomore standing. An analytical introduction to the foundation of international relations: nationalism; imperialism; racial, populational, and economic factors; war; the settlement of international disputes by methods other than war; recent and contemporary problems. Lectures and discussions. 1:30 MWF. Mr. Kirk.

131. THE UNITED STATES AND LATIN AMERICA. I, II; 3 cr. Prerequisite: Sophomore standing. Diplomatic and economic relations of the United States with the Latin American states, and their bearings upon world politics. 10 MWF. Mr. Lloyd Jones.

132. AFRICA IN WORLD POLITICS. I; 2 cr. Prerequisite: Sophomore standing. The partition of Africa and the subsequent international interests and policies. 10 TT. Mr. Kirk.

133. THE NEAR AND MIDDLE EAST IN WORLD POLITICS. II; 2 cr. Prerequisite: Sophomore standing. Problems of the Near and Middle East (including India) since the World War. 10 TT. Mr. Kirk.

137. INTERNATIONAL ORGANIZATION AND THE LEAGUE OF NATIONS. I, II; 3 cr. Prerequisite: Sophomore standing. Diplomacy, treaties, arbitration, international bureaus, conferences, and international federation; the League of Nations. Lectures, reading, discussions. 11 MWF. Mr. Potter.

140. FAR EASTERN POLITICS: HISTORICAL DEVELOPMENT, 1830-1914. I; 2 cr. Prerequisite: Sophomore standing. A survey of international relations and governmental developments in the Far East from the opening of active contact with Western states and peoples. 11 MW. Mr. Ogg.

141. FAR EASTERN POLITICS: RECENT AND CONTEMPORARY. II; 2 cr. Prerequisites: Sophomore standing and Political Science 140 or consent of instructor. International, governmental, and economic problems and developments; the United States and Pacific Asia; the Philippines. 11 MW. Mr. Ogg.

251. SEMINARY IN LATIN AMERICA. Yr; 2 cr. Prerequisite: Graduate standing. 4-6 Tu. Mr. Lloyd Jones.

255. SEMINARY IN WORLD POLITICS. Yr; 2 cr. Deals principally with topics relating to Pacific Asia. Either semester's work may be taken separately; and, normally, graduate students should enroll in this course rather than in course 140 or 141. 3:30-5:30 Tu. Mr. Ogg.

259. SEMINARY IN INTERNATIONAL LAW. II; 2 cr. 3:30-5:30 M. Mr. Potter.

260. SEMINARY IN INTERNATIONAL ORGANIZATION AND THE LEAGUE OF NATIONS. I, II; 2 cr. 3:30-5:30 W. Mr. Potter.

V. MISCELLANEOUS

100. SENIOR THESIS. Yr; 2 cr. Staff.

180. SPECIAL WORK. I, II; 2 or 3 cr. This course is intended primarily for upper-group undergraduates, but may be taken by graduates. The work is carried on individually, under the direction of some member of the staff.

275. BIBLIOGRAPHY AND METHODOLOGY OF POLITICAL SCIENCE. Yr; 1 cr. Prerequisite: Graduate standing. Required of all students who are candidates for the doctor's degree. 11 F. Mr. Ogg.

PSYCHOLOGY

V. ALLEN CHARLES HENMON, Ph.D., *Professor of Psychology, Chairman*
HULSEY CASON, Ph.D., *Professor of Psychology*
FRANK CHAPMAN SHARP, Ph.D., *Professor of Philosophy*
KIMBALL YOUNG, Ph.D., *Professor of Social Psychology*
RICHARD WELLINGTON HUSBAND, Ph.D., *Assistant Professor of Psychology*
HARRY F. HARLOW, Ph.D., *Assistant Professor of Psychology*
THEODORE L. TORGERSON, Ph.D., *Lecturer in Education*

MAJOR. A minimum of 24 credits, including courses 103, 104, and a thesis. None of the courses in this department is open to freshmen. Psychology 1 is prerequisite to all other courses in psychology.

1. INTRODUCTION TO PSYCHOLOGY. I, II; 3 cr. A study of the basic principles of human mental life, habit formation, learning, the influence of heredity and environment, emotion, reasoning, imagination, personality. Lecture 9 MW; quiz. Mr. Cason and staff.

50. APPLIED PSYCHOLOGY. II; 2 cr. Applications of psychology to various occupations. Vocational guidance; selection of workers; personnel; salesmanship; advertising. 11 TT. Mr. Husband.

100. SENIOR THESIS. Yr; 2 cr. Staff.

103. EXPERIMENTAL PSYCHOLOGY. I; 3 cr. 9 TT+lab. Lab. fee $1.00. Mr. Husband.

104. EXPERIMENTAL PSYCHOLOGY. II; 3 cr. 9 TT+lab. Lab. fee $1.00. Mr. Husband.

107. ABNORMAL PSYCHOLOGY. II; 3 cr. 10 MWF. Mr. Cason.

108. PSYCHOLOGY OF EMOTION. II; 3 cr. 9 MWF. Mr. Harlow.

111. PSYCHOLOGY OF THINKING. II; 3 cr. A study of the higher intellectual processes and their relation to action. Mr. Sharp.

127-128. MENTAL TESTS (Education 127-128). Yr; 3 cr. 1:30 MW. Mr. Torgerson.

139. SOCIAL PSYCHOLOGY (Sociology 139). I; 3 cr. Place of emotions, habits, fantastical and objective thinking in social behavior. Prerequisites: Psychology 1 and junior standing, or major in sociology. 10 MW, one quiz. Mr. Young and staff.

143. The Psychology of Individual Differences and the Measurement of Intelligence. II; 3 cr. 11 MWF. Mr. Henmon.

144. The Psychology of Learning. I; 3 cr. 11 MWF. Mr. Henmon.

147. Genetic Psychology. I; 3 cr. 10 MWF. Mr. Cason.

153. Animal Psychology. I; 3 cr. 10TT+lab. Lab. fee $2.00. Mr. Harlow.

154. Physiological Psychology. I; 3 cr. 1:30 MWF. Lab. fee $1.00. Mr. Harlow.

155. Animal Behavior. II; 2 or 3 cr. 10 TT. Fee $2.00. Mr. Harlow.

160. Problems in Animal Behavior. II; 1 or 3 cr. Fee $1.00. Prerequisites: Psychology 1, 153, or 155. Mr. Harlow.

161. Modern Viewpoints in Psychology. I; 3 cr. 9 MWF. Mr. Husband.

197. Personality and Social Adjustment. (Sociology 197) II; 3 cr. Personality treated from the angle of group participation. Prerequisites: Psychology 1 or Sociology 139, and junior standing. Lab. fee $1.50. 10 MW, one quiz. Mr. Young and staff.

200. Research. Yr; *cr. Staff.

210. Seminary, Aptitude Testing. Yr; 2 cr. Prerequisite: Consent of instructor. Mr. Henmon.

214. Seminary, Personality. I; 2 cr. Prerequisite: Consent of instructor. 7:30 p. m. W. Mr. Husband.

215. Seminary, Physiological Problems and Behavior. II; 2 cr. 7:30 p. m. W. Prerequisite: Consent of instructor. Mr. Husband, Mr. Harlow.

218. Seminary, Learning. Yr; 2 cr. 3:30-5:30 Th. Prerequisite: Consent of instructor. Mr. Cason.

225-226. Test Construction (Education 225-226). Yr; 2-3 cr. Prerequisite: A course in educational statistics. 7-9 p.m. W. Mr. Torgerson.

239. Advanced Social Psychology. I; 2 cr. Various topics from year to year. See Soc. 239. 2:30-4:30 M. Fee $1.00. Prerequisite: Graduate standing. Mr. Young.

297. Personality Problems. (Sociology 297) II; 2 cr. Selected topics from year to year dealing with development of personality in reference to social-cultural environment. Prerequisites: Graduate standing and consent of instructor. Lab. fee $1.00. 2:30-4:30 M. Mr. Young.

SCANDINAVIAN LANGUAGES AND LITERATURE

EINAR HAUGEN, Ph.D., *Assistant Professor of Scandinavian Languages and Literature*

1. FIRST-YEAR NORSE. Yr; 4 cr. Primarily for freshmen. 9 MTTF; 2:30 MTTF. Mr. Haugen.

2. SECOND-YEAR NORSE. Yr; 4 cr. Literary selections. A continuation of NORSE 1. 10 MTTF. Mr. Haugen.

4. NOVELS, DRAMAS, AND LITERARY HISTORY. Yr; 3 cr. A continuation of Norse 2. 11 MWF.

74. IBSEN'S BRAND AND PEER GYNT. I; 2 cr. Lectures and readings in English, with a general survey of Norse literature, ancient and modern. 1:30 TT.

73. IBSEN'S SOCIAL DRAMAS. II; 2 cr. Lectures and readings in English, with a general introduction on modern literature. 1:30 TT.

108. OLD NORSE. Yr; 2 cr. 1:30 MW. Mr. W. E. Leonard.

SOCIOLOGY AND ANTHROPOLOGY

EDWARD ALSWORTH ROSS, Ph. D., LL.D., *Professor of Sociology, Chairman*
JOHN LEWIS GILLIN, Ph.D., LL.D., *Professor of Sociology*
JOHN HARRISON KOLB, Ph.D., *Professor of Rural Sociology*
RALPH LINTON, Ph.D., *Professor of Social Anthropology*
KIMBALL YOUNG, Ph.D., *Professor of Social Psychology*
ELLIS KIRKPATRICK, Ph. D., *Associate Professor of Rural Sociology*
HELEN ISABEL CLARKE, M.A., *Assistant Professor of Sociology*
CHARLOTTE DAY GOWER, Ph.D., *Assistant Professor of Physical Anthropology.*
SAMUEL ANDREW STOUFFER, Ph.D., *Assistant Professor of Social Statistics* (on leave 1931-32)
CLARK TIBBITTS, Ph.D., *Lecturer in Social Statistics*
AUBREY WILLIS WILLIAMS, M.A., *Lecturer in Social Work.*
ELIZABETH YERXA, B.A., *Lecturer in Social Work.*

MAJOR. For *sociology* as a field of concentration thirty credits in sociology are required, including courses 132 and 140 and one course in anthropology. Not less than twenty additional credits must be offered within the Division of the Social Sciences, ten of which may be in this department.

For *anthropology* as a field of concentration thirty credits are also required, including one course in zoology and two three-credit courses in sociology in addition to Sociology 46, 106, 110, and 142. Not less than twenty additional credits selected in conference with the adviser must be offered within the Division of the Social Sciences, or in Geography, Geology, Psychology, and Zoology, ten of which may be in this department.

To be eligible for graduation, students are required to earn as many grade-points as credits in the major. Certain upper-group students may substitute a thesis for four of the above required credits. This thesis may be written in any one of the fields designated in Groups I-VI as described on subsequent pages. Students not writing a thesis must offer three courses in some one of the designated fields.

SOCIAL WORK

PROFESSOR J. L. GILLIN IN CHARGE

The demand for trained workers in the different fields of social service is greater than can be supplied. The fields include family and child welfare, juvenile protection and probation, mothers' pensions, medical and psychiatric social work, and the work of school attendance officers, community chest executives, and visiting teachers. To help supply this need, the Department of Sociology and Anthropology has coordinated the courses offered in the University which provide background training for social work, thereby giving students who desire a liberal education the fundamental and technical training which will hasten their preparation for work in these fields. Some of these courses supply that broad liberal background necessary to an understanding of society, past and present, while others provide technical training in the adjustment of personality to social conditions on the one hand, and of social conditions to personality on the other. Proficient students are recommended directly to social agencies as visitors in training or for fellowships and scholarships in professional training schools of social work. Close affiliations are maintained with the Milwaukee School of Social Work. At this institution the student is placed on a fellowship while finishing the training.

At the present time arrangements are made for the student who is looking forward to social work to prepare himself for two different kinds of work, —(1) family case work, and (2) group work. For the first type he does 300 hours of field work in the Madison Public Welfare Association; for the second, he does the same amount of field work with the Neighborhood House, the Y.W.C.A., Y.M.C.A., the Boy Scouts, the Girl Scouts or some other agency with which proper arrangements have been made and which deals with group activities. In both cases the field work is supervised by the University. Only a limited number of students can be admitted to these classes.

A certificate in social work is given to graduates of the University of Wisconsin who attain proficiency during two years of supervised field work in social agencies approved by this department, and who successfully pass an examination on the theory and technique of social work.

During the last three years the following courses should be taken, preferably in the years suggested:

SOPHOMORE YEAR

First Semester	Credits	Second Semester	Credits
Econ. 1a—General economics	4	Econ. 1b—General economics	4
Soc. 1—Introductory sociology	3	Soc. 2—Introductory sociology	3
Soc. 46—Social anthropology	3	Psych. 107—Abnormal psychology	3
Psych. 1—Introductory psychology	3		

JUNIOR YEAR

Soc. 141—Poverty and relief	3	Soc. 161—Criminology and penology	3
Soc. 139—Social psychology	3	Soc. 197—Personality and social adjustment	3
Soc. 132—Social statistics	3	Pol. Sci. 115—Social problems of municipal government	3
Zool. 106—Heredity and eugenics	2	Home. Econ. 1b—General survey	2-3
Home Econ. 1a—General survey	2-3	Econ. 173—Economics of consumption	3
Home Econ. 47—Diet problems in feeding children	3		

SENIOR YEAR

Soc. 147—Introduction to social case work*	2	Phys. Ed. 80—Community recreation	2
Soc. 148—Introduction to group work*	2	Soc. 140—Principles of sociology	3
Soc. 177—Social agencies and social legislation	2	Soc. 164—Principles of social case work*	2
Soc. 25—Rural life	3	Soc. 165—Prineiples of group work*	2
Econ. 122—Labor problems	3	Soc. 178—Social organization and administration	2
		Soc. 162—Child welfare	2

*Which of these two should be taken depends upon the field for which the student is preparing.

I. SOCIOLOGICAL THEORY

1. Introductory Sociology. I; 3 cr. The community; processes and products of interaction; society and the person; social change. Prerequisite: Full sophomore standing. Lecture 8 M; two quizzes. Mr. Ross and staff.

2. Introductory Sociology. II; 3 cr. Population, crime, disease, marriage and divorce, women and children in industry, immigration, poverty, insanity, etc., as they reveal underlying social maladjustments. Prerequisite: For sociology majors, Sociology 1; for others, full sophomore standing. Lecture 8 M; two quizzes. Mr. Gillin and staff.

100. Senior Thesis. Yr; 2 cr. Staff.

139. Social Psychology. I; 3 cr. Place of emotions, habits, fantastical and objective thinking in social behavior, particularly as seen in prejudice, leadership, fashion, crowd behavior, mental epidemics, audiences, public opinion, propaganda, and censorship. Prerequisites: Psychology 1 and junior standing, or major in sociology. 10 MW, one quiz. Mr. Young and staff.

140. Principles of Sociology. II; 3 cr. Growth and shifting of population; genesis and life history of groups; social processes and products; ultimate tests of social policies. Prerequisites: For sociology majors, Sociology 1 and 2, or 46; for others, senior standing or consent of instructor. 8, 9, 10 or 11 MWF. Mr. Ross.

163. Population Problems. I; 2 cr. Population pressure, conquest of disease, fall in the birth rate, growth of numbers, prospects of the food supply, control of immigration. Prerequisite: Senior standing. Offered 1930-31 and in alternate years. Mr. Ross.

167. Contemporary Social Movements. I; 2 cr. Socialism, communism, fascism, the cooperative movement, the British labor movement, the peace movement, the Indian non-violent revolution. Prerequisite: Senior standing or consent of instructor. Offered 1931-32 and in alternate years. 8 WF. Mr. Ross.

172. Immigration and Race Problems. (Economics 172). II; 3 cr. Migrations of mankind in modern times. Particular attention to American immigration. Governmental immigration policies; economic, social, and political immigration problems: race problems. Prerequisites: Econ. 1a, or American history and junior standing. 9 TT; quiz. Mr. Lescohier.

180. Independent Reading in Sociology or Anthropology. Yr; *cr. Reading may be in any field for which student has an adequate background. Prerequisite: Candidacy for degree with honors in major. Staff.

197. Personality and Social Adjustment. (See Group III.)

239. Advanced Social Psychology. I; 2 cr. Various topics from year to year: (1) public opinion and social control; (2) language and culture, with particular reference to the types of thought and the relationship of language to thinking and the nature of culture; (3) psychology of leadership. 2:30-4:30 M. Fee $1.00. Mr. Young.

255. Seminary on Group Conflict. II; 2 cr. Causes, phases, and results of conflict between racial, natural, religious, political, and social groups in society; means of avoiding or allaying inter-group antagonisms. Not offered 1931-32. Mr. Ross.

257. Seminary in Social Institutions. II; 2 cr. Nature and function of social institutions. Critical examination of the evolutionary theory of institutions. One type of institution discussed as an example of institutional development from the historical-cultural and social-psychological angles. 7:15-9:15 Tu. Mr. Young.

262. Seminary on American Family. I; 2 cr. Changes in the cultural and institutional environment of the family and its reaction thereto. 7:15-9:15 W. Lab. fee $1.00. Mr. Ross.

263. Seminary on Social Mobility. 1; 2 cr. Societies from the point of view of the mobility of families and individuals within the social framework. Comparative shares of inheritance and of social environment in determining individual destiny. Not offered 1931-32. Mr. Ross.

264. Research Seminary. II; 2 cr. Field of investigation for 1931-32: The conflict between Capitalism and Democracy in the advanced societies. Lab. fee $1.50. 7:15-9:15 W. Mr. Ross.

270. Human Ecology. I; 2 cr. The distributive aspects of population, social and economic institutions, and various functional groups. Analysis of accommodations of different groups to one another in terms of spatial and temporal relations. Not offered 1931-32. Mr. Young.

276. History of Sociological Thought. I; 3 cr. Social thought from Plato to Comte presented briefly. Principal emphasis on theory of Comte, Spencer, Bagehot, Tarde, Gumplowicz, Ratzenhofer, Simmel, Ward, Durkheim, Weber, Giddings, Sumner, Cooley, Ross, and Thomas. The relation of social theory to political, social, and economic backgrounds is emphasized throughout. 2:30 MW. Fee $2.00. Mr. Gillin.

280. Reading and Research in Sociology and Anthropology. Yr; *cr. Work suited to individual graduate students may be arranged. Prerequisite: Advanced graduate standing. Staff.

297. Personality Problems. II; 2 cr. Selected topics from year to year dealing with development of personality in reference to social-cultural environment. 2:30-4:30 M. Lab. fee $1.00. Mr. Young.

II. SOCIAL ANTHROPOLOGY

46. SOCIAL ANTHROPOLOGY. I; 3 cr. The origin of man; living races; origin and development of civilizations, with special reference to our own. Prerequisite: Sophomore standing. 11 TT, one quiz. Mr. Linton and staff.

102. PEOPLES OF AFRICA. I; 3 cr. Ancient and modern cultures of Africa, their origins and development. Prerequisite: Sociology 46 or consent of instructor. 9 TWT. Mr. Linton.

104. PEOPLES OF EUROPE AND ASIA. II; 3 cr. Modern cultures of Europe and Asia, their origins and development. Prerequisite: Sociology 46 or consent of instructor. Not offered 1931-32. Mr. Linton.

105. NORTH AMERICAN INDIAN. I; 3 cr. Origins of the American Indian, development of his culture and descriptions of selected groups. Prerequisite: Sociology 46 or consent of instructor. Not offered 1931-32 Mr. Linton.

106. INTRODUCTION TO ETHNOLOGY. II; 3 cr. Development of various human institutions with their historic distribution throughout the world. Prerequisite: Sociology 46 or consent of instructor. 11 TT, one quiz. Mr. Linton.

107. PRIMITIVE RELIGION. I; 3 cr. A study of selected primitive religions from the functional standpoint. Prerequisite: Junior standing or consent of instructor. Lecture 9 MW, one quiz. Miss Gower.

108. THEORIES OF CULTURE. II; 2 cr. Study of anthropological theories and methods. Prerequisites: Sociology 46 and 139 or consent of instructor. 10 TT. Miss Gower.

109. PEOPLES OF OCEANIA. II; 3 cr. Historic cultures of Australia, Melanesia, and Polynesia, with their origins and interrelations. Prerequisite: Sociology 46 or consent of instructor. 9 TWT. Mr. Linton.

110. HUMAN PRE-HISTORY. I, II; 3 cr. Human evolution and races and cultures prior to the Neolithic period. Prerequisite: Sociology 46 or consent of instructor. 9 MW, one quiz. Miss Gower.

142. INTRODUCTION TO PHYSICAL ANTHROPOLOGY. I; 3 cr. Physical structure and racial types of mankind. Prerequisite: Zoology 1. 10 TT, one lab. Miss Gower.

143. ADVANCED PHYSICAL ANTHROPOLOGY. II; 1 cr. Training in laboratory methods with research on assigned problems. Prerequisite: Sociology 142 and consent of instructor. Miss Gower.

204. ANTHROPOLOGICAL PROBLEMS. Yr; 2 cr. Discussions of current anthropological literature and methods, and work on assigned problems. 7:15-9:15 Th. Prerequisite: Graduate standing or consent of instructor. Mr. Linton.

211. PROBLEMS OF CULTURE. Yr; 2 cr. Application of anthropological methods to sociological research. Prerequisite: Graduate standing or consent of instructor. 7:15-9:15 Tu. Miss Gower.

III. SOCIAL PATHOLOGY

141. Poverty and Dependency. I; 3 cr. Extent of poverty and pauperism; causes of poverty and dependency; historical institutions and methods of dealing with dependents; special classes of dependents like the aged, the insane, epileptic, dependent children; preventive agencies and methods. Prerequisites: For sociology majors, Sociology 1 and 2 or concurrent registration in 1; for others, junior standing or concurrent registration in 1. 11 M, two quizzes. Mr. Gillin.

158. Degeneracy and Society. I; 2 cr. The various forms of degeneracy, with special emphasis upon mental and social degeneracy; the relationship of mental and physical degeneracy to such social problems as crime, pauperism, divorce, religion, industry, rural and city life, war, vice. Prerequisite: Sociology 141 or 161 or senior standing. 2:30-4:20 M. Fee $2.00. Mr. Gillin.

161. Criminology and Penology. II; 3 cr. The problem of crime and criminals; extent and cost of crime; the making of the criminal; the history of punishment; modern penal institutions; the machinery of justice. Prerequisites: For sociology majors, Sociology 1 and 2 or concurrent registration in 2; for others, junior standing or concurrent registration in 2. Lecture 11 M; two quizzes. Mr. Gillin.

197. Personality and Social Adjustment. II; 3 cr. Personality treated from the angle of group participation, especially in the family, play group, gang, neighborhood, school, church, and various community groups. Literature on problem children, juvenile delinquency, and adolescence examined critically. Prerequisites: Psychology 1 or Sociology 139, and junior standing. Lab. fee $1.50. 10 MW, one quiz. Mr. Young and staff.

256. Development of Correctional Policies. II; 2 cr. Theories and policies relating to the criminal and his treatment; the evolution of punishment; the relation of canon law to secular criminal law; the classical theory of punishment; the Italian School; modern theories and policies. Prerequisite: Graduate standing or consent of instructor. Fee $2.00. Mr. Gillin.

259. Development of Poor Relief Policies. II; 2 cr. The development of poor relief theories and policies from ancient times to the present. Not offered 1931-32. Fee $2.00. Mr. Gillin.

IV. SOCIAL WORK

147. Introduction to Social Case Work. I; 2 cr. with 150 hours of field work at local Public Welfare Association or Juvenile Court, or 1 cr. without field work. The use of the first interview and sources such as relatives, employers, schools. The methods of social diagnosis. Prerequisites: For sociology majors, Sociology 177 or concurrent registration, senior or graduate standing and consent of instructor; For others, senior standing and consent of instructor. Students have the option of taking Sociology 147 or 148, but may not take both courses within their major. 1:30 Tu. Miss Clarke.

148. INTRODUCTION TO GROUP WORK. I; 2 cr. with 150 hours of field work at Neighborhood House, Y.W.C.A., Boy Scouts, etc., or 1 cr. without field work. The importance of the group. The meaning and methods of socialization. Legal and social questions as they affect the foreigner. Prerequisites: For sociology majors, Sociology 177 or concurrent registration, senior or graduate standing and consent of instructor; For others, senior standing and consent of instructor. Students have the option of taking Sociology 147 or 148, but may not take both courses within their major. 1:30 Th. Miss Clarke.

162. CHILD WELFARE. II; 2 cr. Proportion of children in the population; the dependent, delinquent, defective child,—his problems and the community's methods of treatment. Prerequisites: Senior standing and consent of instructor. 1:30-3:30 M. Miss Yerxa.

164. PRINCIPLES OF SOCIAL CASE WORK. II; 2 cr. with 150 hours of field work at local Public Welfare Association or Juvenile Court, or 1 cr. without field work. Case-work treatment of executive and leadership types. The social workers' principles of interviewing. Types of treatment given the unmarried mother, deserted family, transient men, etc. Prerequisite: Sociology 147. Students have the option of taking Sociology 164 or 165, but may not take both courses within their major. 1:30 Tu. Miss Clarke.

165. PRINCIPLES OF GROUP WORK. II; 2 cr. with 150 hours of field work at Neighborhood House, Y.W.C.A., Y.M.C.A., Boy Scouts, etc., or 1 cr. without field work. Discussion of group movements, such as the settlement, the school community center, the open forum, boy and girl scouts. Methods and organization of agencies working with groups. Prerequisite: Sociology 148. Students have the option of taking Sociology 164 or 165, but may not take both courses within their major. 1:30 Th. Miss Clarke.

166. PRINCIPLES OF COMMUNITY ORGANIZATION. I; 2 cr. Historical development of community organization; principles of organization in social welfare agencies, and relation of such agencies to the sociological structure; forms of organization for different purposes; relation of organized public and private agencies; local, state-wide, and national organizations; the social philosophy and function of social organization. Prerequisite: Senior standing and consent of instructor. 2:30-4:30 M. Mr. Williams.

177. SOCIAL AGENCIES AND SOCIAL LEGISLATION. I; 2 cr. Conception and types of social work. Statutes and court decisions as they affect the social worker. Prerequisite: Sociology 141 or consent of instructor. Lab. fee $2.00. 2:30 TT. Miss Clarke.

178. SOCIAL ORGANIZATION AND ADMINISTRATION. II; 2 cr. Typical experiments in community organization such as the public health and settlement movements, the federation of social agencies, etc. Theories and principles of community organization. Prerequisite: Sociology 177 or consent of instructor. 2:30 TT. Miss Clarke.

V. RURAL SOCIOLOGY

25. RURAL LIFE. I; 3 cr. The rural life movement with special attention to group organization and rural social institutions, such as family, school, church, social welfare agencies; principles and policies of rural community organization. Prerequisite: Sophomore standing. 10 MWF. Mr. Kolb.

126. RURAL STANDARDS OF LIVING. II; 2 cr. Development of standards of living in rural communities. Consideration of all elements composing the standard of living: food, housing, transportation, education, religion, art, and recreation, in relation to income, trading centers, social institutions and local groupings. Prerequisite: Junior standing. 3:30-5:30 Tu. Mr. Kirkpatrick.

200. RESEARCH. Yr; *cr. Rural social organization and rural life, Mr. Kolb; Rural standards of living, Mr. Kirkpatrick.

225. SEMINARY IN RURAL SOCIAL ORGANIZATION. I; 2 cr. Emphasis upon research methodology. Case studies of current projects in rural social research. Particular attention to group organization, population, and institutional relations in rural society. Prerequisite: Sociology 25 or equivalent. 7:30-9:30 Tu. Mr. Kolb.

VI. STATISTICS

132. INTRODUCTORY SOCIAL STATISTICS. I, II; 3 cr. Introduction to the logic and use of statistics as a method of analyzing social data. Training in statistical handling of data which the student has gathered himself. Types of statistical fallacies; measures of central tendency and variability; analysis of vital statistics; index numbers; time series and simple curve fitting; linear correlation of two variables; sampling, with major emphasis on problems of making the sample representative. Prerequisite: Major in sociology or consent of the instructor. Lecture 11 F; laboratory and discussion 3:30-5:30 TT. Lab. fee $1.50. Mr. Tibbitts.

232. ADVANCED SOCIAL STATISTICS. II; 2 cr. Theory of errors, with special attention to methods of determining the representativeness and reliability of small samples; relationship between non-quantitative categories; curve fitting; seasonal and cyclical fluctuations; correlation of time series; special problems in total linear and non-linear correlation; partial and multiple correlation. Material drawn from problems of practical concern to research workers in sociology and related fields. Prerequisites: Graduate standing and Sociology 132. Lab. fee $1.00. Lectures 11 Th., 1:30 F; lab. 2:30 F. Mr. Tibbitts.

233. STATISTICAL METHODS IN SOCIAL PSYCHOLOGY. I; 2 cr. Approaches to the measurement of personality differences. Analysis of public opinion through relationships between votes and various social factors. Methods of constructing and validating tests of social attitudes. Statistical problems in experimental behavior studies. Prerequisites: Sociology 132 and 139. Lecture 11 Tu, 2 hours lab. and discussion. Not offered 1931-32. Mr. Stouffer.

234. Statistics in Population Research. II; 2 cr. Critical examination of chief sources of data and consideration of typical fallacies of interpretation. Refinement of birth rates and death rates. Prediction of population growth. Techniques for studying selected topics, such as differential fertility; population and natural resources; population phenomena in relation to business cycles. Prerequisites: Sociology 132 and preferably 163. Lecture 11 Tu., 2 hours lab. and discussion. Not offered 1931-32. Mr. Stouffer.

SPANISH AND PORTUGUESE

Joaquín Ortega, M.A., *Professor of Spanish, Chairman*
Antonio García Solalinde, Litt.D., *Professor of Spanish and Portuguese*
Charles Dean Cool, Ph.D., *Associate Professor of Spanish*
Hyman Chonon Berkowitz, Ph.D., *Assistant Professor of Spanish*
James Homer Herriott, Ph.D., *Assistant Professor of Spanish* (on leave 1931-32)
Albert Eddy Lyon, Ph.D., *Assistant Professor of Spanish*

INSTRUCTORS

Matilde Carranza, M.A.
Lloyd August Kasten, M.A.
William Ray Kingery, M.A.
Manuela de Mora, M.A.
Eduardo Neale-Silva, M.A.
Kathrin Marie Tufts, M.A.

Nature of the Courses. The elementary courses have been planned to meet the needs of students who take up the language for the first time at the University of Wisconsin, as well as of those who have begun the study in high school, or who may transfer from other higher institutions. For purposes of meeting the prerequisites of the courses announced, one unit (year) of high-school work is assumed to be the equivalent of 4 credits, or one semester of college work. The regular first-year courses are 1a and 1b. The regular second-year courses are 10a and 10b, in which emphasis is placed on the acquisiton of a reading knowledge of the language. The second-year practice courses are 15 and 20, usually taught by Spanish-speaking instructors and intended to supplement the training offered in 10a and 10b. The regular third-year course is 21, comprising reading of representative master-pieces with a background of literary history and designed to be an introduction to the study of Spanish literature. This course is a prerequiste to all the other courses in Spanish literature. Students who do excellent work in 10a are urged to enter 21, omitting 10b, thus reducing by one semester the period of preparation for the more advanced courses. 25 is a third-year practice course, usually taught by Spanish-speaking instructors and intended to supplement the training offered in 21; it may be taken separately. 27 is a special third-year course designed to meet the needs of students in such technical fields as commerce, engineering, and agriculture. 17 is a special third-year course intended to be an introduction to the study of Spanish and Spanish-American civilizations. Spanish 55 (Comp. Lit. 55) is a course offering an approach to Spanish and Portuguese literature to students without the knowledge of the languages. A course in elementary Portuguese is offered, and more advanced work will be established when the demand arises. Portuguese is important in comparative study of the Romance languages, and of practical value as the language of Brazil, the largest republic in America outside of the United States.

The advanced practice courses are 116 and 190, for which the prerequisite is three years of college Spanish; 21 is not a necessary prerequisite. The advanced courses in literature and civilization have as a prerequisite 21, or equivalent; several are given in Spanish. Those under 200 are open to undergraduates. A careful rotation is established so that students specializing in literature may have adequate instruction in all genres and epochs.

The philological courses are intended for graduate students, but 141, an introductory course, is open to undergraduates. In special cases, undergraduates may be admitted to advanced philological work with the consent of Professor Solalinde.

Students offering, because of residence in Spanish-speaking countries, individual study, or other reasons, considerable preparation in the language although not formally certified in high-school or university credits, will be given an examination with a view to assigning them to the course best fitted to their needs. Students are advised to consult the foreign-language requirements for the B.A. degree, with the new provisions for attainment examinations. (See page 55.)

MAJOR. 32 credits, including thesis (or 4-6 credits in literature courses numbered above 100 for students not required to write a thesis). Majors who have had up to the senior year no grades below B in Spanish, and, in exceptional cases, majors who have had one or two grades of C in the elementary stage of the study of the language will submit a thesis. Majors not falling in the above described groups may apply to the Chairman of the Department for permission to write a thesis. . Before graduation, students must take a comprehensive examination in the major field, covering conversation, composition, grammar, literature and civilization. The Department has prepared a reading list of the most important standard works, for which students will be held responsible, at the time of the examination, whether or not they have studied them in regular courses. For further information about this examination, application may be made to the departmental office.

TEACHING MAJOR AND MINOR. See School of Education.

All who intend to specialize in Spanish are advised to elect related courses in classical and modern languages and literatures, comparative literature, history, philosophy, and art history and criticism. Courses especially recommended are Introduction to phonetics (English 185), Principles and practice of translation (Comp. Lit. 141), and the courses included in the field of the Hispanic Studies. Graduate students, especially condidates for the doctorate, should acquire a reading knowledge of Latin, French, and German, as early as possible.

HISPANIC STUDIES AS A FIELD OF CONCENTRATION. Students interested in this major field should consult page 58.

SPANISH HOUSE. The *Casa Cervantes,* at 251 Langdon Street, has been maintained since 1925 by the department for the purpose of providing intensive training in speaking Spanish and of promoting a better understanding of the life, art, and literature of Spain and the Spanish-American countries. The *Casa* is open to women students for room and board, and both men and women living outside are welcome for full board or a certain number of meals. The *Casa* has a thoroughly Spanish atmosphere; it is equipped with a Spanish library and a good collection of Spanish music. Spanish is the only language permitted at the tables and during the social hours. Women of Spanish and Spanish-American birth reside at the *Casa,* and the instructional force of the department, as well as Spanish-American university students, come regularly to take their meals there. For further information, apply to the Department of Spanish and Portuguese.

SPANISH CLUB. The *Club Cervantes* meets every other week during the year and presents interesting programs. Each semester and summer session a Spanish play is staged, thus affording an opportunity to the students for participating in Spanish dramatics.

SPANISH

ELEMENTARY AND INTERMEDIATE LANGUAGE

1a. FIRST-SEMESTER SPANISH. I, II; 4 cr. For students who have had no Spanish. 19 sections I; 5 sections II. Mr. Berkowitz, Mr. Herriott, and staff.

1b. SECOND-SEMESTER SPANISH. I, II; 4 cr. Prerequisite: Spanish 1a or one year of high-school Spanish. 5 sections I; 16 sections II. Mr. Berkowitz, Mr. Herriott, and staff.

10a. THIRD-SEMESTER SPANISH. I, II; 3 cr. Prerequisite: Spanish 1b or two years of high-school Spanish. 9 sections I; 3 sections II. Mr. Berkowitz, Mr. Herriott, and staff.

10b. FOURTH-SEMESTER SPANISH. I, II; 3 cr. Prerequisite: Spanish 10a or three years of high-school Spanish. 2 sections I; 7 sections II. Mr. Berkowitz, Mr. Herriott, and staff.

15. ELEMENTARY CONVERSATION. Yr; 1 cr. Prerequisite: Spanish 1b or equivalent. May be taken only with Spanish 10a or 10b. 5 sections. Mr. Lyon and staff.

20. ELEMENTARY COMPOSITION, CONVERSATION, AND GRAMMAR REVIEW. Yr; 2 cr. Prerequisite: Spanish 1b or equivalent. Not open to students who have had 10b. 3 sections. Mr. Lyon and staff.

25. INTERMEDIATE COMPOSITION AND CONVERSATION. Yr; 2 cr. Prerequisite: Spanish 10b, or 20, or equivalent. Not open to students with three years of college Spanish. The regular third-year Spanish course, recommended to all students, is Spanish 21. For training in conversation and composition, L and S students with two years of college Spanish should enter Spanish 25, and with three years of college Spanish, Spanish 116. 4 sections. Mr. Lyon (Chairman), Srta. Carranza, Srta. de Mora.

27. SPANISH COMMERCIAL CORRESPONDENCE. Yr; 2 cr. Prerequisite: Spanish 10b or 20, or equivalent. Open only to students in technical courses. 10 TT. Mr. Cool.

ADVANCED PRACTICE COURSES

(Prerequisite: Three years of college Spanish)

116. Composition, Conversation, and Advanced Grammar Review. Yr; 2 cr. 1:30 TT. Sr. Ortega.

190. Spanish Phonetics. II; 2 cr. Theory of Spanish sounds with practical training in pronunciation. 1:30 WF. Sr. Solalinde.

Teaching of Spanish. See School of Education.

PHILOLOGY

141. Spanish Historical Grammar. Yr; 2 cr. An introductory course to Spanish philology: Phonology, morphology, and syntax. Prerequisite: Three years of college Spanish. 3:30 MW. Mr. Herriott.

210. Philological Seminary, Old Spanish. Yr; 2 cr. Conducted in Spanish. Offered 1931-32 and in alternate years. 1931-32: The language of Gonzalo de Berceo. 7:30-9:30 M. Sr. Solalinde.

273. Comparative Philology of Castilian, Catalan, and Portuguese. Yr; 2 cr. Conducted in Spanish. Offered 1930-31 and in alternate years. Sr. Solalinde.

CIVILIZATION

17. Spanish and Spanish America of Today. Yr; 2 cr. A study of the current periodicals of the Spanish-speaking world, with supplementary readings and lectures to establish a background of the actual social, economic, and political conditions in the Hispanic countries. Prerequisite: Spanish 10b or equivalent. 11 TT. First semester: Spain, Sr. Ortega. Second semester: Spanish-America, Sr. Neale-Silva.

150. Spanish Civilization. I; 2 cr. Conducted in Spanish. Prerequisite: Spanish 21. 9 MW. Sr. Solalinde.

151. Spanish-American Civilization. II; 2 cr. Conducted in Spanish. Prerequisite: Spanish 21. 9 MW. Sr. Neale-Silva.

LITERATURE

(Spanish 21, or its equivalent in the case of students coming from outside institutions, is prerequisite to all 100 courses in Spanish literature.)

21. Elementary Survey. Yr; 3 cr. Introduction to the study of Spanish literature. Representative masterpieces in class, assigned readings, discussion of the literary aspects of the works read, and literary history. Prerequisite: Spanish 10b or equivalent. 4 sections. Mr. Cool (Chairman), Mr. Berkowitz, Mr. Kasten, Mr. Lyon.

55. Spanish and Portuguese Masterpieces in Translation. See Comparative Literature 55.

102. Spanish Contemporary Literature. Yr; 3 cr. 11 MWF. Sr. Ortega.

103. Spanish Lyrical Poetry. II; 2 cr. Offered 1930-31 and in alternate years. Mr. Lyon.

104. Cervantes. Yr; 2 cr. Offered 1931-32 and in alternate years. 11 TT. Mr. Cool.

106. Spanish Drama of the Eighteenth and Nineteenth Centuries. Yr; 2 cr. Offered 1931-32 and in alternate years. 10 TT. Mr. Lyon.

108. Spanish Drama Before the Golden Century. Yr; 2 cr. Offered 1932-33 and in alternate years. 11 TT. Mr. Herriott.

111. The Spanish Picaresque Novel. Yr; 2 cr. Offered 1932-33 and in alternate years. Mr. Cool.

114. Spanish Drama of the Golden Century. Yr; 3 cr. Not offered 1931-32. Sr. Ortega.

118. The Spanish Short Story. I; 2 cr. Offered 1930-31 and in alternate years. Mr. Lyon.

122. Spanish Novel of the Nineteenth Century. Yr; 3 cr. Offered 1932-33 and in alternate years. Mr. Berkowitz.

126. Spanish-American Literature. Yr; 2 cr. Conducted mainly in Spanish. 9 TT. Sr. Neale-Silva.

131. General Survey of Spanish Literature. Yr; 3 cr. Conducted in Spanish. 10 MWF. Sr. Solalinde.

171. Spanish Epic Literature. Yr; 2 cr. Old Spanish epics and their later development. Conducted in Spanish. Offered 1931-32 and in alternate years. 2:30 WF. Sr. Solalinde.

200. Individual Research. Yr; credit commensurate with work accomplished. Well qualified graduate students may undertake individual research in some definite field. Sr. Solalinde.

201. Methods of Investigation and Bibliographical Information. Yr; 1 cr. Required of candidates for the doctorate who have not had this training elsewhere. Conducted in Spanish. Offered 1930-31 and in alternate years. Sr. Solalinde.

205. Seminary, Eighteenth Century. Yr; 2 cr. Not offered 1931-32. Mr. Lyon.

209. Seminary, History of Literary Criticism in Spain. Yr; 2 cr. Not offered 1931-32. Mr. Berkowitz.

230. Seminary, Tirso de Molina. Yr; 2 cr. Offered 1930-31. Sr. Ortega.

231. Seminary, Galdós. Yr; 2 cr. Offered 1931-32. 3:30-5:30 Th. Mr. Berkowitz.

PORTUGUESE

1–2 Elementary Portuguese. Yr; 4 cr. For beginners. 11 MTWT. Mr. Singleton.

SPEECH

ANDREW THOMAS WEAVER, Ph.D., *Professor of Speech, Chairman*
ROBERT WEST, Ph.D., *Professor of Speech Pathology*
GERTRUDE ELIZABETH JOHNSON, B.A., *Associate Professor of Speech*
HENRY LEE EWBANK, M.A., *Associate Professor of Speech*
WILLIAM CHILTON TROUTMAN, M.A., *Associate Professor of Speech*
GLADYS LOUISE BORCHERS, Ph.D., *Assistant Professor of Speech*
GEORGE ADAMS KOPP, M.S., *Instructor in Speech*
JAMES RUSSELL LANE, B.S., *Instructor in Speech*

The courses in this department have two main functions: 1. to educate students in the fundamentals of speech (private and public), covering both scientific and artistic aspects,—organized knowledge and personal proficiency: 2. to prepare especially qualified students to become teachers in one or more of the following sections of this field: (a) argumentation and debate, and the composition and delivery of public speeches; (b) reading, acting, and, dramatic production; (c) disorders of speech and corrective methods; (d) the psychology and pedagogy of reading and speaking; (e) voice science and phonetics. The courses are so arranged as to make possible systematic and progressive study during the sophomore, junior, and senior years. Courses in speech are not open to freshmen.

MAJOR. A minimum of 34 credits in speech, including at least 12 credits in course numbered above 100. Upper-group students who have done distinguished work in speech will be permitted to write theses.

THE UNIVERSITY THEATRE. This well-equipped little theatre provides unusual facilities for training students in acting and in producing plays. A number of plays are staged each semester under the direction of Mr. Troutman and staff.

SPEECH CLINIC. This clinic, which is free to all students, is open for fifteen to eighteen hours per week throughout the academic year; it offers expert guidance and assistance in the diagnosis and treatment of all kinds of voice and speech disorders. Mr. West and staff.

FORENSIC ACTIVITIES. The department sponsors and supervises an extensive program of intra-mural and intercollegiate debates and other speech contests which provide special training for students with unusual talent.

PUBLIC READINGS. Students especially proficient in reading are given the opportunity to appear on a regular weekly program of public readings.

1. FUNDAMENTALS OF SPEECH. I, II; 3 cr. The lecture hour is designed to give the student an understanding of the speech function. The recitation hours are devoted to practice before the class, the analysis of individual difficulties, and suggestions for improvement. Students who expect to take further work in speech should elect this course in their sophomore year if possible. Open to all students except freshmen. Lab. fee $1.00. Lect. 11 Th; two class periods. Mr. Ewbank and staff.

2. FUNDAMENTALS OF SPEECH. II; 3 cr. Continuation of Speech 1, which is prerequisite. Lect. 11 Tu; recitation sections at 10 MW, 10 TT. (Repeated first semester at 10 MWF) Mr. Ewbank, Mr. Weaver.

3. ARGUMENTATION AND DEBATE. I, II; 3 cr. A consideration of the problems involved in gathering material and constructing the type of composition which aims to persuade or to convince. The preparation and delivery of various types of argumentative speeches. Prerequisite: Speech 1, 7, or 8. Lecture 10 M; quiz 8 TT or 10 WF. Mr. Ewbank.

4. ARGUMENTATION AND DEBATE. II; 3 cr. Continuation of Speech 3, which is prerequisite. Not offered 1931-32. Mr. Ewbank.

6. VOICE TRAINING. I; 2 cr. Specific training and practice designed to improve vocal conditions for all speech purposes. Exercises for flexibility, range, relief from tension, articulation, and enunciation. Text and outside readings. Prerequisite: Speech 1, which may be taken concurrently. 3:30-5:30 W, and quiz. Miss Johnson and staff.

7. PUBLIC SPEAKING. I, II; 2 cr. For those who wish to acquire some skill in public address. Maximum of platform work. Special emphasis upon purpose, audience, occasion, and types of speeches. Open to all students except freshmen. Seven sections: 8 or 9 MW; 8, 9, 10, 1:30, or 3:30 TT. Mr. Lane and staff.

8. EXTEMPORE SPEAKING. I, II; 2 cr. Open only to freshmen electrical engineers, of whom it is required. Mr. Kopp.

16. ELEMENTS OF DRAMATIC EXPRESSION AND ACTING. I, II; 2 cr. Prerequisites: Speech 1 and 6; the latter may be taken concurrently. 2:30 MW, Mr. Troutman.

18. ORAL INTERPRETATION OF LITERATURE. II; 2 cr. Prerequisite: Speech 6. 11, 2:30 MW. Miss Johnson.

19. ELEMENTARY DRAMATIC PRODUCTION. I, II; 2 cr. Students in this course are urged to take Speech 22. Prerequisite: Speech 16. 2:30 TT. Mr. Troutman.

22. DRAMATIC READING AND PLATFORM ART. Yr; 2 cr. Prerequisite: Speech 16 and 18; the former may be taken concurrently. 10 or 11 TT. Miss Johnson.

25. CORRECTION OF SPEECH DISORDERS. I; 3 cr. Prerequisite: Junior standing 1:30 MWF. Mr. West.

100. SENIOR THESIS. Yr; 2 cr. Staff.

105. SPEECH COMPOSITION. I; 3 cr. Prerequisite: Speech 2 or 3. 9 MWF. Mr. Ewbank.

110. FORMS OF PUBLIC ADDRESS. II; 2 cr. Prerequisite: Consent of instructor. 9 TT. Mr. Ewbank.

119. ADVANCED DRAMATIC PRODUCTION. Yr; 2 cr. Students are urged to take Speech 123 in connection with this course. Prerequisite: Speech 19 or consent of instructor. 1:30 TT. Mr. Troutman.

121. VOICE SCIENCE. I; 3 cr. Prerequisites: Speech 2 and upper-group status. 2:30-4:30 Tu, 2:30 Th. Mr. Weaver.

123. Interpretation of Classic Literature. I; 2 cr. Prerequisite: Speech 22 or consent of instructor. 7:15-9:15 p.m. M. Miss Johnson.

125. Speech Pathology. I; 3 cr. Prerequisites: Speech 1 and 25. 11 MWF. Mr. West.

126. Advanced Correction of Speech Disorders. II; 3 cr. Prerequisites: Speech 1 and 25. 11 MWF. Mr. West.

135. Advanced Argumentation and Debate. II; 3 cr. Prerequisite: Speech 3 or graduate standing. 9 MWF. Mr. Ewbank.

140. Stage Design (Art Education 140). II; 2 cr. Prerequisite: Speech 19 or graduate standing in speech. 3:30 TT. Mr. Varnum.

141. Psychology of Speech. II; 3 cr. Prerequisites: Psychology 1, Speech 2. 10 MWF. Mr. Weaver.

185. Introduction to Phonetics. II; 3 cr. Prerequisite: Speech 2 or 25, or consent of instructor. 1:30 MWF. Mr. West.

186. Advanced Phonetics. II; 3 cr. Not offered 1931-32. Mr. Hanley.

200. Research. Yr; 1-4 cr. Mr. Weaver.

205. Seminary, Rhetoric and Oratory. Yr; 2 cr. 7-9 Th. Miss Borchers.

219. Seminary, Dramatic Production. I; 2 cr. 3:30-5:30 W. Mr. Troutman.

220. Seminary, Theory of Oral Interpretation. II; 2 cr. 1:30-3:30 Tu. Miss Johnson.

227. Seminary, Speech Pathology. Yr; 2 cr. 7:30-9:30 Tu. Mr. West.

TEACHERS' COURSE

Teaching of Speech. See School of Education.

ZOOLOGY

Michael Frederic Guyer, Ph.D., LL.D., *Professor of Zoology, Chairman*
Frederick Lee Hisaw, Ph.D., *Professor of Zoology*
William Stanley Marshall, *Ph.D., Associate Professor of Zoology*
George Wagner, M.A., *Associate Professor of Zoology*
Chester Albern Herrick, Sc.D., *Assistant Professor of Zoology*
Lowell Evan Noland, Ph.D., *Assistant Professor of Zoology*
Chancey Juday, M.A., *Lecturer in Zoology*
Pearl Elizabeth Claus, Ph.D., *Research Associate in Zoology*
Harry Leonard Fevold, Ph.D., *Research Associate in Zoology*
Nellie Mae Bilstad, M.A., *Instructor in Zoology*
Harold Reclus Wolfe, M.S., *Instructor in Zoology*

MAJOR. A minimum of 30 credits, including ordinary Botany 1, Zoology 1, 9, 102, 104, 105, and, in the case of upper-group students, a thesis. Changes in the list of recommended courses are occasionally made, particularly in the case of students preparing for medicine, nursing, or technical work. Such changes must be arranged in consultation with an adviser in the Department of Zoology.

For the advanced courses, training in chemistry and ability to read French and German are desirable. Medical students will find courses 104-106, 111, 118-120, and 122 of special interest. Agricultural students will find courses 9, 104, 106, 110-112, and 119 of special interest.

1. ANIMAL BIOLOGY. I, II; 5 cr. Cell structure, cell division, adaptations of animals, physiology of organ systems, embryology, heredity, and evolution. Laboratory includes anatomy, physiology, embryology, and histology of the frog, and comparative studies on Protozoa, Hydra, and honey-bee. This course combined with Botany 1 or Zoology 2 satisfies the science requirement for the bachelor's degree. Lab. fee $7. Lecture: I, 9 MW (Mr. Wagner); II, 2:30 MW (Mr. Guyer); 6 hrs. lab., 2 hrs. quiz. Mr. Guyer, Mr. Wagner, and staff.

2. GENERAL ZOOLOGY. II; 5 cr. A survey of the main types of animals, their classification, structure, life history, and interest to man. Laboratory work on representative animals. Bird trips. Prerequisite: Zoology 1. Lab. fee $7. Lecture 9 MW; 6 hrs. lab., 2 hrs. quiz. Mr. Noland and staff.

3. ELEMENTARY ZOOLOGY. I; 3 cr. A brief introductory course in general biological principles, as illustrated by animals. Primarily for agricultural and physical education students. Laboratory study and dissection of representative animals. Lab. fee $5. Lecture 3:30 MF; 4 hrs. lab. Mr. Herrick and staff.

9. ELEMENTARY ENTOMOLOGY. II; 3 cr. Lectures on the life problems and adaptations of insects. Collecting and classifying of insects. Lab. fee $3. 10 MWF. Mr. Marshall.

100. SENIOR THESIS. Yr; 2 cr. Original, individual work for zoology majors of upper-group status. Staff.

102. INVERTEBRATE ZOOLOGY. I; 5 cr. Structure, development, life history, and adaptation of invertebrate animals. Prerequisite: Zoology 1 or 3. Lab. fee $8. 1:30-4:30 MWF. Mr. Noland and staff.

103. THE VERTEBRATES. II; 2 cr. Lectures on classification, life history, and adaptations of vertebrate animals. Prerequisite: Zoology 1 or 3. 8 TT. Mr. Wagner.

104. COMPARATIVE ANATOMY OF VERTEBRATES. II; 5 cr. Lectures comparing structure and development of organ systems in the different vertebrate groups. Laboratory dissection of shark, mud-puppy, and cat, and comparative studies on other vertebrates. Prerequisite: Zoology 1 or 3. Lab. fee $8. Lecture 1:30 MWF; 6 hrs. lab. Mr. Wagner and staff.

105. VERTEBRATE EMBRYOLOGY. I; 3 cr. The early embryological development of vertebrates, including fertilization, cleavage, and origin of organ systems. Prerequisite: Zoology 1 or 3. Lab. fee $6. Lecture 1:30 TT; 4 hrs. lab. Mr. Hisaw and staff.

106. Heredity and Eugenics. I; 2 cr. The laws of heredity, their application to man, and the importance of the biological principles underlying race-betterment. Not open to freshmen. Lecture 3:30 TT; quiz. Mr. Guyer.

107. Organic Evolution. II; 2 cr. A critical consideration of organic evolution and how it has taken place. Not open to freshmen. 11 TT. Mr. Wagner.

108. Protozoology. II; 3 cr. Structure, physiology, life history, and adaptations of Protozoa, especially the non-parasitic ones. Prerequisite: Zoology 102 or consent of instructor. 1:30-4:30 TT. Mr. Noland.

109. Advanced Vertebrate Embryology. II; 2 cr. An advanced course dealing with the differentiation and development of tissues and organs; organogeny. Prerequisite: Zoology 105 or Anatomy 115. Lab. fee $6. 1:30-3:30 MW. Mr. Hisaw.

110. Entomology: Anatomy and Embryology. I; 3 cr. Anatomy, histology and development of insects. Prerequisite: An elementary course in entomology. Lab. fee. $4. Mr. Marshall.

111. Micro-Technique. I; 3 cr. Training in the preparation of histological material, including practice in fixing, staining, mounting, maceration, and sectioning by the paraffin, celloidin, and freezing methods. Prerequisite: Zoology 1. Lab. fee $11. 8-11 MW. Miss Bilstad.

112. Insects and Man. I; 2 cr. Lectures on harmful and beneficial insects in their relation to man and his domesticated animals and plants. 10 MW. Mr. Marshall.

113. Comparative Animal Histology. II; 3 cr. A comparative study of the tissues and organs of vertebrate and invertebrate animals. Prerequisite: Zoology 1 or 3. Lab. fee $6. 9-12 MW. Mr. Hisaw.

118. Mammalian Anatomy. I; 3 cr. Lectures on mammalian anatomy; dissection of the cat in laboratory. Prerequisite: Zoology 1 or 3. Lab. fee $5. Lecture 8 Tu; lab. 9-12 TT. Mr. Wagner.

119. Animal Parasites. II; 3 cr. A survey of animal parasites, especially those of man and domesticated animals. For medical students and others interested in public health problems. Veterinary students may take laboratory alone for two credits. Prerequisite: Zoology 1 or 3. Lab. fee $5. Lecture 9 TT; 4 hrs. lab. Mr. Herrick and staff.

120. Advanced Parasitology. I; 2 cr. Advanced work on the identification and life histories of parasites, and the diagnosis of parasitic diseases. Prerequisite: Zoology 119. Lab. fee $5. 10-12 TT. Mr. Herrick.

122. Endocrinology. I; lect. 2 cr., lab. 2 cr. The general physiology of hormones and glands of internal secretion. Prerequisites: Zoology 105, Chemistry 1a. Only specially qualified graduate students will be admitted to laboratory. Lab. fee $5. 11 MW. Mr. Hisaw.

123. Advanced Entomology. I, II; *cr. For students who desire to pursue some special line of advanced entomological work. Prerequisite: Zoology 9. Mr. Marshall.

124. LIMNOLOGY. I; 2 cr. The geology, physics, chemistry, and biology of lakes, supplemented by training in limnological methods. Special attention is given to studies on Wisconsin lakes. Hours by arrangement. Mr. Juday.

125. PLANKTON ORGANISMS. II; 2 cr. Identification, distribution, variation, and economic importance of plankton forms. Field work consists of physical, chemical, and biological observations on lakes. Prerequisite: Zoology 102. Mr. Juday.

126. FIELD ZOOLOGY. I; 4 cr. Field trips; observing and collecting of local animals; identification and study of collected species in the laboratory. Prerequisite: 10 credits of college zoology. Lab. fee $3. 8-12 TT. Mr. Noland.

180. ADVANCED ZOOLOGICAL PROBLEMS. I, II; 2-5 cr. Individual work dealing with advanced phases of zoology not taken up in the regular courses. Prerequisite: Consent of instructor. Lab. fee $5. Staff.

200. GRADUATE RESEARCH. I, II; 2-5 cr. Lab. fee $5. Staff.

201. PROSEMINARY. Yr; 2 cr. Devoted to a discussion of the history of zoology. Distribution of graduate students between seminary and proseminary will be arranged in consultation with the instructors in charge. Specially qualified seniors are occasionally admitted to the proseminary. 3:30-5:30 F. Mr. Wagner.

214. ANATOMY AND PHYSIOLOGY OF THE CELL. I; 2 cr. The physics and chemistry of the cell, theory of staining, colloidal nature of protoplasm, semi-permeable membranes, effects of electrolytes, phenomena of metabolism, stimulation and transformation of energy. Prerequisites: Chemistry 1; Zoology 105 or 111. 11 TT. Mr. Guyer.

215. THE CELL IN DEVELOPMENT AND INHERITANCE. II; 2 cr. The chromosomal mechanism of the cell, and its relation to recent discoveries in experimental embryology and genetics. Prerequisite: Zoology 105. 11 TT. Mr. Guyer.

216. CYTOLOGY. Yr; 3 cr. An introduction to cytological technique and the general field of cellular biology. Prerequisite: Zoology 111. Hours by arrangement. Lab. fee $6. Mr. Guyer.

220. SEMINARY. Yr; 2 cr. Oral reports and discussions of advanced zoological subjects by members of the class. 3:30-5:30 F. Mr. Guyer.

COLLEGE OF ENGINEERING

F. E. TURNEAURE, DEAN

ORGANIZATION OF THE COLLEGE

The College of Engineering is organized in the belief that a thorough-going fundamental training is the first essential to a successful engineer. It is believed that this fundamental training may be best secured not alone by theoretical study, but by giving attention as well to the practical application of the principals involved. It is further a leading thought that after the fundamental principles have been mastered, a certain measure of specialization in the main lines of engineering is advisable because of the great development of engineering in recent years, and the various phases which it is rapidly assuming. It is the endeavor of the college to combine a reasonable amount of specialization during the later years of its courses with a thorough grounding in the fundamentals during the earlier portions; and in carrying out this plan, the mathematical and theoretical courses constitute the main body of the program in the earlier years, and the later years are devoted more largely to the applications of these fundamentals to engineering problems.

Engineering students are urged to take their elective work in foreign language, advanced English, economics, public speaking, and other subjects of a general rather than a technical nature.

BUILDINGS

The main building of the College of Engineering contains the offices of administration, the engineering library, the materials testing laboratory, and the departments of drawing, mechanics, and structural, highway, and railway engineering. The new Mechanical Engineering Building has recitation, lecture, and drafting rooms, the steam and gas laboratories, and the engineering shops. A third building contains the electrical laboratories; a fourth, the laboratories for chemical engineering; a fifth, the hydraulics laboratory; and a sixth, the mining building, contains the ore dressing, assay, and metallurgical laboratories.

For chemistry the engineering students go to the Chemistry Building, for physics to Sterling Hall, for natural sciences to Science Hall and the Biology Building, and for language, mathematics, and similar work to other buildings of the University. In this way the students of engineering come into daily contact with the students in the other university courses.

LIBRARIES

The Library of the College of Engineering is located in the Engineering Building and contains a large collection of technical books and periodicals. The current numbers of about 250 engineering periodicals are available in the reading room, and the bound volumes in the library include complete sets of all the important transactions and magazines. In addition to the college library, there are the University Library, containing about 405,000 volumes and 67,000 pamphlets, the Library of the State Historical Society (266,000 volumes and

286,000 pamphlets), the Library of the Wisconsin Academy of Sciences, Arts, and Letters (5,000 titles), and the Madison Free Library (90,000 volumes), to which students have free access.

ADMISSION

See section on Admission, page 33.

GENERAL REGULATIONS

PREPARATION IN ALGEBRA

One and one-half units of algebra are required for entrance. The first unit should include the following subjects: addition, substraction, multiplication, division, equations of the first degree with one unknown number, simultaneous equations of the first degree, including the graphical solution of a pair of linear equations with two unknowns, factors, highest common factor, lowest common multiple, the solution of quadratic equations.

The additional one-half unit should cover the following subjects: simultaneous quadratic equations; ratio proportion and variation, elementary theory of exponents and radicals; the theory of quadratic equations; graphical representation of simple relation between two variables; binomial theorem for positive integral exponents; logarithms, including use of tables in simple numerical work; arithmetical and geometrical progressions.

All students entering the College of Engineering will be tested in algebra by class work and by an examination given shortly after the beginning of the first semester. It is essential that students in the engineering courses shall possess a good working knowledge of algebra at the time when they begin their course, and it is the purpose of the examination to secure this by requiring a review of the subject shortly before entering the University. Students failing in the test are not permitted to continue with regular freshman mathematics, but are required to take a review of algebra during the first semester. A special non-credit course is provided for this purpose.

ADVISERS

At the beginning of each semester the students consult their faculty advisers as to the selection of subjects and the arrangement of programs. These advisers keep in touch with the students' work during the semester, receive reports from instructors as to progress, suggest methods for improvement in work, and report gross deficiencies to parents or to the faculty.

Reports to parents or guardians on the scholastic standings of students are sent from the Registrar's office at the end of each semester.

GRADE-POINT SYSTEM

Under the grade-point system, points are awarded as follows: For Grade A (*excellent*), three points for each credit; for grade B (*good*), two points; for grade C (*fair*), one point; for grade D (*poor*), no points. In the College of Engineering at least 146 grade-points and 146 credits, exclusive of freshman lecture, physical education, band, and military science, are required for graduation from any one of the four-year courses. No student will be recommended for the degree of Bachelor of Science who does not earn at least one grade-point per credit during the last two semesters of his attendance at the University.

HONORS

Honors and high honors are awarded at the end of the sophomore year and at graduation to students who have spent not less than two full years in residence in the University. In computing credits and points for honors or high honors, the following subjects are not to be included: sub-freshman subjects, physical education, band, and basic courses in the Military Department; credits obtained by special examination, and credits earned at other institutions.

SOPHOMORE HONORS AND SOPHOMORE HIGH HONORS are awarded on the basis of a minimum of two years' work (not less than 60 credits, exclusive of physical education, band, military science, and freshman lectures) completed in the University. A student earning during these two years 135 grade-points, plus 1.5 grade-points for each credit above 60 which he has taken will be awarded *sophomore honors;* a student earning during these two years 165 grade-points plus 2 grade-points for each credit above 60 which he has taken, will be awarded *sophomore high honors.*

HONORS AND HIGH HONORS AT GRADUATION. Students having an average of 2.25 or more and less than 2.75 points per credit at graduation, will be awarded *honors.* Students having an average of 2.75 or more points per credit will be awarded *high honors.*

FEES AND EXPENSES

See section on Student Expense, page 15.

COURSES OF STUDY AND DEGREES

The College of Engineering offers six systematic four-year courses leading to the B.S. degree.

CIVIL ENGINEERING
MECHANICAL ENGINEERING
ELECTRICAL ENGINEERING
CHEMICAL ENGINEERING.
MINING ENGINEERING
METALLURGICAL ENGINEERING.

Students who complete any of the above four-year courses are graduated with a degree of Bachelor of Science, the diploma containing a specific designation of the course taken.

The above courses may also be taken as five-year courses leading to the B.S. degree. The additional year will make it possible to include a large amount of work in the College of Letters and Science.

ELECTIVES FOR STUDENTS IN THE COLLEGE OF LETTERS AND SCIENCE WHO PLAN TO TAKE ENGINEERING LATER

Students who plan to graduate in Engineering, after taking a degree in the College of Letters and Science, should aim to make the following elections during the undergraduate course, in order that the engineering course may be completed in two additional years:

Mathematics 51, 52, 54, and 55; Physics 1 or 51 and 52; Chemistry 1 or 2; Mechanical Drawing 1, 2, and 3; Topographical Engineering 1, 2, 3, and 104, or Machine Design 1; Mechanics 1, 2; Electrical Engineering 1 and 51; Chemical Engineering 12, 18, and 111; Mining Engineering 101, 121, 122; and Geology 9.

It is well also to elect some or all of the freshman and sophomore shop work as extra studies.

GRADUATION IN MORE THAN ONE OF THE ENGINEERING COURSES

Graduates in any of the engineering courses may graduate in any other engineering course after one year of additional study. Students who contemplate doing this should, however, make their elections, especially in the senior year, with this end in view.

SUMMER VACATION WORK

All engineering students are required to take summer vacation work in addition to the work of the four academic years. For civil engineering students this work consists of four weeks of topographic engineering field work and two weeks of railway engineering field work. These courses are given at the University Survey Camp at Devils Lake, Wisconsin. For mechanical engineering the requirement consists of not less than six weeks of approved summer work in industrial practice. Electrical engineers are required to take six weeks of approved summer work in an engineering or industrial organization. The chemical engineers are required to work five weeks, at the close of the junior year, in the university laboratory on chemical manufacture. Mining engineers spend a considerable portion of two summer vacations at work in the different mining regions and metallurgical centers. A very detailed report is submitted of their observations of conditions, methods, and operations in the district visited. In addition the long mine and metallurgical inspection trip is taken at the end of the junior year.

INSPECTION TRIPS

Inspection trips, for visiting industrial plants, are required of all engineering students during the junior and senior years. They are arranged and conducted by members of the faculty of the various departments and are designed to illustrate the work of the several courses.

The electrical and mechanical engineers take the trip in the autumn of the senior year. The trip takes a week's time and visits are made to plants in Milwaukee, Kenosha, Waukegan, Chicago, Buffington, and Gary.

The civil engineers visit the cities of Chicago and Milwaukee, the former in the spring of the junior year, the latter in the autumn of the senior year. Each of these trips takes three or four days.

The chemical engineers make a week's visit to Milwaukee, Chicago, and points near by in the spring of the junior year.

In the second semester of the freshman year, mining engineers take a trip to a mine in one of the nearer districts for the purpose of a complete mine survey, and while there make a complete inspection of the operation.

In metallurgy the students annually inspect the metallurgical works around Chicago, the trip lasting a week.

At the end of the junior year or, if advisable, just after their commencement, students in the courses in mining and metallurgy are required to take a long western inspection trip, visiting mining and metallurgical centers throughout the northwest. This trip lasts about six weeks.

THESES

In all courses, candidates for a second or a professional degree in engineering shall submit a thesis. The thesis requirements for the B.S. degree in the different courses in the College of Engineering are as follows:

In the civil engineering course a thesis is required. In the electrical, mechanical, and mining engineering courses a thesis is optional. In chemical engineering a course in special problems replaces the thesis requirement.

If a thesis is taken, the subject of the thesis shall be selected by the student after consultation between the student, his adviser, and the instructor who is to direct the work, and it shall be submitted to the Course Committee for approval. The total number of credit hours granted for this work shall not be less than three nor more than five, except by special action. The thesis is to be typewritten according to specifications furnished by the librarian of the University, and before it is accepted it must be approved by the instructor under whom the work has been done. It shall be deposited in the University Library by the second Friday before Commencement.

FRESHMAN LECTURES

The College has provided a course of lectures for freshmen. Attendance is required. In the lectures of this course it is the aim to give the student a more adequate conception of the work of the engineer, to make clear the kind of training which furnishes the best preparation for the practice of the engineerng profession, and to call attention to the methods of study which have been found to produce satisfactory results. The course also includes several lectures on subjects of more general interest.

SPECIAL LECTURES

It is the practice of the College to provide each year a number of lectures on various phases of engineering practice. These lectures are for the most part given by prominent non-resident engineers and professors; some are given by Wisconsin professors. Their purpose is to enliven the interest of the student and to broaden his horizon, rather than to give specific instruction. The following lectures were given recently:

November 29, 1929.

Harold B. Smith, Professor of Electrical Engineering at Worcester Polytechnic Institute, President of American Institute of Electrical Engineers, and Consulting Engineer for the Westinghouse Electric and Manufacturing Company. "The Quest of the Unknown."

March 5, 1930.

T. C. Fry, Technical Engineer for the Bell Telephone Laboratories. "The Modern Use of Probability."

March 21, 1930.

James Everett Mackie, Structural Engineer for the National Lumber Manufacturers Association. "Correct Uses of Lumber in Construction."

May 7, 1930

J. G. Pearce, Director and Secretary of the British Cast Iron Research Association. "Cast Iron Specifications."

GRADUATE WORK

The graduate work in the College of Engineering is a part of the Graduate School of the University, and is in charge of an administrative committee. Excellent opportunities are offered in the various departments for advanced theoretical work and for research. A special fund is available to be devoted exclusively to experimental work in the engineering laboratories.

For admission to the Graduate School an official transcrit of the undergraduate record of the applicant should be forwarded to the Dean of the Graduate School, Bascom Hall, some weeks in advance of the opening of the session.

The degree of Master of Science (in civil engineering, mechanical engineering, etc.) is conferred upon graduates of approved institutions who have completed suitable undergraduate courses and who pursue advanced professional study at the University for one year or more, present a satisfactory thesis, and pass an oral examination upon the field of their graduate work.

The degrees of Civil Engineer, Mechanical Engineer, Electrical Engineer, Chemical Engineer, Engineer of Mines, and Metallurgical Engineer are conferred upon graduates of the College of Engineering of the University of Wisconsin who have spent five years in professional work, at least one of which must have been in a position of responsibility, and who present a satisfactory thesis.

The degree of Doctor of Philosophy is conferred upon graduates of the engineering courses under the same requirements as apply to graduates of other divisions of the University.

For statements of these requirements, see Graduate School.

CIVIL ENGINEERING COURSE

GENERAL STATEMENT

The course in civil engineering is designed to accomplish two things: First, it aims to give its graduates sufficient skill in certain technical operations to enable them to be of immediate value to an employer. The graduate enters civil engineering as a computer, draftsman, instrument man, timekeeper, or inspector, and he should be able to do creditable work in some one of these lines. Second, the course aims to train men to analyze engineering problems scientifically and reach sound conclusions about them.

The first two years of the course parallel closely the first two years of the other engineering courses in this college and are devoted chiefly to the study of English, mathematics, physics, and chemistry. During the last two years of the course the student is brought into contact with problems in various fields of civil engineering, partly to give him some familiarity with those fields, but chiefly to develop his powers of analysis and his judgment. Excellent laboratories enable the student to verify the theory he learns in the class room and to become familiar with research methods.

In addition to the technical objectives outlined above, the course is designed to give a training that will enable its graduates to hold their own in business and social intercourse and rise to the highest positions of responsibility in business and public affairs.

The course is administered with sufficient flexibility to permit a student to satisfy any reasonable desires in regard to the subjects to be studied. Those students who desire a greater amount of liberal education than can be crowded into a four-year curriculum can arrange special five- and six-year programs.

The four-year course leads to the degree of Bachelor of Science. The degrees of Master of Science and Doctor of Philosophy can be earned by graduate work. The degree of Civil Engineer is granted to graduates of the course who have had five years of successful practice in civil engineering and who comply with certain formalities.

EQUIPMENT

THE SURVEYING LABORATORY contains all instruments needed for extensive triangulation, topographic, hydrographic, and railroad surveys, including aneroid barometers, baseline apparatus, calculating machines, compasses, current meters, heliotropes, levels, invar tape, pantographs, plane tables, planimeters, precise-levels, sextants, sounding apparatus, theodolites, transits, and other smaller articles of surveying equipment.

THE BRIDGE ENGINEERING DEPARTMENT owns several autographic extensometers, a deflectometer for determining bridge stresses under moving train loads and a Beggs Deformeter. The department also possesses a large number of photographs, drawings, and lantern slides illustrating details, erection methods, and complete structures of a great variety of designs.

THE TESTING LABORATORY is supplied with a 600,000-pound hydraulic universal testing machine (designed in the laboratory) taking tension and compression specimens 10 feet and beams 20 feet long; a Riehlè torsion machine taking shafts 15 feet long and 3 inches in diameter; and 100,000-pound Johnson beam machine taking beams 22 feet long; seven Olsen and Riehlè universal machines from 10,000 to 200,000 pounds capacity; a Thurston torsion machine; a Russell impact machine; machines for fatigue tests of metals; Brinnell, Rockwell and scleroscope hardness testers; several small beam and wire machines; a 5-ton refrigerator for freezing tests; a Smith concrete mixer; a good equipment for tests of plain and reinforced concrete; and appliances for testing road-building material. There is a full supply of necessary apparatus for making standard tests of cement baths, self recording thermometers, complete equipment of 1,000-pound Riehlè and Olsen testing machines, etc.

HYDRAULIC LABORATORY. A special building for this laboratory is located on the shore of Lake Mendota. It is equipped for theoretical, experimental, and research work. The facilities are especially good for studying those problems where large quantities of water are needed. A direct-connected 30-inch centrifugal pump furnishes up to 35,000 gallons of water a minute under a twelve-foot head. This water is delivered into a receiving chamber connected with various conduits and channels. Investigations can be conducted covering the flow in such channels and conduits together with the effects thereon of dams, weirs, racks, submerged orifices, and other features encountered in water power work.

A concrete reservoir, 50 ft. in diameter by 15 ft. deep, with a capacity of 220,000 gallons, is located on the bluffs at an elevaton of about 60 ft. above the laboratory. It is connected to the laboratory by a 16-inch delivery pipe and 10-inch supply line. Its installation has made possible experiments which require a considerable flow of water under a very steady head, tests on turbines under heads up to 50 feet and the ready calibration of the largest weirs in the laboratory.

Very favorable facilities are afforded for the study of losses due to valves and other forms of restricted passages or to sudden changes in pipe section, and for the study of flow in straight and curved pipes, and through weirs and orifices of practically any type.

A large assortment of accurate apparatus for the measurement of quantities, velocities, and pressures, both in open and closed channels, is available, includng a variety of water meters, among them various Venturi meters.

The laboratory is equipped with several types of impulse water-wheels including tangential and Girard turbines, reaction turbines with cylinder register, and wicket gates. The pumping machinery includes both duplex and triplex reciprocating pumps, centrifugal pumps, vacuum pumps, jet pumps, and the hydraulic ram.

The electric power supply is favorable to accurate work on hydraulic machine testing. A 175 k. w. synchronous motor generator set supplies 220 volts, direct current, through four feeder lines into the laboratory. Unusually exact speed regulation can be obtained with noninterference of testing apparatus.

The regular course of instruction includes a careful selection of typical determinations, and opportunities are offered for advanced and research work in practical hydraulics and hydraulic machinery as well as in the more advanced lines.

Sanitary Laboratory. A well equipped sanitary laboratory is housed near the Hydraulic Laboratory. The apparatus available for the use of the students includes all modern equipment necessary in making accurate sewage and trade wastes analysis. The course of instruction includes work of an advanced nature, where the student can observe for himself the analysis studied in the theoretical courses, and at the same time carry on some research work to assist in the solution of many of the present problems in sewage and trade wastes disposal and in stream pollution.

The Road Materials Testing Laboratory. In cooperation with the Wisconsin Highway Commission the University offers instruction in the testing of both bituminous and non-bituminous road materials. The equipment in the laboratories is sufficient to perform all of the standard tests.

Other Laboratories. The mechanical and electrical laboratories and the Machine Shop are open to civil engineering students. They will be found described on subsequent pages of this bulletin. For a description of the laboratories of the science departments of the University, all of which are open to engineering students, reference is made to the University Catalog.

CIVIL ENGINEERING COURSE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CIVIL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Top. Engr. 1—Elementary surveying	2	Top. Engr. 2—Elementary surveying	2
Physical activity requirement	0	Physical activity requirement	0
Freshman lectures	0	Freshman lectures	0
	17		17

SOPHOMORE YEAR

Math. 54—Differential and integral calculus	4	Math. 55—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
Railway Engr. 1—Railway curves	2	Mech. 1, 2—Statics, dynamics	5
Railway Engr. 2—Theory of location and construction	3	Top. Engr. 104—Advanced surveying	3
Top. Engr. 3—Land surveying	3	Physical activity requirement	0
Physical activity requirement	0		17
	17		

Six weeks of summer camp, including two weeks of Railway Survey and four weeks of Topographical Engineering.

JUNIOR YEAR

Mech. 3—Mechanics of materials	5	Mech. 52—Materials of construction	2
Mech. 51—Materials of construction	2	Hydr. 110—Hydrology	2
Hydr. 2—Elementary hydraulics	4	Railway Engr. 110—Masonry construction	2
Drawing 3—Descriptive geometry	3	Struct. Engr. 2—Stresses in simple structures	4
Geol. 9—Engineering geology	3	Steam and Gas 7—Engines and boilers	2
Hydr. 122—Sewerage	2	Econ. 1a—General economics	4
Engr. Engl. 1a—Papers and discussion	1	Engr. Engl. 1b—Papers and discussions	1
	20	Highway Engr. 102—Highway engineering	3
			20

SENIOR YEAR

Struct. Engr. 3—Bridge design	3	Engr. Contr. 101—Contracts and specifications	2
Struct. Engr. 105—Reinforced concrete	3	Struct. Engr. 4—Bridge design	2
Steam and Gas 127—Laboratory	2	Elect. Engr. 10, 60—Direct current machinery	4
Hydr. 121—Water supply	3	Railway Engr. 111—Substructures	1
Engr. Engl. 2a—Papers and discussions	1	Engr. Engl. 2b—Papers and discussions	1
Thesis	1	Thesis	2-4
Electives	6	Electives	7-5
	19		19

At the beginning of the junior year, the students must elect to pursue one of the following groups of studies:

STRUCTURAL OPTION

Struct. Engr. 107—Higher structures.... 2
Struct. Engr. 111—Reinforced concrete design 2

Struct. Engr. 108—Secondary stresses.. 2
or
Mech. 106—Advanced mechanics .....(2)

Additional electives: Structural Engineering 106, 109, 112; Mechanics 108.

RAILWAY OPTION

Ten credits to be elected from the following group:

Railway Engr. 105—Engineering economics 2
Railway Engr. 107—Advanced design..... 2
Min. Engr. 101—Excavation and tunneling 3

Econ. 135—Railway transportation 3
Econ. 136—Transportation problems .. 3
Elect. Engr. 129—Electric railways..... 3
Railway Engr. 112—Estimates..... 2

HYDRAULIC OPTION

Hydr. 102—Testing of hydraulic machines 2
Hydr. 104—Water power engineering.... 3
Hydr. 113—Hydraulic design 2

Hydr. 105—Hydraulic machinery..... 2
Hydr. 112—Drainage and irrigation..... 2
Hydr. 114—Hydraulic design 2

MUNICIPAL OPTION

City Plan. 101—City planning and zoning 2
Hydr. 124—Water and sewage analysis.. 2

Hydr. 112—Drainage and irrigation..... 2
Hydr. 123—Sewage and garbage disposal 1
City Plan. 101—City planning and zoning (repeated) 2

HIGHWAY OPTION

Highway Engr. 103—Adv. highway design 3
Highway Engr. 105—Highway maintenance 2
City Plan. 101—City planning and zoning 2

Highway Engr. 104—Highway materials testing 3
Struct. Engr. 112—Highway bridges..... 2
City Plan. 101—City planning (repeated) 2
Top. Engr. 108 is recommended

GENERAL OPTION

All electives are free, excepting that not more than half can be taken in the department providing special optional groups.

INSPECTION TRIPS

Junior Trip, 2nd semester. Prerequisites: Ry.E. 2, Ry.E. 110, Mech. 52 or concurrent registration.

Senior Trip, 1st semester. Prerequisites: Structures 2, Hydraulics 2 and 122.

MECHANICAL ENGINEERING COURSE

GENERAL STATEMENT

The four-year course offered in mechanical engineering leads to the degree of Bachelor of Science (Mechanical Engineering) and is open to graduates of accredited high schools, and students entering by examination or with proper credits from other schools or colleges.

The first two years of the course, and a portion of the junior year, are devoted principally to the fundamental studies of mathematics, chemistry, mechanical drawing, machine design, physics, mechanics, and shop work, while during the junior and senior years the professional subjects are introduced. The treatment of these professional subjects is along as broad lines as possible, in order to make them of the greatest educational as well as technical value to the students.

As it is difficult for most students to determine in advance their professional career it is desirable that their college training shall follow a general direction and be free from excessive specialization. To this end the mechanical course includes studies dealing with the elements of direct and alternating currents and hydraulics, in addition to the subjects of steam engines and boilers, heating and ventilating, machine design and shop practice.

In the senior year courses are offered which are designed to give the commercial point of view in many of the problems of engineering. With these subjects the mental attitude of the student is brought into conformity with that of actual practice as far as possible.

Elective credits in the junior and senior years allow students in mechanical engineering to take fundamental subjects in other engineering courses, such as civil, chemical, or mining engineering in addition to correlated work in economics and business administration as well as general subjects.

EQUIPMENT

THE ENGINEERING SHOPS LABORATORIES afford excellent facilities for mechanical practice. The six laboratories are for machine, forge, pattern, foundry, carpentry, and welding practice.

The Machine Laboratory has a well balanced and modern equipment for handling classes in elementary, advanced, and general shop work. Production methods are emphasized. Johansson blocks and other precision tools afford practice in modern measuring devices. An up-to-date tool room insures an excellent condition of machines.

The Forge Laboratory is equipped with the latest design down-draft forges and direct-connected blast-exhaust unit. A steam hammer, shears, grindstones, and hand tools form an adequate equipment.

The Pattern Laboratory has 24 wood lathes and standard individual work benches with the necessary tools for general pattern making. Two band saws, two jointers, a circular saw, a surfacer, and three combination sanders form part of the machine equipment.

The Foundry is equipped with a 36-inch cupola, brass furnace, core oven, molding machines, 20 individual molding benches with sets of tools, air rammers, sand blast equipment, and motor driven riddle.

The Carpentry Laboratory is well equipped for the needs of agricultural carpentry. Ample tools for this phase of work are provided.

In the Welding Laboratory ample provision is made for practice in electric arc and acetylene welding by an up-to-date equipment representative of the best manufacturers.

EXPERIMENTAL ENGINEERING. The work in this subject is planned so that it illustrates the principles taught in the classroom by tests on the various types of heat engines. The student is first taught how to calibrate the various instruments used in such tests, to set valves and then to make efficiency tests of engines, boilers, gas producers, and other machinery. As a preliminary to the testing of boilers and gas producers, instruction is given in the use of the various steam, coal, and gas calorimeters, flue gas apparatus and apparatus for the analysis of fuel and gases. Instruction is also given in the methods of measuring flow of air and of testing air compressors, blowers, and refrigerating machines. In the junior year the students study various methods of measuring power and determining mechanical efficiency, testing of oils, determination of friction with regard to lubricants and bearing materials. The courses are laid out with the idea of giving the necessary information and practice in the testing of various machines, and of encouraging accuracy in work and originality in investigation. For thesis work the laboratories offer unusual opportunities in the way of special apparatus.

STEAM AND GAS ENGINEERING LABORATORY. The present main laboratory is a one-story extension at the rear of the Engineering Building. The machinery floor in this laboratory is on the same level as the basement of the main building. A gallery entered from the first floor of the main building is partitioned off to form laboratories for calibration work, special investigation, and oil testing.

A new Mechanical Engineering Building is now under construction and will be in use at the beginning of the school year 1931-32. This building is located on University Avenue, west of the Forest Products Laboratory, and is the first of the new group of engineering buildings that will be located on this site.

The new Mechanical Engineering Building will house the Engineering Shops, the Department of Machine Design, and the Steam and Gas Department, including the Steam and Gas Laboratory. The new Steam and Gas Laboratory is designed to conform with modern power plant practice, including condenser pits, traveling cranes and all modern facilities. It includes a Boiler Laboratory, Heating and Ventilating Laboratory, Automotive Laboratory, and an ample number of small rooms for carrying on advanced research work.

Much of the equipment described below will be moved to the new laboratory during the summer of 1931 and new equipment will be added.

All of the equipment of the laboratory is specially arranged for experimental work, and for demonstration of the principles discussed in the class room. A means of supplying load for each of the engines is provided. On many of the engines a simple friction brake is used, while for high-speed units either electric generators or water dynamometers are used. The steam driven units are supplied with condensers in order that the exhaust steam may be weighed.

The more important *steam driven units* are a 25-kilowatt Curtis turbine, a 25-horsepower simple Corliss steam engine, and a complete refrigeration plant. The main unit of the refrigeration plant is a 15-ton direct-connected Corliss engine-driven ammonia compressor. Also, this plant includes a double-pipe ammonia condenser and a double-pipe brine cooler besides some automatic control equipment. A 50-horsepower cross-compound poppet-valve steam engine is fitted with steam jacketed receiver and cylinders. Tests can be made with either

superheated or saturated steam, condensing or non-condensing, with or without steam in the steam jackets, and with or without reheating between cylinders. This furnishes a means for studying the effect of such conditions upon steam consumption. Moreover, the speed of this unit may be varied from 90 to 125 revolutions per minute, while the cut-off has a range of automatic variation between 0 and 95 per cent of the stroke.

A 50-horsepower compound steam engine is directly connected to a two-stage air compressor. The engine is equipped with a Meyer valve gear and operates condensing. The base of the unit contains an intercooler for the air and a receiver for the steam end. An orifice is used for measuring the quantity of air compressed. A locomotive-type air compressor is also arranged for test purposes.

A separately fired steam superheater is arranged to supply superheated steam to the main steam loop and hence to any of the steam units. A small vertical boiler and engine is used to familiarize the students with the essential parts of a simple steam power plant and the problems connected with its efficient operation. Also, such tests prepare the student for the more complicated plant tests.

Such stations as the University Central Heating Plant, the Capitol Heating Plant, the central station of the Madison Gas and Electric Company, and the City Water Works Plant are used in addition to actual laboratory equipment. Tests are run each year by the students at some of the above mentioned plants. The boiler house of the University which furnishes steam for all the buildings of the institution, both for heating and for power purposes, has a normal capacity of 5528 boiler H. P. It is equipped with special testing apparatus so that experimental work may be carried on relating to the economy of boilers under various service conditions.

The *internal combustion* engines range in size up to a 40-horsepower full Diesel type engine. This is a vertical single cylinder unit, and is a modern piece of equipment. It is a two-stroke cycle engine of the solid injection type, and it will operate on a wide range of fuel oils. There is a 25-horsepower semi-Diesel engine besides some smaller units which will operate on crude oil or kerosene. A 20-horsepower engine which was built especially for test purposes can be fitted with a variety of heads, vaporizers, valves, governors, and auxiliary equipment. This permits testing the engine with city gas, producer gas, gasoline, kerosene, alcohol or other liquid fuels as desired.

There is a suction type producer gas plant installed in the laboratory. This consists of a 21-horsepower engine and anthracite coal producer with an air heater and a gas scrubber.

Special *automotive testing apparatus* is available for testing marine, aeroplane, automobile or truck motors. A 150-horsepower electric dynamometer furnishes a most up-to-date method for testing high-speed engines up to 3,500 revolutions per minute. By a combination of this machine and a calibrated fan dynamometer 250 horsepower can be absorbed. There are many automatic devices used in connection with the dynamometer unit in order to get the greatest possible accuracy of test. Several makes of automobile and aeroplane motors are available for tests. Recently, a standard S. A. E. variable compression engine has been installed for the study of the detonating qualities of liquid fuels.

A hot air engine is operated on city gas to pump water and demonstrate the possibility of an external combustion engine.

Heating and *ventilating* equipment is available for most any type of experiment. An air conditioner in the laboratory is capable of washing, cooling, humidifying, or dehumidifying air. A modern type of dust determinator is used in connection with air testing. An extensive arrangement is installed for determining

the infiltration of air around doors and windows under various conditions of wind pressure. Types of windows, metal weather stripping, and many types of wall construction are problems under investigation. A rotary vacuum and condensate pump is arranged for test. This type of pump is used on vacuum steam-heating systems for maintaining low pressure. A boiler for hot water heating system is arranged for testing either with oil burners or any kind of coal or coke.

Air measurement in the laboratory can be accomplished by a variety of methods. A series of meters have been arranged to facilitate the comparison and calibration of air or gas meters. A Thomas Electric Gas Meter, a Pitot tube, an anemometer, and orifice are some of the more important metering devices.

Steam flow measurement in the laboratory has been worked out with the same ideas in mind as for air measurement. Steam flows through an electric flow meter, a balance type of flow meter, a Pitot tube, a Venturi meter, and several orifices and nozzles. By condensing and weighing the steam, a calibration may be obtained for each method of measurement.

In the *calibration laboratory,* there are dead weight gage testers, vacuum pumps with mercury columns. Also there is a fluid pressure scale with which gages and indicators can be tested to pressures of 25,000 pounds per square inch. Steam drums are used for calibrating inside spring indicators under working conditions.

In the *oil testing* laboratory there are viscosimeters for determining viscosity of oils at different temperatures, also equipment for determining the flash, fire, and pour points. Many oils are tested both in the oil test laboratory and in actual service in connection with engine tests.

There is also an abundance of equipment for making complete tests for determining the economy and capacity of boilers, engines, and gas machinery. This equipment comprises weighing scales, measuring tanks, pyrometers, thermometers, calorimeters, indicators, revolution counters, tachometers, stop watches, planimeters, hydrometers, psychrometers, recording gauges, reducing motions, gas meters, water meters, manometers, draft gauges, and gas analysis apparatus. The laboratory also contains a number of machines for special test purposes, and several steam injectors and nozzles especially arranged so that test data may easily be obtained.

Gas Analysis and Fuel Laboratories. The work in gas and fuel analysis is given under the direction of the Chemical Engineering Department, and in their laboratories. The equipment there available provides excellent opportunities for study of the methods of gas and fuel analysis and the determination of heating values of fuels. Also, some time is given to the study of boiler feed-water treatment.

Transmission Laboratory. The equipment of this laboratory includes a belt testing machine, several forms of transmission dynamometers, and apparatus for testing hoists and screw jacks. Also, there are means for determining the relative efficiency of various forms of shaft bearings.

Machine Design. This department has a large collection of modern working drawings furnished by representative builders in this country and abroad, which are kept on file for reference by students.

A collection of kinematic models built by Schroeder and by the university shops is used in the study of mechanism. In addition to these models there are sectional machines consisting of pumps, valves, etc., used to illustrate the design of machine parts. For this purpose the regular shop and laboratory equipment is

also regularly employed, the students using this machinery for mechanical drawing models and for comparison in design.

THE FOREST PRODUCTS LABORATORY is a scientific institution engaged in research for the Forest Service, United States Department of Agriculture, in cooperation with the University of Wisconsin. The final objective of the research activities of this organization is to secure maximum economy and efficiency in the production and utilization of forest products with a view to prolonging the present timber supply and encouraging the practice of forestry through greater financial returns. The staff of the laboratory cooperates with that of the University in the courses of lectures and research outlined below. The laboratory offers unusual facilities for research in the field of forest products and possesses very complete scientific and technical equipment for this purpose. In its investigations it approximates closely commercial conditions and cooperates extensively with the various manufacturing establishments in testing out its research on a commercial basis.

The technical investigations of the laboratory are as follows:

(1) Mechanical Properties of Wood. Investigations of strength, stiffness, hardness, and other mechanical properties of commercial woods; effect of treatments on strength; tests on fabricated materials and manufactured articles; the development of grading rules for structural timbers.

(2) Seasoning of Wood. Determination of best methods of air drying and kiln drying to eliminate losses; design and operation of dry kilns; studies of commercial kilns; physical properties of woods.

(3) Shipping Containers. Study of wooden and fiber shipping containers, with special reference to design and specifications to develop containers which will deliver the contents to the consumer in a satisfactory condition at a minimum total cost.

(4) Plywood, Glues, and Laminated Stock. Study of plywood manufacturing problems; strength and design of plywood; development and improvement of glues; study of new uses for laminated construction in commercial work.

(5) By-Products and Chemical Studies. Research on the methods of production and utilization of by-products, such as alcohol, turpentine, rosin, acetate, etc., obtained from various forms of wood and wood waste; and general wood chemistry.

(6) Wood Preservation. Research on fungi which attack structural timbers, with investigations aimed at practical means of prevention; the efficiency of various wood-preserving processes and preservatives.

(7) Pulp and Paper. The suitability of woods and other fibrous materials for pulp, paper, and fiber specialties; studies in the chemistry and engineering of pulping and paper-making processes; chemical and physical studies of pulps and papers.

(8) Silvicultural Relations. Identification of wood; the effect of growth conditions on the structure of wood; and the relation of the structure of wood to its properties.

(9) Technical Studies of Wood-Using Industries. Study of the economic utilization of wood with a view to eliminating waste; lumber grades and specifications; methods of measuring, manufacturing, and marketing logs, lumber and small dimension stock; development of efficient uses of wood.

The lectures and research are offered by the staff of the laboratory to both undergraduates and graduates. Several courses on various technical activities are given in the Extension Division.

MECHANICAL ENGINEERING COURSE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Shop. 1, 2—Elementary shopwork	2	Shop. 4, 5—Lathe work, planing, milling	2
Physical activity requirement	0	Physical activity requirement	0
Freshman lectures	0	Freshman lectures	0
	17		17

SOPHOMORE YEAR

Math. 54—Differential and integral calculus	4	Math. 55—Calculus	4
Physics 51—General physics	5	Physics 52—General physics	5
Mach. Design 1—Mechanism	4	Drawing 3—Descriptive geometry	3
Shop 6, 13—Tool making and foundry practice	3	Mach. Design 2—Design practice	1
Physical activity requirement	0	Mech. 1, 2—Statics, dynamics	5
		Physical activity requirement	0
	16		18

Summer work, six weeks of industrial practice (see Shop 10).

JUNIOR YEAR

Mech. 3—Mechanics of materials	5	Steam and Gas 22—Elementary testing	2
Mech. 53—Materials of construction	2	Steam and Gas 2—Thermodynamics	4
Steam and Gas 1—Thermodynamics	4	Hydr. 1—Elementary hydraulics	3
Mach. Design 3—Machine elements	4	Mach. Design 4—Advanced design	4
Shop 7—General shop work	2	Mach. Design 12—Machine testing	2
Elective	3	Elect. Engr. 6—Electrical machinery	3
		Elect. Engr. 56—Direct current laboratory	2
	20		20

SENIOR YEAR

Steam and Gas 105—Calculations	2	Engr. Admin. 106—Power plant economics and design	3
Steam and Gas 23—Advanced testing	2	Engr. Admin. 102—Production and operation	3
Engr. Admin. 101—Construction	3	Steam and Gas 124—Advanced commercial testing	1
Elect. Engr. 7—Electrical machinery	3	Shop 9—Advanced pattern making	1
Elect. Engr. 57—Alternating current laboratory	2	Chem. Engr. 8—Metallography	2
Engr. Admin. 105—Manufacturing and production methods	2	Thesis and electives	9
Electives	5		
	19		19

Electives in the general course outlined above must include Hyd. Engr. 104, Water power, 3 cr., first semester; or Hyd. Engr. 105, Hydraulic machinery, 2 cr., second semester. Also two credits of electives must be selected from the list of advanced courses in Steam and Gas.

It is recommended that the remaining electives be on subjects not closely related to technical engineering work. However, should the student desire to select his electives in the Engineering College, the following are suggested for preliminary consideration:

	Credits per Sem.	
	1st	2nd
Agricultural Engineering	2–3	2–3
City Plan. 101—City planning (repeated)	2	2
Engr. Admin. 103—Corporation reports	2	2
Engr. Admin. 104—Thesis or advanced individual studies	1–5	1–5
Engineering English	1	1
Mining 124—Metallurgy of iron and steel (repeated)	3	3
S and G 100—Senior thesis	1–5	1–5
S and G 106—Steam turbines		2
S and G 108—Heating and ventilating (repeated)	3	3
S and G 109—Internal combustion engines	2	
S and G 110—Advanced heating and ventilating problems	3	3
S and G 112—Refrigeration		2
S and G 128—Heating and ventilating laboratory		2
S and G 130—Internal combustion laboratory		2
S and G 151, 152—Special problems	1–3	1–3
S and G 180—Special reading project	1–3	1–3
S and G 200—Graduate research	3–5	3–5
Struct. Engr. 10—Structural design (repeated)	2	2
Top. Engr. 108—Short course in surveying (repeated)	3	3

ENGINEERING DESIGN GROUP

Mach. Des. 101—Kinematics and dynamics of machinery		2–3
Mech. 106—Advanced strength of materials		3
Mech. 107—Advanced dynamics	3	
Mech. 108—Materials of construction		2
Mech. 109—Graphs		2
Mech. 110—Dynamic stress		2
S and G 114—Theory of heat transfer		2
Math. 110—Higher mathematics for engineers	3	3
Math. 113—Theoretical mechanics	3	3
Math. 250—Theory of elasticity	3	3

Students who wish to select most of their electives from the Engineering Design group should take Math. 110 in the junior year. Hyd. Engr. 1 may be deferred until the senior year.

OPTION IN AERONAUTICAL ENGINEERING

Aeronautics 101—Aerodynamics	3	
102—Airplane stress analysis		3
103—Design of airplane parts	2	
104—Propellor theory		2
108—Welding	2	
109—Airplane engines	2	
110—Aeronautical meteorology		1
130—Airplane engine testing		2

Students who wish to complete the option in Aeronautical Engineering in the senior year must take Aeron. 101 in the first semester of the junior year. Those who take all of the courses listed in this option may substitute non-professional electives for Shop 7, M.D. 12, S and G 105, S and G 124, and E.A. 106. Hyd. Engr. 1 may be deferred until the senior year.

ELECTRICAL ENGINEERING COURSE

GENERAL STATEMENT

The four-year course in electrical engineering leads to the degree of Bachelor of Science (Electrical Engineering) and is open to graduates of accredited high schools and to students entering by examination or with proper credits from other schools and colleges.

The aim of the course is to produce industrious, clear-thinking young men having a working acquaintance with the scientific and economic principles which underlie all engineering practice and a vision of the pleasures and possibilities of continuous growth in engineering service. While engineering practice is kept in view throughout the instruction in the course, this is not for the purpose of conveying a knowledge of the practical details in any one of the many branches of the electrical engineering field. Rather it is for the purpose of imparting an appreciation of engineering methods of procedure.

The successful engineer who develops executive and administrative ability in his technical work eventually assumes an administrative or executive position in which he deals with problems which involve, beside purely technical features, the economic and sociological questions of a civilization which is based so largely upon engineering achievements. To the solution of these problems should be brought the judgment of years of experience founded upon the broadest possible university training. With this in mind, the course in Electrical Engineering has been so framed that a good proportion of the studies are non-professional in nature, i. e., studies not directly connected with the more technical phases of engineering. These are pursued for the most part in the College of Letters and Science. Because of the wide latitude of choice permitted, students are urged to give careful consideration, early in their course, to the planning of a worthwhile group of these non-professional studies the election of which usually begins in the second semester of the sophomore year.

It is further recommended that students who aim to lay the broadest foundation for constructive leadership devote more than four years to their college work, combining with their engineering studies a liberal selection of studies outside the College of Engineering.

All class room work in electrical theory is paralleled by work in the well-equipped laboratories in which the students, working in pairs, acquire a working knowledge of electrical instruments and machines by carrying out tests which illustrate the engineering applications of the principles studied in the class room. In all of the electrical work, special effort is directed toward training the initiative and the independent powers of thought of the students, so that they may truly make themselves masters of the principles studied, and may thereby lay the foundation for creative professional work. To develop initiative, students are urged, in the senior year, to elect and submit reports on one or more engineering problems requiring analytical investigative work. The studies may be of an economical, historical, statistical, theoretical, or experimental type. Studies of unusual merit are filed as theses in the University Library.

According to their interests and aptitudes, the men who graduated from this course engage in the following types of electrical engineering work: research, design, maintenance, operating, construction, and sales engineering. The majority enter the employment of corporations owning electric lighting, electric railway, electric power transmission, or telephone plants (with the expectation of ultimately becoming superintendents, chief engineers, managers, or owners), the employment of contractors for the construction of electrical plants, or the employment of manufacturers of electrical and allied machinery. A considerable number of the graduates are now found in administrative and teaching positions in the engineering colleges.

GRADUATE STUDENTS. Graduates are offered instruction in advanced theory, design, and experimental investigation relating to the several branches of applied electricity. Students who are candidates for the doctor's or master's degree are offered all the reasonable facilities for carrying on either their major or minor elections in the Electrical Engineering Department. The regulations relating to these degrees are enumerated on another page of this bulletin.

The organization of the department is arranged to afford adequate supervision to advanced students who are carrying on the investigation of original problems, and excellent facilities are offered to such students in the way of laboratory rooms and of special apparatus constructed by the college mechanicians.

EQUIPMENT

THE DYNAMO LABORATORY. The transforming and converting machinery which furnishes the electrical power for all the electrical laboratories is located in the dynamo laboratory. The electrical power for these laboratories is transmitted from the electrical substation of the University to the necessary transforming and motor-generator equipment for furnishing power at the following voltages and frequencies: Three-phase power at 110 volts and 25 and 60 cycles; and direct current power at 110, 220 and 500 volts.

The dynamo collection consists of a large number of continuous current and alternating current dynamos and motors of different types and sizes. Shunt, series, and compound, continuous current generators and motors; single, two- and three-phase alternating current generators; single-phase and three-phase induction motors; sychronous motors and converters; single-phase commutator type motors and transformers are supplied in various sizes.

The equipment comprises more than fifty dynamos for exclusive laboratory use for the purpose of instruction and experiment. All apparatus necessary for the accurate testing of dynamos is available. Large lamp banks, water rheostats, and transformers for loading generators; special prony brakes and electric dynamometers, for loading motors; and an unusually complete assortment of the well-known types of ammeters, voltmeters and wattmeters for making accurate electrical measurements are supplied.

STANDARDS LABORATORY. Instructional work in courses dealing with electrical instruments and meters and the official standardizing work for the Railroad Commission of Wisconsin are carried on in this laboratory. The laboratory equipment includes a complete duplicate set of standard resistance units and a group of standard cells which are periodically used in connection with the Wolff potentiometer to calibrate the secondary or working standard instruments. The working standard instruments include numerous Weston, Westinghouse, General Electric and Simens-Halske precision and portable ammeters, voltmeters, wattmeters, and a Brooks deflection potentiometer.

Specialized equipment, such as Wheatstone bridges, a Kelvin double bridge, and a Per Cent bridge accurate to within 0.01%, are available for special and precise resistance measurements. For unusual measurements with instruments, power factor meters, frequency meters, low range ammeters, voltmeters, wattmeters and low power factor wattmeters are available. Variable speed motor-generator sets operated in conjunction with a 120 volt storage battery furnish power at any frequency between 10 and 150 cycles. A motor-generator set and a Seth-Thomas clock and relay timing system are part of the permanently installed equipment for accurately testing portable standard watthour meters.

Equipment suitable for field tests includes stop watches, wattmeters, ammeters, voltmeters, power factor meters, cycle counter, synchronous timer, frequency meters, portable standard a. c. and d. c. watthour meters, phase shifting transformer and voltage regulator, Silsbee current transformer testing set, standard current and voltage transformers, and a Westinghouse three-element oscillograph.

Photometric Laboratories. These laboratories comprise a number of rooms especially arranged for the study and testing of lamps and light sources of various kinds. The equipment includes a complete set of photometric standard lamps, a 300-cm. photometer bar, a 500-cm. photometer bar equipped with a single mirror selector, a 72" Ulbricht spherical photometer, a Sharp-Millar portable photometer, a Lummer-Brodhun spectro-photometer and numerous auxiliary equipment, such as sight boxes of the Bunsen, Lummer-Brodhun, and flicker types, rotating sectored discs and absorption screens.

High Tension Laboratory. The high tension equipment comprises a 50,000-volt, 20-kw. and a 300,000-volt transformer, and an induction regulator permitting the voltage to be gradually varied from zero to 300,000 volts, needle and sphere gaps for measuring high voltages, facilities for testing insulators under wet weather conditions, and general facilities such as vibrator type and cathode ray oscillographs, for routine tests or special researches upon insulating materials.

Communications and Circuits Laboratory. Under telephone equipment may be listed: demonstration panels and sets containing all the elements from one subscriber's telephone set through two exchanges to a second subscriber's station, an artificial telephone line having a length of several wave lengths, duplex telegraph sets, a repeating station, loading coils and wave models which show the distribution of current and voltage along long lines, alternating current bridges and voltmeter-ammeter amplifiers.

The radio equipment comprises a large antenna and the necessary facilities for setting up and carrying on studies relating to sending and receiving sets such as a stock of receiving and power tubes, inductances, condensers, high voltage generators, wave meters, oscillators, and many signal corps sets supplied by the government for use in the signal corps courses. The university broadcasting station, which is under the supervision of the department, presents an opportunity for the study of some of the problems of radio transmission and reception.

For the study of transient phenomena, sychronous switching devices have been constructed which permit of viewing transient wave forms on the oscillograph screen.

For general research work, there are available four modern vibrator type oscillographs, two cathode ray oscillographs, electrical measuring instruments of all types, various types of vacuum pumps, chemical apparatus, etc.

An excellent mechanician's department is maintained by the College of Engineering to construct and repair apparatus for the research and instructional work of the college.

These facilities, together with a liberal research fund, make important and effective research work possible.

ELECTRICAL ENGINEERING COURSE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (ELECTRICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Shop 11 or Speech 8	2	Speech 8 or Shop 11	2
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Physical activity requirement	0	Physical activity requirement	0
Freshman lectures	0	Freshman lectures	0
	17		17

SOPHOMORE YEAR

Math. 54—Differential and integral calculus	4	Math. 55—Calculus	4
Physics 53—Mechanics and heat	3	Physics 54—Electricity, magnetism and sound	3
Drawing 3—Descriptive geometry	3	Elect. Engr. 1—Electrodynamics	4
Econ. 1a—General economics	4	Elect. Engr. 51—Electrodynamics lab.	2
Elective—Top. Engr. 108 recommended	3	Shop 12—Advanced shop work	2
Physical activity requirement	0	Non-professional elective	3
	17	Physical activity requirement	0
			18

Six weeks of approved summer experience in an engineering industrial organization, to be taken following either the sophomore or the junior year.

JUNIOR YEAR

Mech. 1, 2—Statics, dynamics	5	Mech. 3—Mechanics of materials	5
Physics 55—Adv. electricity, magnetism	3	Steam and Gas 4—Thermodynamics	3
Steam and Gas 3—Thermodynamics	3	Steam and Gas 28—Elementary testing	2
Elect. Engr. 2—Direct current machinery	4	Elect. Engr. 3—Alternating current circuits and machinery	4
Elect. Engr. 52—Direct current laboratory	2	Elect. Engr. 53—Alternating current lab.	2
Non-professional elective	3	Non-professional elective	3
	20		19

SENIOR YEAR

Elect. Engr. 4—Alternating current machinery	4	Physics 56—Adv. electricity and light	3
Elect. Engr. 54—Alternating current lab.	2	Contracts 101—Contracts and specifications	2
Steam and Gas 29—Advanced testing	1	or	
Hydr. 1—Elementary hydraulics	3	Engr. Admin. 102 or 106	(3)
Mech. 53—Materials of construction	2	Elect. Engr. 25—Seminar	2
or		or	
Elect. Engr. 25—Seminar	(2)	Mech. 53—Materials of construction	(2)
Electives	7	Mach. Design 5—Machine elements	3
	19	Electives	9-8
			19

ELECTIVES

Of the 28 elective credits,—

10 may be elected without restriction.

12 must be elected in subjects which are non-professional in the sense that they are not prerequisite to the more technical phases of engineering work,—in subjects such as economics, political science, history, literature, languages, logic, ethics, psychology, philosophy, sociology, geology, and the like.

6 must be selected from the following group of electrical applications:

First Semester		Second Semester	
E. E. 116—Electric circuits	3	E. E. 104—Electrical machine design	3
E. E. 122—Electric meters	3	E. E. 120—High tension insulation	3
E. E. 137—Power distribution	3	E. E. 127—Central stations	3
E. E. 154—Elements of radio communication	3	E. E. 133—Illumination and photometry	3
E. E. 155—Thermionic vacuum tube circuits	3	E. E. 156—Elements of wire communication	3
E. E. 160—Advanced individual studies*	3-5	E. E. 157—Radio circuit analysis and design	3
		E. E. 160—Advanced individual studies*	3-5
		E. E. 214—Advanced dynamo laboratory.	3
		E. E. 232—Advanced electric circuits	3

*Must receive the approval of the E. E. Course Committee

CHEMICAL ENGINEERING COURSE

GENERAL STATEMENT

Industrial development generally and that in the chemical industries particularly has made chemical engineering one of the important branches of the engineering profession. There is now a demand for men having a combined engineering and chemical training. To satisfy this demand the four-year course in Chemical Engineering has been arranged, leading to the degree of Bachelor of Science.

The variety of industries is most comprehensive in which the chemical engineer now generally finds employment. Among these may be mentioned the by-product coke and gas industry and its intimate connection with the manufacture of dyestuffs; the production of paper and chemical pulp; the hardening of vegetable and animal oils into valuable foods; the refining of crude petroleum into gasoline, lubricating oils, and waxes; the manufacture of iron and steel, brass, and alloys; the sulphuric acid and alkali industry; and the construction of machinery and equipment for chemical plants. The electrochemical industries for the refining of copper, the production of caustic soda and chlorine, and the electroplating of metals for prevention of corrosion have been firmly established. The use of the electric furnace for making steel, brass, and alloys has led to revolutionary changes in these industries.

The graduate usually begins his work as a cadet engineer in the operating or research departments; as a chemist in the laboratory; or in the sales organization. His goal is frequently an executive position in a corporation or in his own business; or he may do consulting work after having gained the necessary experience.

Because the field of chemical engineering is so comprehensive, the training of men for this work must be along broad lines. Besides the required technical courses, instruction in the departments of economics, accounting, and English should be elected by the student, because training in such studies is a most valuable asset. To train men in the technical details of any branch of chemical engineering is not the purpose of the course, since the technique of an industry can best be acquired in subsequent practice. The purpose of the course is to offer instruction in those fundamental subjects which are essential to the chemical engineer in whatever line he may folllow.

EQUIPMENT

All of the Chemical Engineering Building is devoted to the laboratories, classrooms and offices of the Department of Chemical Engineering. The building, 45 feet wide by 125 feet long, comprises a high basement and two floors with a commodious attic.

Gas and Fuel Laboratory. Bomb calorimeters of various types are available for testing the heating values of coal and oil; gas calorimeters together with the necessary meters, scales, and water tanks are also provided. The equipment for gas analysis, for testing of lubricating and road oils, and for distillation of petroleum products is complete.

Pyrometry Laboratory. The pyrometric laboratory is well supplied with base metal and platinum thermocouples, resistance thermometers, and optical and radiation pyrometers for the measurement of high and low temperatures. The equipment includes precision potentiometers and Wheatstone bridges for highly accurate measurements. The furnaces are electrically heated and for accurate con-

trol there is an ample number of transformers and reactance coils. The facilities are well adapted for instruction in temperature control and measurements under industrial conditions.

METALLOGRAPHY LABORATORY. Besides the general laboratory for preparing the metal specimens for microscopic examination, there is a photographic dark room for developing negatives and making prints. The microscopes for student use are of a high grade and are provided with attachments for photographing; for research there are larger microscopes capable of high magnification. Accessory apparatus such as furnaces for heat treatment, pyrometers, polishing apparatus, and quenching devices are also provided.

CHEMICAL FACTORY LABORATORY. About one-half of the basement is devoted to chemical manufacture and tests on machinery. A complete laboratory with balance room on the first floor is provided for chemical analysis. Among the important pieces of apparatus are: two rectifying stills each of 20 gallons capacity, three plain oil stills of 10 to 15 gallons capacity, 3 filter presses, a single effect vacuum evaporator, a vacuum drying oven, pressure digester, two hydraulic presses, one of 40 tons maximum pressure, an autoclave of 5 gallons capacity, and crushing and grinding machinery. Besides these there are the necessary wooden, metal and stoneware tanks, basket centrifugal machine, drying oven, furnaces of the muffle, crucible, and reverberatory type, and other desirable appliances to conduct experiments on a semi-factory scale.

ELECTROCHEMISTRY LABORATORY. The general laboratory for electrochemistry is well equipped with tanks, stirring devices, indicating and recording ammeters and voltmeters, instruments for measuring resistances. Either alternating or direct current is available at the desk of each student.

For instruction in electroplating, refining and electrotyping, the equipment comprises polishing lathes, a motor dynamo, and a storage battery. Tanks of wood, enameled iron, and stoneware, with a capacity from 30 to 60 gallons, are provided for plating and cleaning solutions.

ELECTRIC FURNACE LABORATORY. The electric furnace room for alternating current contains resistance and arc furnaces for general purposes, a vacuum furnace of the Arsen type, a Girod steel furnace having a capacity of 100 pounds of metal, and a rotating brass furnace of about 100 pounds capacity. There is available for the exclusive use of this laboratory the power from three transformers each of 75 k. v. a. which may be had continuously.

LABORATORY FOR INDUSTRIAL MICROSCOPY. A large, well-lighted room on the third floor is provided specially for the instruction in industrial microscopy. Petrographic and chemical microscopes and many useful accessories are available for the study and identification of textiles, pulp and paper, paint, refractories, leather, etc. A separate chemical laboratory is provided for the preparation of samples.

FOREST PRODUCTS LABORATORY. The United States Forest Products Laboratory is operating in cooperation with the University of Wisconsin. The work carried on in this laboratory is largely of a chemical engineering nature dealing with the preservation of timber, manufacture of paper, utilization of wastes, and the like. The management of this laboratory provides that chemical engineering students may undertake investigation using the Forest Products Laboratory equipment, so far as such does not interfere with their own work.

CHEMICAL ENGINEERING COURSE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (CHEMICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Shop 1, 2—Elementary shopwork	2	Shop 4, 5—Lathe work, planing, milling	2
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Physical activity requirement	0	Physical activity requirement	0
Freshman lectures	0	Freshman lectures	0
	17		17

SOPHOMORE YEAR

Math. 54—Differential and integral calculus	4	Math. 55—Calculus	4
Chem. 14—Quantitative analysis	5	Mech. 1, 2—Statics, dynamics	5
Physics 51—General physics	5	Physics 52—General physics	5
Mach. Design 1—Mechanism	4	Chem. Engr. 12—Technical examination of fuels, gases, water	2
Physical activity requirement	0	**Chem. Engr. 18—Fundamentals of** chemical engineering	2
	18	Physical activity requirement	0
			18

JUNIOR YEAR

Mech. 3—Mechanics of materials	5	Steam and Gas 4—Thermodynamics	3
Steam and Gas 3—Thermodynamics	3	Steam and Gas 25—Elementary testing.	2
Chem. 120—Organic chemistry	3	Chem. 120—Organic chemistry	3
Chem. Engr. 117—Technical pyrometry	2	Chem. Engr. 111—Manufacturing operations	4
Chem. Engr. 119—Metallography	3	Mech. 54—Materials of construction	2
Elective (Economics recommended)	3	Electives	5
	19		19

Summer work, Chemical Engineering 114, Chemical manufacture, 4 cr.

SENIOR YEAR

Steam and Gas 26—Advanced testing	1	Engr. Admin. 101—Construction, or	2
Elect. Engr. 8—Electrical machinery	3	Contracts 101—Contracts and specifications	(2)
Mach. Design 5—Machine elements	3	Chem. Eng. 116—Thermal processes of chemical engineering	2
Chem. Engr. 101—Applied electrochemistry	5	Chem. Engr. 115—Industrial chemistry	2
Chem. Engr. 115—Industrial chemistry	3	Chem. Engr. 122—Special problems	4
Chem. Engr. 116—Thermal processes of chemical engineering	2	Chem. 30—Physical chemistry	3
Elective	2	Elect. Engr. 9—Electrical machinery	3
	19	Elective	3
			19

MINING ENGINEERING COURSE

METALLURGICAL ENGINEERING COURSE

GENERAL STATEMENT

The courses in mining, metallurgy, and geology are offered for students who intend to enter any branch of the mineral industry, and they are also recommended to those desiring an engineering or broad technical training.

The regular four-year courses in mining and geology leading to the degree of Bachelor of Science (Mining Engineering) and the four-year course in metallurgy leading to the degree of Bachelor of Science (Metallurgical Engineering), are open to graduates of accredited high schools, and are fully outlined below.

The degrees Master of Science (Mining Engineering) and Master of Science (Metallurgical Engineering) are conferred upon graduates of this and other approved institutions upon completion of one year's work in residence and the submission of a satisfactory thesis. The professional degrees, Engineer of Mines and Metallurgical Engineer, are granted to graduates of the College of Engineering, University of Wisconsin, who have completed five years of professional work in their respective fields and have submitted a satisfactory thesis. For a detailed statement of the requirements for the degree see Graduate School.

A survey of mineral production and the metallurgical industries in the state and in adjacent territory in what might be called Wisconsin's sphere of influence shows it to be located near the greatest reserves of iron ore in the world, on the one hand, and, on the other, are the great blast furnaces and rolling mills, foremost among the world's steel producers. Wisconsin is also located between the copper producing district and the zinc lead district, which are among the oldest mining districts in the United States. As a foundry state, Wisconsin occupies a unique position among American states for its gray iron foundries, for malleable iron foundries, for steel foundries, and for electric steel foundries. In the manufacture of various lines of mining, smelting, and power machinery, Wisconsin is one of the leaders of the world.

The United States is the preeminent mining nation of the world, producing 40 per cent of the mineral production of the world. The mineral production of the world has increased very much in recent years, the output since the year 1900 equalling the total production in all past history up to that date. With this increase in production, the need for technical knowledge and the demand for technically trained mining engineers, metallurgists, and geologists has correspondingly increased. These fields are now the youngest and most rapidly growing branch of engineering, and education in them should fullfill certain needs of the industry in the state, and within the immedate region of Wisconsin influence. It should have that broad general basis, as well as detailed technical application to make it best play its part in the future commercial expansion of the United States into foreign fields. It has been said that university education is to promote leadership in the state, leadership in the nation, leadership in the world's affairs, and to give to the individual the greatest opportunity for advancement. In addition he must have the basic general and technical training of an engineer. He must make a study of the technical and industrial problems of his profession, and he should also broaden himself by a study of the problems of the state and the nation as well as by the study of man.

To give the specialized training to carry out the scheme outlined above, the Department of Mining and Metallurgy organized in the College of Engineering,

in conjunction with the Department of Geology of the College of Letters and Science, takes up the specialized work which follows the thorough fundamental training which is the first essential of a successful engineer.

The location of a technical school at a great university has many advantages which cannot be duplicated. It has all the resources of personnel and equipment for instruction and research; it has the advantages of access to great libraries and laboratories, all of which offer facilities that only a great university can maintain. It has the advantages of cooperation with strong independent departments in geology, chemistry, physics, mathematics, mechanics, civil, electrical, chemical, and mechanical engineering, English, foreign languages, commerce, economics, and various other subjects which are of vital importance to the mining engineer. The University of Wisconsin is fortunate in the possession of exceptional facilities in all of these lines. As a result, the Department of Mining and Metallurgy is enabled to concentrate all of its effort on and to specialize in its particular fields, and outlines and directs the work of its students in allied subjects. The contact of the student with the larger and broader interests at a university enlarges his outlook on life in general.

EQUIPMENT

The mining and metallurgical laboratory is fireproof and contains about twelve thousand square feet of laboratory floor space. The basement contains the crushing and screening room, ore bins, supply room, and ceramic laboratory. The metallurgical laboratory occupies the north end of the first floor while the ore-dressing laboratory includes both floors at the opposite end. Three offices and lavatory with lockers and showers are provided. The fire assay laboratory, chemical laboratory, balance room, metallographic room, dark room, process testing laboratory, are temporarily located in the Chemistry Building.

The present facilities of the Department will be augmented greatly, when it moves next year into its new quarters now occupied by the Forest Products Laboratory.

The fire assay equipment consists of one triple muffel western coal furnace, crucible coke furnaces, and various gas and oil-fired assay furnaces.

The metallurgical laboratory is equipped with an oil-fired stationary hearth reverberatory furnace, an oil-fired roasting furnace, an oil-fired tilting reverberatory furnace, a copper, and lead blast furnace, a gas-fired tilting copper reverberatory furnace, various electric and gas-fired furnaces, pyrometers, and furnace accessories. Metallogrophic microscopes and grinding and polishing apparatus for the examination of metals, minerals, and metallurgical products are provided.

Special electric furnaces and pyrometer equipment are available for similar work in iron and steel and other metallurgical research of advanced nature.

Equipment for advanced research along various hydrometallurgical lines is provided.

The crushing room contains laboratory crushers for fine crushing, of the jaw and gyratory type, disc, and ball grinders and rolls. The ore bins are conveniently located for crushing tests by the laboratory size crushers.

Dry screening is done by hand, by shaking screens, and by the trommel screens in the ore-dressing laboratory.

The ore-dressing laboratory occupies both floors at the south end of the building. It contains a large jaw-type crusher, a large set of rolls, bucket elevators, trommel screens, jiggs of the Woodbury, Harz, and Richards pulsator

types, Wilfly and Diester tables, a Ding and a Grondal magnetic separator. Each machine is an independent unit provided with ample head room to permit sampling its feed and products, and with pipe and launder systems and pumps or elevators to return these products for continuous treatment when desired. Classifiers, settling and dewatering cones, are provided so that various units may be grouped and large lots of ore tested under milling conditions when this is desirable.

For testing gold and silver ores a battery of two 850 pound stamps, amalgamating tables together with laboratory leaching apparatus are available.

In process testing initial classroom testing is performed and small lots of ores are tested in small equipment to determine methods best adapted to their successful treatment. For this purpose small scale laboratory jigs, tables, classifiers, and flotation equipment together with laboratory leaching apparatus are available. For the rapid examination of ore dressing products microscopes are provided.

For research in ore dressing a well-equipped laboratory for faculty members and advanced students is maintained.

For making and testing clay products a pug mill, an auger brick and tile machine, a wet and dry pan, a repress, a cutting table, and an oil-fired down-draft kiln are available.

The mining museum contains models of several types of surface and underground mine structures, mine models, and the various types of rock drills used in mining and quarry practice.

In the metallurgical museum there is an extensive exhibit of castings illustrating quality of product, gating, and the use of risers. Another series illustrates defects in castings. Samples of all foundry material are included. The collection of iron blast furnace slags, with the operating data under which they were produced, is probably the most complete in the United States.

While not required from undergraduates for graduation, a thesis upon some suitable subject may be submitted by students who have an interest in research. This thesis will replace an equivalent amount of work regularly required for graduation.

COURSES IN MINING AND GEOLOGY

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (MINING ENGINEERING)

AND

COURSE IN METALLURGY

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (METALLURGICAL ENGINEERING)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Math. 51—Elementary analysis	5	Math. 52—Elementary analysis	5
Drawing 1—Elements of drawing	3	Drawing 2—Elements of drawing	3
Chem. 2a—General chemistry	4	Chem. 2b—General chemistry	4
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Shop. 1, 2—Elementary shopwork, or	2	Shop 4, 5—Lathe work, planing, milling	2
Top. Engr. 108—Short course in surveying	(3)	or Mining 12—Mine surveying	(2)
Physical activity requirement	0	Physical activity requirement	0
Freshman lectures	0	Freshman lectures	0
	17-18		17

SOPHOMORE YEAR

Math. 54—Differential and integral calculus	4	Math. 55—Calculus	4
Physics 51—General physics	4	Physics 52—General physics	4
Chem. 14—Quantitative analysis	5	Drawing 3—Descriptive geometry	3
Geol. 9—Engineering geology	3	Geol. 9—Engineering geology	3
Mining 101—Excavation and Tunneling	3	Mining 121—Assaying	3
Physical activity requirement	0	Mining 122—General metallurgy	3
		Physical activity requirement	0
	19		20

In order to best prepare the student for specialized work in one of the three special fields—mining, metallurgy, or economic geology—three options are offered from which he may select his major and minor studies at the beginning of his junior year.

The major is to consist of 30-40 credits from one of the three groups listed below.

The minor is to consist of 15-20 credits from either other group. No minor studies may be selected from the major group.

MINING GROUP.

Mining and Metallurgy 103, 104, 105, 106, 107, 108, 109, 126.
Railways 104, Structural Engr. 10, Steam and Gas Engr. 3 and 4.
Electrical Engr. 8 and 9, Hydraulics 1, Geology 113, 115.
Economics 1a, 1b, 5, 137.

METALLURGY GROUP.

Mining and Metallurgy 122, 123, 124, 125, 126, 127, 128, 130, 131, 132, 135, 140, 145.

Structural Engr. 10, Steam and Gas. Engr. 3 and 4, Electrical Engr. 8 and 9. Chemical Engr. 102, Economics 1a, 1b, 5, 137.

GEOLOGY GROUP.

The courses in Geology; Mining and Metallurgy 101, 103, 104, 107, 109, 124.

Typical junior and senior year elections are shown below for each of the three options. These outlines are suggestive only and other courses may be carried within the general rule of major, minor, and free electives.

MINING OPTION

SUGGESTED SEQUENCE

JUNIOR YEAR

Mech. 1, 2—Statics, dynamics	5	Mech. 3—Mechanics of materials	5
Geol. 6—Mineralogy	5	Mech. 53—Materials of construction	2
Mining 103—Mining methods	3	Geol. 6—Mineralogy	5
Geol. 114—Structural geology	3	Mining 103—Mining methods	3
*Mining 123—Metallurgy of copper, lead and zinc	(5)	Mining 127—Hydrometallurgy of gold and silver	5
†Geol. 114—Structural, Lab.	2		
	18		20

Note:—*For students taking metallurgy minor.
†For students taking geology minor.

SENIOR YEAR

Mining 124—Metallurgy of iron and steel	3	Mining 109—Mine and smelter administration	3
Mining 107—Ore dressing	5	Mining 104—Mine valuation	3
Elect. Engr. 8—Electrical machinery	3	Struct. Engr. 10—Structural design	2
Struct. Engr. 10—Structural design	2	Mining 105—Mine engineering	3
Mining 105—Mine engineering	3	Elect. Engr. 9—Electrical machinery	3
Minor and electives	3	Minor and electives	5
	19		19

NOTE—Preferably at the end of the junior year those taking the Mining option are required to take a six-week inspection trip in the mining districts while those taking the Metallurgical option take a similar trip to the metallurgical centers.

METALLURGY OPTION

SUGGESTED SEQUENCE

JUNIOR YEAR

Mech. 1, 2—Statics, dynamics	5	Mech. 3—Mechanics of materials	5
Mining 123—Metallurgy of copper, lead, and zinc	5	Mech. 53—Materials of construction	2
Mining 124—Metallurgy of iron and steel	3	Mining 127—Hydrometallurgy of gold and silver	5
Mining 145—Phase rule applied to metallurgy	3	Chem. 30—Physical chemistry	3
Minor and electives	3	Minor and electives	4
	19		19

SENIOR YEAR

Mining 107—Ore dressing	5	Mining 109—Mine and smelter administration	3
Mining 140—Heat treatment of low and medium carbon steel	2	Chem. Engr. 102—Electric furnaces	4
Mining 135—Thermodynamics of metallurgical reactions	3	Elect. Engr. 9—Electrical machinery	3
Mining 125—Metallurgy of minor metals	3	Mining 130—Physical chemistry of the metals	3
Elect. Engr. 8—Electrical machinery	3	Mining 131—Foundry metallurgy	2
Chem. Engr. 119—Metallography	3	Mining 135—Thermodynamics of metallurgical reactions	3
	19		18

GEOLOGY OPTION

SUGGESTED SEQUENCE

JUNIOR YEAR

Mech. 1, 2—Statics, dynamics	5	Mech. 3—Mechanics of materials	5
Geol. 6—Mineralogy	5	Mech. 53—Materials of construction	2
Geol. 114—Structural geology	5	Geol. 6—Mineralogy	5
Mining 103—Mining methods	3	Mining 103—Mining methods	3
Geol. 117—Pre-Cambrian geology	2	Geol. 115—Metamorphic geology	5
or		or	
Geol. 150—Economic aspects	(2)	Geol. 151—Geology of mineral deposits	(5)
	20		20

SENIOR YEAR

Mining 107—Ore dressing	5	Mining 104—Mine valuation	3
Mining 124—Metallurgy of iron and steel	3	Mining 109—Mine and smelter administration	3
Geol. 108—Petrology	5	Geol. 108—Petrology	5
Geol. 117—Pre-Cambrian geology	2	Geol. 115—Metamorphic geology	(5)
or		or	
Geol. 150—Economic aspects	2	Geol. 151—Geology of mineral deposits	5
Minor and electives	4	Geol. 148—Tectonic geology	(1)
		or	
		Geol. 149—Methods of mineral exploration	2
	19		18

ENGINEERING EXPERIMENT STATION

The Engineering Experiment Station of the College of Engineering was established by action of the Board of Regents, March 4, 1914. The members of the engineering faculty, together with fellows, scholars, and special assistants, devoting their time to research, constitute the members of the staff of the Experiment Station.

The purpose of this Experiment Station is the promotion of the engineering and industrial interests of the State by the scientific study of problems relating thereto as far as the facilities of the engineering laboratories will permit. So far as may be, the subjects for experimental study are selected with reference to their importance to the state of Wisconsin, although generally the problems are of wider interest and importance.

The establishment of this department brings together into definite organization the research which has been conducted for many years in the College of Engineering. It is expected that by this means such work will be more systematically developed and come to be of greater value to all interests concerned. The results of the research done in the past have appeared in part in papers before technical societies, and in part in the Engineering Series of the University Bulletin. Up to date more than seventy such bulletins have been published. A list of the bulletins already published may be had upon application to the University Editor.

In the fields of hydraulic and sanitary engineering, bulletins are published from time to time giving the results of studies of stream flow and other conditions affecting water supply and water power. Bulletins are also issued giving the results of experimental studies in the laboratory on hydraulic machines, apparatus for the measurement of flow of water, and the losses which occur when water flows through pipes and other passages. Investigations now in progress include a study of the variations of stream flow as affected by rainfall, the effect of standing wave in undermining the downstream foundation of dams, the comparison of losses in various pipe bends, the resistance to flow in locomotive water columns and the relief from water hammer pressure caused by closure of the valves, the discharge coefficients of submerged weirs of various heights and types of crests, pipe friction studies in wrought iron pipes of long lengths and large diameters, coefficients of discharge of standard triangular weirs and triangular weirs when placed on the end of circular conduits, and studies of the performance of different types of rotary pumps.

In the sanitary field studies are being made on the purification actually effected by modern sewage disposal plants. In cooperation with the State Board of Health, investigations are being made of pea cannery wastes and creamery wastes.

In the Materials Testing Laboratory, experiments have been conducted for several years on various features of reinforced concrete design. At the present time further tests are being made on the permeability, durability, and other properties of concrete. Tests are in progress on friction in line shaft bearings, on temperature stresses in reinforced concrete chimneys, on steel columns under eccentric loads, on flat plates and cylindrical tanks, on fatigue of brasses, steel and cast iron, and on steels subjected to prolonged constant strain. The laboratory is cooperating with the Materials Department of the State Highway Commission; also with national engineering societies in studies of materials of construction.

The Steam and Gas Department of Mechanical Engineering has published information relating to the heat insulating properties of commercial pipe coverings, the economical combustion of soft coal, the Pitot tube as an instrument for measuring the flow of gases; besides a number of bulletins covering heating and

ventilating subjects. These papers cover the study of recirculation of washed air for ventilating purposes, the direct transmission of heat from steam to hot water for heating purposes, complete engineering service data for a large hospital, and the infiltration of air into buildings through windows and through various types of wall construction. The infiltration work is being carried on in cooperation with the American Society of Heating and Ventilating Engineers.

In the Department of Electrical Engineering studies and experimental investigations have been made pertaining to the flow of heat through cable insulation, electrical records for mechanical stresses, electrical methods of geophysical exploration, the radiating and receiving properties of radio antennas, the measurment of the constants of radio apparatus and receiving sets, inductive effects between power and telephone circuits, the nature of failure in insulating materials, speed variation and power factor correction in induction motors, and the theory of transient phenomena in electric networks.

A Standards Laboratory is operated in connection with the work of the Wisconsin Railroad Commission and the State at large, testing and standardizing electrical metering devices of all kinds. Through this laboratory, the facilities of the Electrical Laboratory have been made available to the industries of the State for tests and investigations which require the use of instruments not ordinarily possessed by the industries. The following tests indicate the nature of the work conducted for the industries: oscillograph tests of magnetos, ignition coils and circuit breakers, acceptance test of transformers for ratio, regulation and efficiency, certification of ratio and phase angle of current transformers, tests on insulators, insulating materials, and cables, tests of lamps and magnetic materials.

The researches in the Chemical Engineering Department include: the measurement of the temperature of hot flowing gas, the aeration of industrial gas burners, the liberation of ammonia from solutions by various commercial limes, the transfer of heat in tubular gas condensers, the case hardening of steel with manufactured gas, the methods of analysis of cooking liquor for Kraft pulp, the electroplating of chromium, and the mechanism of extraction or solution of soluble salts by water.

Research is being carried on in the field of Mining and Metallurgy by that department. The treatment of zinc ores by flotation concentration methods and electrolytic recovery methods, developed in our laboratories, offers considerable economic possibilities in the treatment of low grade ores with higher recoveries than are now possible. The constitution and physical properties of iron blast furnace slags are being studied. A grant from the Engineering Foundation is facilitating progress in this work. With the assistance of different groups of founderies in Wisconsin, research on the properties of gray cast iron, the reactions of steel-making, and the manufacture of pearlitic iron is being instituted. From time to time the department cooperates with individual enterprises in studies of the special problems which their work develops.

For further information regarding the Engineering Experiment Station, address F. E. TURNEAURE, *Director*.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*—to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100-group may be credited by both undergraduates and graduates; those in the 200-group are ordinarily open only to graduates.

The unit of reckoning the credit is one hour of classroom work per week. Two hours of drawing, laboratory, field, or shop work (which require little outside preparation) count as one hour of classroom work.

AERONAUTICS

Raymond Jefferson Roark, M.S., C.E., *Associate Professor of Mechanics*
Leroy Alonzo Wilson, M.E., M.M.E., *Associate Professor of Steam and Gas Engineering*
Grover C. Wilson, M.S., M.E., *Assistant Professor of Steam and Gas Engineering*
Eric Rexford Miller, M.S., *Lecturer in Meteorology.*
Richard S. Hartenberg, B.S., *Instructor in Mechanics*
Charles Frederick Peters, *Instructor in Mechanical Practice*
Robert Nicholas Schumann, *Instructor in Mechanical Practice*

101. Aerodynamics. I; 3 cr. The wind tunnel, properties of airfoils and of combinations, and parasitic resistance; also airplane controls and propellers; stability and performance. Prerequisite: Mechanics 2. Mr. Hartenberg.

102. Airplane Stress Analysis. II; 3 cr. Stress analysis of airplane structures with special reference to Department of Commerce requirements. Prerequisites: Aeronautics 101 and Mechanics 3. Mr. Roark.

103. Design of Airplane Parts. I; 2 cr. Design of spars, struts and other structural elements. Aircraft materials. Prerequisite: Aeronautics 102. Mr. Roark.

104. Propeller Theory. II; 2 cr. Theories of propeller performance; practical methods of design. Prerequisite: Aeronautics 101. Mr. Roark.

108. Welding. I; 2 cr. Arc and gas welding, with special reference to aircraft construction. Lab. fee $6.00. Mr. Peters, Mr. Schumann.

109. Airplane Engines. I; 2 cr. Fundamental principles of aircraft engine construction, operation, and maintenance. Characteristics of gasoline and lubricating oils. Study of modern engines, carburetors, ignition systems, starters, and superchargers. Prerequisite: Steam and Gas 1 or 3, or concurrent registration. Mr. L. A. Wilson.

110. Aeronautical Meteorology. II; 1 cr. Prerequisite: Junior standing. Mr. Miller.

130. Airplane Engine Testing. II; 2 cr. Prerequisite: Beginning course in Steam and Gas laboratory. Lab. fee $6.00. Mr. G. C. Wilson.

CHEMICAL ENGINEERING

Otto Louis Kowalke, Ch.E., *Professor of Chemical Engineering, Chairman*
Olaf Andreas Hougen, Ch.E., Ph.D., *Associate Professor of Chemical Engineering*
Oliver Patterson Watts, Ph.D., Sc.D., *Associate Professor of Chemical Engineering*
Roland Andrew Ragatz, M.S., *Assistant Professor of Chemical Engineering*
Kenneth Merle Watson, Ph.D., *Assistant Professor of Chemical Engineering*
Alois John Krombholz, M.S., *Instructor in Chemical Engineering*
Norman H. Ceaglske, M.S., *Instructor in Chemical Engineering*

8. Metallography for Mechanical Engineers. II; 2 cr. The microscopic examination of the structure of steels used for cutting metals; metals suited to machine tool construction, as affected by heat treatment. Not open to chemical engineers. Lab. fee $6.00; deposit $1.00. Mr. Ragatz, Mr. Krombholz.

12. Technical Examination of Fuels, Gases, and Water. I, II; 2 cr. Recitations and laboratory work together with reports on the interpretation of experimental results. Prerequisites: Chemistry 11 or 14, Physics 1 or 51. Lab. fee $6.00; deposit $2.00. Mr. Watson, Mr. Ceaglske.

15. Industrial Chemistry. I; 3 cr. II; 2 cr. Lectures and recitations in the technology of important chemical industries. Prerequisite: Chemistry 120 or concurrent enrollment. For Letters and Science chemistry majors. Mr. Hougen.

16. Industrial Chemistry. I; 3 cr. II; 2 cr. Lectures and recitations on the technology and the economic phases of important chemical industries. Prerequisite: Chemistry 120 or concurrent enrollment. For Chemistry-Commerce course students. Mr. Kowalke, Mr. Hougen.

18. Fundamentals of Chemical Engineering. II; 2 cr. The applications of the laws of stoichiometry, gases, vapors, and solubilities to problems in chemical industries. Prerequisites: Math. 52, Chemistry 11 or 14. Mr. Watson.

23. Manufacturing Equipment. I; 2 cr. A survey of the equipment used in, and of the principles underlying chemical manufacturing operations. Not open to chemical engineers. Prerequisites: College algebra, Chemistry 1, Physics 1. Mr. Watson.

101. Applied Electrochemistry. I; 5 cr. The laws and principles of electrolysis, with their applications to electroplating, the refining of metals, and electrochemical manufacture. Lab. fee $6.00. Mr. Watts, Mr. Krombholz.

102. Electric Furnaces. II; 4 cr. Recitation, two hours: on the construction, operation, and products of electric furnaces. Laboratory practice, four hours: melting steel; making calcium carbide, carborundum, and alloys. Lab. fee $8.00. Mr. Watts.

111. Manufacturing Operations. II; 4 cr. Lectures, recitations, and reports on fundamental principles of sizing, mechanical separation of materials, evaporation and drying, filtration, distillation, flow of fluids, etc., and the effective arrangements of and suitable materials for constructing appliances to carry out these operations. Prerequisites: Mathematics 55, Steam and Gas 3, Chem. Engr. 18. Mr. Kowalke.

113. Gas Manufacture and Distribution. I; 2 cr. Lectures and recitations on technology of gas for domestic and industrial heating and on problems of distribution. Prerequisite: Senior standing. Mr. Kowalke.

114. Chemical Manufacture. 4 cr. Laboratory practice supplementary to course 111; efficiency tests on unit operations, manufacture of chemical products, recovery of products from waste materials. Prerequisites: Chemistry 14, Chem. Engr. 111. Required for chemical engineers as summer work; elective for other students. Lab. fee $12.00. Mr. Kowalke.

115. Industrial Chemistry. I; 3 cr. II; 2 cr. Lectures and recitations on the scientific, engineering, and economic aspects of selected chemical industries. Prerequisites: Chem. Engr. 111, Chemistry 120 or concurrent enrollment. For students in Chemical Engineering and for graduates. Mr. Kowalke.

116. Thermal Processes of Chemical Engineering. Yr; 2 cr. Application of the principles of thermophysics and physical chemistry to the solution of problems in the thermal process in chemical industries. Prerequisite: Chem. Engr. 111. Mr. Hougen.

117. Technical Pyrometry. I; 2 cr. Recitations and laboratory work on the principles and methods of industrial measurement and control of temperature. Prerequisite: Physics 52. Lab. fee $6.00. Mr. Watson, Mr. Ceaglske.

119. Metallography. I; 3 cr. Lectures and laboratory instruction in the microscopic examination and microphotography of iron, steel (including special steels), brasses, bearing metals, and other technical alloys, and the effect of heat and mechanical treatment together with the theories of solidification and constitution of these materials. Prerequisites: General chemistry and Physics 1 or 51. Lab. fee $6.00; deposit $1.00. Mr. Ragatz, Mr. Krombholz.

122. Special Problems. II; 4 cr. One or more assigned problems involving greater opportunity for independent effort than is possible in the usual laboratory exercise. A detailed typewritten report is required on each project. Prerequisites: Chem. Engr. 101, 111, 117, 119. Lab. fee $9.00. Staff.

124. Industrial Microscopy. I; 3 cr. Lectures and laboratory work on micrometry and the microscopic and microchemical examination of selected industrial products. Prerequisites: Chemistry 120, Physics 51. Lab. fee $6.00. Mr. Hougen.

125. MATERIALS OF CONSTRUCTION FOR EQUIPMENT IN CHEMICAL INDUSTRY. 1; 2 cr. Mr. Kowalke.

126. METALLOGRAPHY OF ALLOY STEELS. II; 2 cr. Prerequisite: Chem. Engr. 119. Lab. fee $3.00. Mr. Ragatz.

127. METALLOGRAPHY OF NON-FERROUS METALS AND ALLOYS. II; 2 cr. Prerequisite: Chem. Engr. 119. Lab. fee $6.00. Mr. Ragatz.

128. ADVANCED METALLOGRAPHIC TECHNIQUE. II; 1 cr. Prerequisite: Chem. Engr. 119. Lab. fee $3.00. Mr. Ragatz.

200. RESEARCH. *cr. Assigned experimental and library investigation together with conferences and written reports. Lab. fee $3.00 per credit. Mr. Kowalke, Mr. Watts, Mr. Hougen, Mr. Ragatz, Mr. Watson.

231. SEMINARY. Yr; 2 cr. The presentation and discussion of papers dealing with various problems in chemical engineering. Mr. Kowalke.

232. CORROSION. II; 2 cr. Reading course. Hours to be arranged. Mr. Watts.

233. DIFFUSIONAL AND COLLOIDAL PROCESSES. I; 2 cr. Mr. Watson.

234. THEORETICAL CONCEPTS IN MODERN METALLOGRAPHIC SCIENCE. Yr; 2 cr. Mr. Ragatz.

CITY PLANNING

(See Highway Engineering and City Planning, page 249.)

DRAWING

HERBERT DENNY ORTH, B.S., *Associate Professor of Drawing and Descriptive Geometry, Chairman*
ADAM VAUSE MILLAR, M.S., *Professor of Drawing and Descriptive Geometry*
JOSEPH DOW LIVERMORE, B.S., *Assistant Professor of Drawing and Descriptive Geometry*
KENNETH GRINNELL SHIELS, M.S., *Assistant Professor of Drawing and Descriptive Geometry*
HOWARD BAILEY DOKE, *Instructor in Drawing and Descriptive Geometry*
FULLER ORVILLE GRIFFITH, B.S., *Instructor in Drawing and Descriptive Geometry*
ROBERT ROCKWOOD WORSENCROFT, B.S., *Instructor in Drawing and Descriptive Geometry*
LEO WILLIAM PELESKE, B.S., *Instructor in Drawing and Descriptive Geometry*

1. ELEMENTS OF DRAWING. I, II; 3 cr. Working drawings; third angle projection, lettering, tracing, and blueprinting. Orth, Doke, and Worsencroft's *Mechanical Drawing*. Lab. fee $1.00. Mr. Orth and staff.

2. ELEMENTS OF DRAWING. II; 3 cr. Working drawings, lettering, sketching, isometric, and cabinet drawing. Orth, Doke, and Worsencroft's *Mechanical Drawing*. Prerequisite: Drawing 1. Lab. fee $1.00. Mr. Orth and staff.

3. Descriptive Geometry. I, II; 3 cr. Fundamental theory of point, line and plane, with application to solids. Generation and classification of lines and surfaces; tangent planes; sections, intersections and developments. Millar, Maclin, Markwardt, and Shiels' *Descriptive Geometry*. Prerequisite: Drawing 2. Mr. Millar, Mr. Orth, Mr. Shiels, Mr. Livermore.

7. Freehand Lettering. I, II; 1 or 2 cr. Construction and composition of Classic Roman capitals, "lower case" letters, English Gothic, black letter, and modern script. Special emphasis given to the choice of lettering styles in advertising design. Prerequisite: Drawing 1. Mr. Doke.

8. Advanced Freehand Lettering. I, II; 1 or 2 cr. Continuation of Course 7, which is prerequisite. Mr. Doke.

9. Advanced Freehand Lettering. I, II; 1 or 2 cr. Continuation of 8, which is prerequisite. Mr. Doke.

ELECTRICAL ENGINEERING

Edward Bennett, E.E., *Professor of Electrical Engineering, Chairman*
Cyril Methodius Jansky, B.A., B.S., *Professor of Electrical Engineering*
John Reese Price, B.S., *Professor of Electrical Engineering*
James Webster Watson, B.S., *Professor of Electrical Engineering*
Leslie Erskine Allan Kelso, B.S., *Assistant Professor of Electrical Engineering*
Glenn Koehler, M.S., *Assistant Professor of Electrical Engineering*
Edmund Dale Ayres, M.S., *Assistant Professor of Electrical Engineering*
Gordon Frederick Tracy, M.S., *Assistant Professor of Electrical Engineering*
Clarence Alois Andree, Ph.D., *Instructor in Electrical Engineering*
Reginald Ralph Benedict, MS., *Instructor in Electrical Engineering*
Royce Everett Johnson, M.S., *Instructor in Electrical Engineering*
Henry Joseph Kubiak, B.S., *Instructor in Electrical Engineering*
Ludvig Conrad Larson, E.E., *Instructor in Electrical Engineering*

1. Fundamentals of Electrodynamics. I, II; 4 cr. An introductory course for sophomore electrical engineers dealing with the derivation and application of the basic ideas and laws relating to electrostatic and electromagnetic phenomena. Open to students of other colleges. Prerequisites: Physics 53 and Math. 54. Mr. Benedict, Mr. Larson, Mr. Kubiak.

2. Direct Current Machinery. I, II; 4 cr. A continuation of E.E. 1. Construction and operation of direct current machinery. Prerequisite: E.E. 1. Mr. Watson, Mr. Kubiak, Mr. Tracy.

3. Alternating Current Circuits and Machinery. II; 4 cr. Single phase and polyphase circuits; synchronous generators and motors. Prerequisite: E.E. 2. Mr. Price, Mr. Watson, Mr. Tracy.

4. Alternating Current Machinery. I; 4 cr. Transformers, induction motors, synchronous converters. A continuation of E.E. 3. Mr. Price, Mr. Watson, Mr. Tracy.

6. Electrical Machinery. II; 3 cr. Deals with the laws of the electric and magnetic circuit and the characteristics of direct current machinery. Primarily for mechanical engineers. Prerequisite: Physics 52. Mr. Kelso.

7. Electrical Machinery. I; 3 cr. Alternating current theory and machinery. Primarily for mechanical engineers. Prerequiste: E.E. 6. Mr. Kelso.

8. Electrical Machinery. I; 3 cr. Laws of the electric and magnetic circuit and the characteristics of direct current machinery. Primarily for mining and chemical engineers. Prerequisite: Physics 52. Lab. fee $3.00. Mr. Ayres.

9. Electrical Machinery. II; 3 cr. Alternating current theory and machinery. Primarily for mining and chemical engineers. Prerequisite: E.E. 8. Lab. fee $3.00. Mr. Ayres.

10. Direct Current Machinery. II; 3 cr. Primarily for civil engineers. Mr. Jansky.

25. Engineering Papers. I, II; 2 cr. Preparation and presentation of technical papers. Open to engineering seniors. Mr. Jansky.

104. Electric Machine Design. II; 3 cr. Individual design of a direct or an alternating current machine. Prerequisite: E.E. 2. Mr. Watson.

116. Electric Circuits. I; 3 cr. Analytical and oscillograph study of starting currents of transformers and transmission lines, short circuit currents of alternators, generation of radio frequencies, distribution of current and voltage in loaded and unloaded telephone lines. Prerequisite: E.E. 3. Lab. fee $3.00. Mr. Bennett, Mr. Benedict.

120. Insulation and High Tension Testing. II; 3 cr. Dielectric theory. Properties and laboratory tests of insulators and insulating materials. Prerequisite: E.E. 3. Lab. fee $3.00. Mr. Bennett, Mr. Benedict.

122. Electric Meters. I; 3 cr. Analytical study of instruments; methods of calibration and measurement; watthour meters and their application; instrument transformers; and relays. Laboratory work in Electrical Standards Laboratory. Prerequisite: E.E. 3. Lab. fee $3.00. Mr. Johnson.

127. Electrical Central Stations. II; 3 cr. Substation and central station design. Technical and economic choice and arrangment of electrical equipment. Prerequisite: E.E. 3. Mr. Ayres.

133. Illustration and Photometry. II; 3 cr. Commercial illuminants and their applications to lighting. Design of illuminating systems. Lectures and laboratory work. Lab. fee $3.00. Mr. Johnson.

137. Power Distribution. I; 3 cr. Technical and economic features of local wiring systems; city and rural distribution; and transmission lines. Prerequisite: E.E. 3. Mr. Ayres.

154. Elements of Radio Communication. I; 3 cr. The properties of circuits and devices used in radio communication. With laboratory work. Prerequisite: E.E. 3. or senior standing in physics. Lab. fee $3.00. Mr. Koehler.

155. Thermionic Vacuum Tube Circuits. I; 3 cr. An experimental and analytical study of the properties of amplifier and oscillator circuits and of the performance of the thermionic vacuum tube in telephone and radio networks. With laboratory work. Prerequisite: E.E. 3. or senior standing in physics. Lab. fee $3.00. Mr. Koehler.

156. Elements of Wire Communication. II; 3 cr. Theory of telephone and telegraph instruments and circuits. The theory of the long line. With laboratory work. Prerequisite: E.E. 3. or senior standing in physics. Lab. fee $3.00. Mr. Koehler.

157. Radio Circuit Analysis and Design. II; 3 cr. A continuation of E.E. 155. Treating of such topics as: amplifiers and their design, operation of triode oscillators in parallel, the design of triode oscillators, modulation and demodulation, analysis and design of radio transmitting and radio receiving sets, elementary radiation theory, partial analysis of a complete radio communication system. With laboratory work. Prerequisite: E.E. 155. Lab. fee $3.00. Mr. Koehler.

160. Advanced Individual Studies. I, II; *cr. The object of the course is to facilitate investigative work and to develop the students initiative. The student is to submit reports on one or more engineering problems requiring analytical investigative work. The study may be of an economic, historical, statistical, theoretical, or experimental type. Studies of unusual merit will be accepted as theses and filed in the University Library. The election of an individual study must receive the approval of the E.E. Course Committee.

214. Advanced Dynamo Laboratory. II; 3 cr. Advanced laboratory tests with direct and alternating current machinery. Prerequisites: E.E. 54 and 4. Lab. fee $6.00. Mr. Price.

231. Transmission and Distribution of Power. Yr; 3 cr. This course deals with the following features of the transmission and distribution of electrical energy: general economic features of electrical transmission, the constants of the transmission line and apparatus, derivations of equations of the transmission line, abnormal potentials and lightning arresters, insulating material, and line insulators, line construction, relays, and automatic sectionalizing. Mr. Bennett.

232. Advanced Theory of Electric Circuits. Yr; 3 cr. This course treats of the following aspects of the theory of electric circuit phenomena: the investigation of the transient phenomena occuring when the conditions in simple and coupled circuits are suddenly changed; the oscillations or surges set up in transmission and cable systems by grounding and switching operations; traveling and stationary waves in transmission and telephone lines; current and magnetic flux distribution at high frequencies. The analytical work is supplemented by experimental work with the oscillograph. Lab. fee $3.00. Mr. Bennett, Mr. Benedict.

233. Seminar in Electric Circuit Theory. Yr; 3 cr. This course is a further development of the topics listed under E.E. 232 and in addition treats the following subjects: electromagnetic radiation, electric wave filters in the steady and transient state, the selective properties of circuits and filter networks to impulse excitation, the development and application of the Heaviside-Carson expansion formula and other advanced analytical methods of treating the phenomena which take place in electrical networks in the transient state. Prerequisite: E.E. 232. Mr. Bennett.

SIGNAL CORPS COURSES. Electrical engineers who enroll in the Signal Corps unit of the Reserve Officers' Training Corps are required to take two 3-credit courses which must be selected from the following group: E.E. 116, 154, 155, 156, 157, 232. Men who enroll in this unit, after satisfactorily completing the course and meeting the military requirements, may be commissioned in the Officers' Reserve Corps if they so desire.

DYNAMO LABORATORY COURSES

Mr. Price and Laboratory Instuctors

51. ELECTRODYNAMICS LABORATORY. I, II; 2 cr. Basic electrostatic and electromagnetic experiments and measurements. To accompany E.E. 1. Lab. fee $6.00.

52. DYNAMO LABORATORY. I or II; 2 cr. Tests of direct current dynamos and appliances. To accompany E.E. 2. Lab. fee $6.00.

53. ALTERNATING CURRENT LABORATORY. II; 2 cr. Experimental study of a. c. circuits; tests of generators, motors and appliances. To accompany E.E. 3. Lab. fee $6.00.

54. ALTERNATING CURRENT LABORATORY. I; 2 cr. Continuation of E.E. 53. Tests of synchronous generators and motors, transformers, converters, and induction motors. To accompany E.E. 4. Lab. fee $6.00.

56. DIRECT CURRENT LABORATORY. II; 2 cr. For mechanical engineers. To accompany E.E. 6. Lab. fee $6.00.

57. ALTERNATING CURRENT LABORATORY. I; 2 cr. Primarily for mechanical engineers. Prerequisite: E.E. 7. Lab. fee $6.00.

60. DIRECT CURRENT LABORATORY. II; 1 cr. To accompany E.E. 10. Lab. fee $3.00.

ENGINEERING CONTRACTS AND SPECIFICATIONS

DANIEL WEBSTER MEAD, C.E., *Professor of Hydraulic Engineering*
ARNO THOMAS LENZ, M.S., *Instructor in Hydraulic Engineering*
HAROLD WILLIAM RUF, M.S., *Instructor in Sanitary Engineering*

101. CONTRACTS AND SPECIFICATIONS. II; 2 cr. Engineering relations, legal, contractual and personal preparation of contracts, specifications and other engineering papers.

ENGINEERING ADMINISTRATION

FRANK PALMER WOY, B.S., *Professor of Engineering Administration*
PATRICK HENRY HYLAND, M.E., *Associate Professor of Machine Design*
JAMES WILBUR MCNAUL, B.S., *Assistant Professor of Machine Design*

101. ENGINEER'S RELATIONS DURING CONSTRUCTION. I; 3 cr. The engineer's professional, ethical, business, legal, accounting, and commercial relations; analysis of corporation reports, financial statements, technical report writing and organization of reports; estimating principles; organization of corporations; installation plans; law of real property; land values; unit costs of construction; contracting overhead costs; valuation; engineer's relation to fixed property charges, maintenance, depreciation and retirement reserves, and fair return; corporation finance for engineers; financing costs; failures, receivership and reorganizations. Prerequiste: Senior standing. Mr. Woy.

102. ENGINEER'S RELATIONS DURING PRODUCTON AND OPERATION. II; 3 cr. Administration; executive functions; public relations; banking relations; scientific factory and shop management; industrial cost analysis; industrial overhead burden; fixed and variable factory costs; industrial relations and labor survey; welfare work; sales, advertising and insurance; utility engineer's cost analysis and rate making in electric, gas, water, telephone, street railway and steam railroad utilities; fare analysis and traffic studies. Prerequisite: Senior standing. Mr. Woy.

103. CORPORATION REPORTS. I; 2 cr. The accounting, cost analysis and efficiency methods of measuring the engineer's accomplishments; accounting principles; voucher systems; flow of purchase costs of material and labor into construction and operation; flow of stock room transactions, sales of products and cash records; analysis of balance sheets, and financial statements; distortion and juggling of corporation financial reports; engineer's technical function in adjusting and closing entries; engineer's financial check and test units applied to the actual figures of existing utilities and industries. Prerequisite: Junior or senior standing. Mr. Woy.

104. THESIS OR ADVANCED INDIVIDUAL STUDIES. I, II; 1 to 3 cr. Individual investigation in commercial, statistical, economic or technical advanced subjects; to create investigative ability, initative, sequential development, logical presentation, and specialized preparation in practical subjects. Meritorious reports are accepted as theses and filed in the University Library. Prerequisite: Senior standing. Mr. Woy.

105. MANUFACTURING AND PRODUCTION METHODS. I; 2 cr. Factory and shop administration and management; production scheduling and planning; dispatching and manufacturing methods. A general survey of the most suitable material, special tools and fundamental processes of manufacturing, together with the relations of the allied departments of pattern shop, foundry and machine shops. Prerequisite: Senior standing. Mr. McNaul.

106. POWER PLANT ECONOMICS AND DESIGN. II; 3 cr. Load curves, principles underlying the selection of power units; power plant layout, building design, equipment selection, estimates, operating charges, fixed charges, etc. Drawing room design and estimate of small power plant. Prerequisite: Senior standing. Mr. Hyland.

ENGINEERING ENGLISH AND ENGINEERING JOURNALISM

LESLIE FLANDERS VAN HAGAN, C.E., *Professor of Railway Engineering*

1a. ENGINEERING ENGLISH. I; 1 cr. To supplement the English work of the freshman year and to assist in maintaining standards in speech and writing throughout the last two years of the engineering course. Prerequisite: English 1b.

1b. ENGINEERING ENGLISH. II; 1 cr. Follows course 1a.

2a. ENGINEERING ENGLISH. I; 1 cr. Follows course 1b.

2b. ENGINEERING ENGLISH. II; 1 cr. Follows course 2a.

10. ENGINEERING JOURNALISM. I, II; 1 cr. Editing and managing a technical magazine.

HIGHWAY ENGINEERING AND CITY PLANNING

HAROLD FREDERICK JANDA, C.E., *Professor of Highway Engineering and City Planning, Chairman*

HIGHWAY ENGINEERING

101. HIGHWAY ENGINEERING. I; 1 cr. This course is especially planned for those students desiring a general knowledge of constructing and maintaining earth, gravel, macadam, and concrete roads. Special attention is devoted to the Wisconsin highway conditions. Mr. Janda.

102. HIGHWAY ENGINEERING. II; 3 cr. Economics; traffic census; drainage; construction and maintenance methods of the various types of road surfaces. Prerequisite: Railway Engr. 1. Mr. Janda.

103. ADVANCED HIGHWAY DESIGN. I; 3 cr. Special problems of an advanced nature in the construction of the modern highway. Prerequisite: Highway Engr. 102 or its equivalent. Mr. Janda.

104. HIGHWAY MATERIALS TESTING. II; 3 cr. The testing of bituminous and non-bituminous road materials. Prerequisite: Highway Engr. 102. Lab. fee $6.00. Mr. Janda.

105. HIGHWAY MAINTENANCE. I; 2 cr. Equipment depots; maintenance machinery; shoulder and ditch maintenance; methods of surface maintenance; snow-drift prevention and removal; etc. Prerequisite: Highway Engr. 102. Mr. Janda.

CITY PLANNING*

101. CITY PLANNING. I, II; 2 cr. Growth of cities; land subdivision; classes and uses of streets; zoning; parks and playgrounds; regional planning. Mr. Janda.

*Students desiring work in planning and planting of public grounds, parks, and home grounds, see courses in Horticulture, College of Agriculture.

104. MUNICIPAL ENGINEERING PRACTICE. I; 2 cr. Width and arrangement of streets; curb and gutter; sidewalks; street surface details; crowns and intersections; landing fields; trees and shrubs. Prerequisite: Topographic Engr. 103. Mr. Janda.

105. TRAFFIC CONTROL. II; 2 cr. Street systems; causes of accidents; parking; traffic signals; ordinances; administration. Prerequisite: Junior standing. Mr. Janda.

HYDRAULIC AND SANITARY ENGINEERING

DANIEL WEBSTER MEAD, C.E., *Professor of Hydraulic Engineering, Chairman*
FRANCIS MURRAY DAWSON, M.C.E., *Professor of Hydraulic Engineering*
LEWIS HANFORD KESSLER, M.S., C.E., *Assistant Professor of Hydraulic Engineering*
MERLE STARR NICHOLS, Ph.D., *Assistant Professor of Sanitary Chemistry*
ARNO THOMAS LENZ, M.S., *Instructor in Hydraulic Engineering*
HAROLD WILLIAM RUF, M.S., *Instructor in Sanitary Engineering*

1. HYDRAULICS. I, II; 3 cr. The elementary principles of the mechanics of fluids, and the theory, calibration and use of instruments for hydraulic measurements. Recitations, lectures, and laboratory work. Prerequisite: Mechanics 1, 2. Lab. fee $3.00. Mr. Dawson, Mr. Kessler, Mr. Lenz, Mr. Ruf.

2. HYDRAULICS. I, II; 4 cr. Similar to course 1, but having additional recitation and laboratory work. Required of junior civil engineering students. Prerequisites: Mechanics 1, 2. Lab. fee $3.00. Mr. Dawson, Mr. Kessler, Mr. Lenz.

102. TESTING OF HYDRAULIC MACHINES. I, II; 2 cr. A course designed to acquaint the student with the methods of hydraulic machine testing. Tests are made of impulse and turbine water wheels, centrifugal and reciprocating pumps, hydraulic rams, air lift pumps, etc. Laboratory work with occasional lectures and computing periods. Prerequisite: Hydr. 1 or 2. Lab. fee $5.00. Mr. Kessler.

103. EXPERIMENTAL HYDRAULICS. I, II; 1 to 5 cr. Laboratory investigation of the relation of experimental results to the theory of hydraulic machinery and of the flow of water under various conditions. The special field to be studied may be selected by the student, with the approval of the instructor. Prerequisite: Hydr. 1. Lab. fee $3.00 per credit. Mr. Dawson.

104. WATER POWER ENGINEERING. I; 3 cr. The theory, investigation, and development of water power. Prerequisite: Hydr. 1. Mr. Mead, Mr. Lenz.

105. HYDRAULIC MACHINERY. II; 2 cr. The theory of hydraulic motors, pumps, etc., and their economic selection and installation. Prerequisite: Hydr. 1. Mr. Mead, Mr. Lenz.

110. HYDROLOGY. II; 2 cr. Water in its physical, geological, and meteorological relations as applied to water power, water supply, irrigation, drainage, and sanitary work. Mr. Mead, Mr. Dawson, Mr. Ruf.

112. DRAINAGE AND IRRIGATION. II; 2 cr. Theory, practice, and economy of sanitary and agricultural drainage, flood control, and application of water to irrigation of land. Prerequisites: Hydr. 1, 110. Mr. Mead, Mr. Dawson.

113. HYDRAULIC DESIGN. I; 2 cr. Investigation of water supply for power, irrigation or municipal purposes. Prerequisites: Hydr. 1, 110. Mr. Mead, Mr. Lenz.

114. DESIGN OF VARIOUS FEATURES OF HYDRAULIC OR SANITARY WORK. Prerequisites: Hydr. 1, 110, 113. Mr. Mead, Mr. Lenz.

115. HYDRAULIC PROBLEMS. II; 1-3 cr. Drawing room course for seniors and graduates in methods of analysis used on problems taken from practice. Mr. Dawson.

121. WATER SUPPLY ENGINEERING. I; 3 cr. Theory, development, and improvement of water supplies for domestic, manufacturing, and fire service. Prerequisites: Hydr. 1, 110. Mr. Mead, Mr. Ruf.

122. SEWERAGE. I; 2 cr. The principles of design and maintenance of sanitary and storm sewer systems. Prerequisite: Hydr. 1 or 2, or concurrent registration. Mr. Kessler, Mr. Ruf.

123. SEWAGE AND GARBAGE DISPOSAL. II; 1 or 2 cr. Development, disposal works and methods of treatment. Additional credit may be elected, in which the student will design a treatment plant. Mr. Nichols, Mr. Ruf.

124. WATER AND SEWAGE ANALYSIS. I; 2 cr. Study of laboratory methods of chemical and bacterial analysis and the interpretation of results. Mr. Nichols.

125. SEWAGE AND TRADE WASTES ANALYSIS. I, II; 1 to 3 cr. Special studies on sewage and trade wastes. Prerequisite: Chemistry 2b and junior standing. Lab. fee $5.00. Mr. Ruf.

126. SANITARY ENGINEERING SEMINAR. I; 1 cr. Review of literature on sewage and trade waste problems. Mr. Nichols.

127. SANITARY ENGINEERING SEMINAR. II; 1 cr. Discussion of recent developments in sewage and trade waste disposal and in water purification. Mr. Nichols, Mr. Ruf.

MACHINE DESIGN

PATRICK HENRY HYLAND, M.E., *Associate Professor of Machine Design, Chairman*
JAMES WILBUR MCNAUL, B.S., *Assistant Professor of Machine Design*
RUSSELL EDWARD PUERNER, B.S., *Assistant Professor of Machine Design*
WALTER H. HALL, B.S., *Instructor in Machine Design*

1. MECHANISM. I; 4 cr. The relative motions of machine parts including linkages, cams, toothed gears, beltings, chains, and ratchets. Prerequisites: Drawing 1, 2. Mr. Hyland, Mr. Puerner, Mr. McNaul, Mr. Hall.

2. DESIGN PRACTICE. II; 1 cr. A short course treating of the practical consideration of machine design. Study of the use and application in design of engineering material, formulae and tabulated data, together with a discussion of factor of safety, allowable stress, etc. Prerequisite: Machine Design 1. Mr. Hyland.

3. MACHINE ELEMENTS. I, II; 4 cr. Study of the application of the principles of mechanics and empirical methods to the design of machine elements. Commerical drafting room practice. Prerequisites: Machine Design 1, Mechanics 1, 2; Mechanics 3 or concurrent enrollment. Mr. Hyland.

4. ADVANCED MACHINE DESIGN. I, II; 4 cr. A continuation of course 3 applied to the design of complete machines. Prerequisite: Machine Design 3. Mr. McNaul.

5. MACHINE ELEMENTS. I, II; 3 cr. For electrical and chemical engineers. A study of the mathematical and empirical methods for the design of machine parts, with a parallel drafting course conforming to the requirements of modern drafting practice. Prerequisites: Machine Design 1, Mechanics 1, 2, 3. Mr. Puerner.

12. MACHINE TESTING. II; 2 cr. Experimental determinations of the strength of machine elements and the efficiency of machines. Prerequisite: Machine Design 3. Lab. fee $6.00. Mr. Puerner, Mr. McNaul, Mr. Hall.

101. KINEMATICS AND DYNAMICS OF MACHINERY. II; 2 or 3 cr. Fundamental concepts of motion, velocity, acceleration, and equilibrium; graphical and analytical solution of velocities and accelerations in machine parts; determination of static and inertia forces in machines; combinations of static and inertia forces; effect of stress concentration and fatigue in machine parts; design of high-speed machines for strength, rigidity, balance, and lubrication; governors as to type and design. Mr. McNaul.

MECHANICS

EDWARD ROSE MAURER, B.C.E., *Professor of Mechanics, Chairman*
JESSE BENJAMIN KOMMERS, M.E., *Professor of Mechanics*
MORTON OWEN WITHEY, C.E., *Professor of Mechanics*
HARRY E. PULVER, C.E., *Associate Professor of Civil and Structural Engineering*
RAYMOND JEFFERSON ROARK, M.S., *Associate Professor of Mechanics*
LORING O. HANSON, B.S., *Instructor in Mechanics*
RICHARD S. HARTENBERG, B.S., *Instructor in Mechanics*
GEORGE W. WASHA, B.S., *Instructor in Mechanics*
KURT FRANK WENDT, B.S., *Instructor in Mechanics*

1. STATICS. I, II; 3 cr. Treated, as are all of the following courses, with special reference to the requirements of engineers. Prerequisite: Physics 51. First nine weeks of each semester.

2. DYNAMICS. I, II; 2 cr. Prerequisites: Mechanics 1; Mathematics 55, or concurrent registration. Last nine weeks of each semester.

3. MECHANICS OF MATERIALS. I, II; 5 cr. Prerequisites: Mechanics 1; Mathematics 55, or concurrent registration.

The next four courses are principally laboratory work; assigned readings and reports; and preparation and manufacture of materials.

51. MATERIALS OF CONSTRUCTION. I; 2 cr. Prerequisite: Mechanics 3 or concurrent registration. For civil engineers. Lab. fee $6.00.

52. MATERIALS OF CONSTRUCTION. II; 2 cr. Continuation of 51. Lab. fee $6.00.

53. MATERIALS OF CONSTRUCTION. I, II; 2 cr. Prerequisite: Mechanics 3 or concurrent registration. For electrical, mechanical, and mining engineers. Lab. fee $6.00.

54. MATERIALS OF CONSTRUCTION. II; 2 cr. Prerequisite: Mechanics 3 or concurrent registration. For chemical engineers. Lab. fee $6.00.

106. ADVANCED MECHANICS OF MATERIALS. II; 3 cr. Some topics (curved beams, flat plates, thick cylinders, springs, etc.) and methods of analysis not included in Mechanics 3. Prerequisites: Mechanics 2 and 3. Mr. Maurer.

107. ADVANCED TECHNICAL MECHANICS. I; 3 cr. Especially dynamics of machinery; vibrations; balancing; gyroscopic effects; whirling shafts; critical speeds. Prerequisite: Mechanics 2. Mr. Maurer.

108. MATERIALS OF CONSTRUCTION. II; 2-5 cr. Laboratory research on the various materials. Research on concrete, plain and reinforced. Prerequisite: Mechanics 51 and 53. Lab. fee $3.00 per cr. Mr. Withey.

109. GRAPHICS. II; 2 cr. A development of the principles of graphical computation and construction of graphic charts. Application is made to various engineering problems, including representation of experimental data. Mr. Kommers.

110. DYNAMIC STRESS. II; 2 cr. Stress and strain due to impact and sudden loading; inertia stresses in moving bodies; impact tests. Prerequisites: Mechancis 1, 2, and 3. Mr. Roark.

MINING AND METALLURGY

RICHARD STANISLAUS MCCAFFERY, E.M., *Professor of Mining and Metallurgy, Chairman*
SCOTT MACKAY, M.S., *Associate Professor of Metallurgy*
EDWIN ROY SHOREY, E.M., *Associate Professor of Mining and Metallurgy*
GEORGE JOHN BARKER, E.M., *Assistant Professor of Mining and Metallurgy*
JOSEPH FRANCIS OESTERLE, Ph.D., *Assistant Professor of Metallurgy*

12. MINE SURVEYING. II; 2 cr. Classroom and drafting room study of the methods of surface and underground mine surveying, including shaft plumbing, underground practice, open-pit tonnage, progress, and final estimates. Followed by a week's survey of a zinc mine in southwest Wisconsin, or a nearby Wisconsin iron mine. Prerequisite: T.E. 108. Lab. fee $3.00 Mr. Shorey.

126. CLAY PRODUCTS MANUFACTURE. I, II; 2 or 3 cr. Lectures and laboratory work. Clay testing, brick, tile, and ceramics manufacture. The making of Portland cement. Lab. fee $3.00 per credit. Prerequisites: Chem. 2b; Phys. 52. Mr. Barker.

150. ECONOMIC ASPECTS OF MINING. II; 3 cr. The mining industry. Mineral resources and recovery. Mining and finance. Typical mining organizations. For students in economics and commerce and colleges other than engineering, of junior, senior, or graduate rank. Mr. McCaffery.

MINING

101. Excavation and Tunneling. I; 3 cr. Earth excavation; support of excavation, railway grading, canal and submarine excavation, irrigation and drainage channels, methods and cost. Steam shovels and mechanical excavators. Explosives; their chemical and physical natures, selection and use. Rock drills; rock excavation; tunneling; mine tunnels, hard and soft ground. Railway tunnels; in rock, in loose earth. Irrigation tunnels. Freezing processes, shields and caissons. Prerequisites: Chem. 2b; Phys. 52. Mr. Shorey.

103. Mining Methods. Yr; 3 cr. I. Classroom study of boring; various methods of prospect drilling and the compilation of results. Shaft sinking, underground prospecting and epxloration, development and methods of surface and underground mining ore, coal placer and other mineral deposits. II. Classroom and drafting room design of a method of mining a selected ore-body from actual drilling records. Prerequisite: Junior standing. Mr. Shorey.

104. Valuation of Mineral Properties. II; 3 cr. Preliminary and detailed examination and reports. Prospecting and sampling of mineral properties. Construction and use of sample-maps and assay-plans. Valuation of metal, coal, and other mineral properties. Decline, ultimate production, and valuation of oil properties. Mine taxation. Prerequisite: Mining 103. Mr. Shorey.

105. Mine Engineering. Yr; 3 cr. Drainage, control, and removal of mine water. Ventilation, lighting, haulage, hoisting, mechanics and methods of hoisting, including regenerative systems. Mine signal systems, underground power installations. Surface plant; power generation and transmission; building, roads, water supply housing, mine accidents, safety, rescue, and recovery. Lectures, quiz. Prerequisites: Mining 103, Mechanics 1, 2. Mr. Shorey.

106. Mine Plant Design. II; 3 cr. Design of mine plant, selection of equipment, including surface, power, and hoisting equipment, ventilating fans and haulage systems. Underground hoisting and pumping stations. Ore-pockets, mine pumps, and ore-handling equipment. Drafting room design. Prerequisites: Mining 101, 103, 105. Mr. Shorey.

107. Ore Dressing and Coal Washing. I; 5 cr. Principles and practice of ore dressing; preliminary breakers, and secondary crushers. Fine grinding and stamp-milling, sizing, screening and classifying. Concentration, jigging, tabling, slime concentration, log washing, magnetic and electro-static separation. Oil flotation. All sliming processes. Mechanical engineering of concentrators. Coal breakers and washers. Economic limits of concentration. Lectures, quiz, and laboratory practice. Prerequisite: Senior standing. Lab. fee $6.00. Mr. Shorey.

108. Milling Plant Design. II; 3 cr. The design of a mill to treat a Wisconsin zinc ore. The design and selection of equipment, including crusher, jigs, screens, elevators, and flotation equipment. Water supply and power-plant. Building construction. Drafting design. Prerequisites: Mining 105a, 107. Mr. Shorey.

109. Mine and Smelter Organization, Administration, and Accounts. II; 3 cr. The principles of administration applied to mines, mills, and smelters and their organizations. Labor supply and management. Wage system. Mine accounting, including a set of reports and financial statements of a month's operation of a typical mine and smelter. Home office accounts. Cost keeping. Ore sales and contracts. Lectures, quiz. Prerequisite: Senior standing. Mr. McCaffery.

121. Assaying. II; 3 cr. Lectures and laboratory practice covering the fire assay of ores, mattes, bullion, and other metallurgical products, using carefully checked ores, and smelter products from American and Canadian operations. Prerequisite: Chemistry 2b. Lab. fee $10.00. Mr. Barker.

210. Advanced Ore-Dressing Laboratory. I, II; 2 to 5 cr. Detailed research with a view to discovery of a method of treating a selected ore. The particular application of one or more of the principles of ore-dressing, covered in outline by Mining 107. Individual investigation. Lab. fee $3.00 per credit. Mr. Shorey.

215. Mill Design. II; 5 cr. The complete design of a mill to treat a selected ore on a tonnage basis. Especial emphasis is placed upon economic recoveries, methods and costs. A development of the work covered in courses 107 and 108. Individual design. Mr. Shorey.

220. Mine Development. I; 5 cr. A study of a prospected ore-body to determine economic method of mining and probable cost. A careful consideration of extraction and various methods of mining. Supporting systems and development ratios. Individual solution. Mr. Shorey.

METALLURGY

122 Principles of Metallurgy. II; 3 cr. The statics, kinetics, and thermodynamics of metallurgy. Chemical equilibrium, affinities, reaction velocities illustrated in the common metallurgical processes. Prerequisite: Chemistry 2b. Mr. McCaffery.

130. Physical Chemistry of the Metals. I, 3 cr. The underlying principles of physical metallurgy. The use of chemical statics as applied to metallurgical processes and smelting operations. Development of the principles of equilibrium in binary, ternary and quaternary systems. Lectures, quiz. Prerequisites: Chem. 2b, Phys. 52. Mr. Oesterle.

135. Thermodynamics of Metallurgical Reactions. Yr; 3 cr. Prerequisites: Chem. 2b, Math. 55, Phys. 52. Mr. McCaffery.

145. Phase Rule Applied to Metallurgy. I, 3 cr. A study of phase equilibrium in metal systems. The importance of allotropic forms, the intrepretation of equilibrium diagrams, and a comprehensive recognition of metastability. Prerequisite: Phys. 52. Mr. Mackay.

225. Metallurgical Laboratory. I, II; 2 to 5 cr. Detailed research problems covering selected metallurgical processes. The particular application of one or more of the metallurgical principles outlined by courses 122, 124. Lab. fee $3.00 per credit. Mr. McCaffery, Mr. Mackay.

230. Advanced Physical Chemistry of the Metals. I and II, 2 or 3 cr. An advanced treatment of the principles of physical metallurgy, and the direct application of these principles to metallurgical practice. Mr. Oesterle.

IRON AND STEEL METALLURGY

124. METALLURGY OF IRON AND STEEL. I, II; 3 cr. The iron blast furnace, bessemer, open-hearth, and electric furnace steel processes. Principles of design of furnaces and accessory apparatus. Control of furnace operation and product. Reheating, rolling, rolling mills, forging, hammers and presses, alloy steels, standard specifications, inspection methods. Prerequisites: Chem. 2b, Phys. 52. Mr. McCaffery.

128. IRON AND STEEL LABORATORY. Yr; 2 or 3 cr. I. The physical properties and structure of low and medium carbon steels as affected by their heat-treatment and mechanical treatment. II. The construction and effects of acid, neutral and basic oxidizing and reducing slags. Prerequisite: Mining 124 or concurrent registration. Lab. fee $3.00 per credit. Mr. Mackay.

131. FOUNDRY METALLURGY. II; 2 cr. The properties of gray iron, foundry raw materials, the cupola and air furnace. The properties of cast steel. Converter, open hearth and electric furnace castings. The properties and production of malleable iron. Lectures, quiz. Prerequisites: Chem 2b, Phys. 52. Mr. McCaffery.

132. MANUFACTURE OF COKE. I; 2 cr. The preparation of coal for coking. The coking process in bee-hive and by-products ovens. The recovery of by-products. Lectures, quiz. Prerequisite: Chem. 2b. Mr. McCaffery.

140. HEAT TREATMENT OF SOFT AND MEDIUM STEELS. II; 2 cr. A study of the iron-carbon system based upon the diffusion of carbon and other soluble contained substances. A systematic discussion of the commercial heat treatment of forged and rolled steels. Prerequisites: Chem. 2b, Phys. 52. Mr. Oesterle.

231. THE IRON BLAST FURNACE. I; 5 cr. The construction of the furnace and accessory apparatus. The reactions in the furnace and factors influencing control of the process are taken up in lectures. Problems in furnace design are worked out in the drafting room. Mr. McCaffery.

232. CONVERTER AND OPEN-HEARTH STEEL. II; 5 cr. The chemistry of the refining processes. The order of reaction as affected by temperature, the various factors which enter into the control of the process, and the quality of the product are studied in lectures; and in the drawing-room the principles entering into the design of the converter and open-hearth plant are applied in the solution of practical problems. Mr. McCaffery.

250. PROPERTIES AND MANUFACTURE OF GRAY IRON CASTINGS. Yr; 3 cr. Mr. McCaffery, Mr. Mackay.

255. PROPERTIES AND MANUFACTURE OF STEEL CASTINGS. Yr; 3 cr. Mr. McCaffery, Mr. Mackay.

METALLURGY OF GOLD, SILVER, COPPER, LEAD, ZINC, AND MINOR METALS

123. METALLURGY OF COPPER, LEAD, AND ZINC. I; 5 cr. The blast and reverberatory processes for copper; the treatment or furnace products, converting matte and refining reverberatory, ore-hearth and blast furnace processes for lead; sinter roasting, disilverization of base bullion. Roasting and distillation processes for zinc. Lectures, quiz and laboratory practice. Prerequisite: Chem. 2b. Lab. fee $9.00. Mr. Barker.

125. METALLURGY OF MINOR METALS. I; 3 cr. The metallurgy of tin, nickel, aluminum, mercury, cadmium, bismuth, and antimony. Recovery of metal from by-products and secondary sources. Prerequisite: Chem. 2b. Lab. fee $3.00. Mr. Barker.

127. HYDROMETALLURGY OF GOLD, SILVER, COPPER, LEAD, AND ZINC. Yr; 3 cr. I. Classroom and laboratory study of the hydrometallurgy of gold and silver. Amalgamation. Cyanidation and chlorination of the ores of noble metals. Electrolytic refining of dorè bullion. Refining of cyanide precipitate. II. Classroom and laboratory study of the hydrometallurgy of copper, lead and zinc. Sulphatizing and chloridizing roasts, leaching, precipitation. Regeneration of solutions, refining precipitates, accessory equipment and process. Electrolitic zinc and lead. Lab. fee $3.00. Prerequisite: Chem. 2b. Mr. Barker.

240. LABORATORY RESEARCH IN COPPER, LEAD, AND ZINC METALLURGY. An advanced study of methods of reduction of the metals covered in outline by courses 123, 125, 127, 133. Investigation of processes, selection of equipment, plant design. Economics of smelting. Individual solution. Lab. fee $3.00 per credit. Mr. Barker.

UN-NUMBERED COURSES

WESTERN MINE INSPECTION TRIP. Summer work. A six-week inspection trip, visiting several of the more important mining and metallurgical centers of the United States and Canada. Required for graduation. Should be taken after the junior year. Mr. Shorey.

FIRST AID TRAINING. A week's intensive training in first aid methods for miners. Given in conjunction with the United Sates Bureau of Mines. Required for graduation. Taken in the junior year.

MINE RESCUE TRAINING. A week's intensive training in mine rescue and recovery methods using oxygen breathing apparatus. Given in conjunction with the United States Bureau of Mines. Required in the senior year.

ANNUAL FOUNDRY CONFERENCE. In addition to the regular courses conducted by the Department of Mining and Metallurgy, an annual foundry conference is conducted during the week of February 1 under the auspices of the department. At this conference those engaged in the foundry industry—managers, superintendents, research experts, foremen, etc.—present their problems and discuss them in round table meetings under the leadership of prominent men in the industry. Discussions on cupola practice, sand conditioning, metallography, cost accounting, routing and planning, malleable castings, steel castings, aluminum and light metal castings, heat treatment of steel, sand testing, bronze and brass castings, and defects in castings are features of the conference. In addition to the discussions, laboratory tests and demonstrations are organized. While this work was developed for the industry in Wisconsin, an equally large attendance from outside the State is a regular feature.

RAILWAY ENGINEERING

LESLIE FLANDERS VAN HAGAN, C.E., *Professor of Railway Engineering, Chairman*
WALTER H. TACKE, B.S., *Instructor in Railway Engineering*

1. RAILWAY CURVES. I, II; 2 cr. The computation and field location of simple, compound, and spiral curves and railway turnouts. Prerequisites: Trigonometry, elementary surveying. Mr. Van Hagan, Mr. Tacke.

2. THEORY OF RAILWAY LOCATION AND CONSTRUCTION. I; 3 cr. Recitation, lectures, and problems. Prerequisite: Railway 1 or concurrent registration. Mr. Van Hagan, Mr. Tacke.

22. PRACTICE IN RAILWAY LOCATION AND CONSTRUCTION. Two weeks, at the close of the second year, spent in field and office practice. Prerequisites: Railways 2 and Topographic Engineering 2. Registration fee $9.00; lab. fee $3.00. Mr. Van Hagan, Mr. Tacke.

105. ENGINEERING ECONOMICS. I; 2 cr. The theory underlying the economic selection of materials of construction, methods of doing work, and types of structures. Elective for junior and senior engineers. Mr. Van Hagan.

107. ADVANCED RAILWAY DESIGN. I, II; 2 cr. Special problems of an advanced nature, together with studies and discussions of matters of current interest in connection with railway engineering. Elective for seniors and graduate students. Mr. Van Hagan.

110. MASONRY CONSTRUCTION. II; 2 cr. Theory governing the design and construction of masonry structures. Prerequisites: Mechanics 3, 51. Mr. Van Hagan, Mr. Tacke.

111. SUBSTRUCTURES. II; 1 cr. Ordinary and deep foundation work; lectures and problems. Prerequisite: Railways 110. Mr. Van Hagan.

112. ESTIMATES. II; 2 cr. Practice in scaling quantities and preparing estimates of cost. Prerequisite: Junior standing. Mr. Van Hagan.

ROADS AND PAVEMENTS

(See Highway Engineering and City Planning, page 249)

SHOP LABORATORIES

JAMES MORGAN DORRANS, *Assistant Professor of Mechanical Practice, Superintendent*
RICHARD REX BELL, *Instructor in Mechanical Practice*
BERT BERNARD BRIDGE, *Instructor in Mechanical Practice*
JOHN B. CLULEY, B.S., *Instructor in Mechanical Practice*
GEORGE DAVID HITCHCOCK, *Instructor in Mechanical Practice*
NICHOLAS FRANCIS HOLLANDER, *Instructor in Mechanical Practice*
CHARLES FREDERICK PETERS, *Instructor in Mechanical Practice*
THOMAS PUDDESTER, *Instructor in Mechanical Practice*
ROBERT NICHOLAS SCHUMANN, *Instructor in Mechanical Practice*
GEORGE FRANCIS YOUNG, *Instructor in Mechanical Practice*

The following shop courses are required in Mechanical Engineering: Of freshmen, Courses 1, 2, 4, 5; of sophomores, Courses 6, 13; of juniors, Course 7; of seniors, Course 9. A total of ten credits and six weeks of industrial or mechanical practice are required.

The following shop courses are required in Electrical Engineering: Course 11 in the freshman and 12 in the sophomore year, a total of four credits.

The following shop courses are required in Chemical Engineering: Courses 1, 2, 4, 5 in freshman year, a total of four credits.

1. ELEMENTARY PATTERN MAKING. I, II; 1 cr. Bench and lathe work in wood. Principles of molding and core making. A knowledge of common woods. Fee $3.00. Mr. Hollander.

2. BENCH WORK, FORGE, AND WELDING. I, II; 1 cr. Instruction in the use of bench metal tools, acetylene and electric welding, splicing, soldering and drill press work, pipe fitting, welding, tempering and brazing. Fee $3.00. Mr. Schumann, Mr. Peters.

4. LATHE WORK IN METALS. I, II; 1 cr. Turning, boring, and thread cutting. Experience in working various metals. Fee $3.00. Mr. Bell, Mr. Hitchcock, Mr. Puddester.

5. PLANING, SHAPING, AND MILLING. I, II; 1 cr. Surfacing, slotting and gear cutting. Fee $3.00. Mr. Bell, Mr. Hitchcock, Mr. Puddester.

6. TOOL MAKING. I; 2 cr. Making and tempering taps, reamers, counterborers, turret lathe tools, etc. Prerequisites: Shop 4, 5. Fee $6.00. Mr. Bell, Mr. Hitchcock, Mr. Puddester.

7. GENERAL SHOP WORK. I; 2 cr. Manufacturing machines, gas engines, etc. Turret lathe practice. Production methods. Prerequisites: Shop 2, 4, 5, 6. Fee $6.00. Mr. Bell, Mr. Hitchcock, Mr. Puddester.

8. ADVANCED SHOP PROBLEMS. II; 2 to 4 cr. Prerequisite: Shop 7. Fee $3.00 per credit. Mr. Bell, Mr. Hitchcock, Mr. Puddester.

9. ADVANCED PATTERN MAKING. II; 1 cr. Building up patterns and core boxes, skeleton construction, type patterns for molding machine work. Prerequisite: Shop 1. Regularly for seniors only. Fee $3.00. Mr. Hollander.

10. INDUSTRIAL OR MECHANICAL PRACTICE. Not less than six weeks of work, performed outside the University, in a shop with a well-developed system of methods pertaining to the manufacture, building, or making general repairs of machinery, machine parts, or metal products. Application for credit must be made upon a form furnished by the adviser, and accompanied by credentials stating the length of service, kind of work and any other pertinent information necessary for granting of this credit by the Mechanical Engineering Course Committee.

11. ELEMENTARY SHOP WORK. I, II; 2 cr. Elementary pattern making, bench metal work, forging, and welding. For freshman electricals only. Mr. Hollander, Mr. Peters, Mr. Schumann.

12. ADVANCED SHOP WORK. II; 2 cr. Lathe work in various metals, shaping, drill-press work, assembling. For sophomore electricals only. Mr. Bell, Mr. Hitchcock, Mr. Puddester.

13. ELEMENTARY FOUNDRY PRACTICE. I, II; 1 cr. Bench molding, floor molding, and machine molding, cupola practice, core making. Fee $3.00 Mr. Bridge, Mr. Young.

14. ADVANCED FOUNDRY PRACTICE. II; 2 cr. Cupola practice, bench and floor work, bronze and white metal alloys. Skin drying and sweep work. Elective for junior and senior engineers. Fee $6.00. Mr. Bridge, Mr. Young.

15. GENERAL FARM CARPENTRY. I, II; 1 or 2 cr. Elective for junior and senior engineers. Fee $3.00. Mr. Cluley

108. WELDING. II; 2 cr. Acetylene and electric arc welding. Elective for graduates and undergraduates. Fee $6.00. Mr. Peters, Mr. Schumann.

STEAM AND GAS ENGINEERING

GUSTUS LUDWIG LARSON, M.E., *Professor of Steam and Gas Engineering, Chairman*
BEN GEORGE ELLIOTT, M.S., M.E., *Professor of Mechanical Engineering, Extension Division and College of Engineering*
LEROY ALONZO WILSON, M.E., M.M.E., *Associate Professor of Steam and Gas Engineering*
DELMAR WOOD NELSON, M.E., *Assistant Professor of Steam and Gas Engineering*
GROVER C. WILSON, M.S., M.E., *Assistant Professor of Steam and Gas Engineering*
EDWARD WILLIAM AZPELL, M.S., *Instructor in Steam and Gas Engineering*
EINAR THEODORE HANSEN, M.S., *Instructor in Steam and Gas Engineering*
ROBERT WILLIAM KUBASTA, B.S., *Instructor in Steam and Gas Engineering*
REED ALDEN ROSE, M.S., *Instructor in Steam and Gas Engineering*

1. THERMODYNAMICS. I; 4 cr. A study of the laws of heat and mechanical energy and their application to air compressors and external and internal combustion engines, followed by a study of fuels and theoretical combustion. Prerequisites: Physics 51, 52; Mathematics 54, 55. Required of junior mechanical engineers. Mr. L. A. Wilson, Mr. G. C. Wilson, Mr. Elliott.

2. THERMODYNAMICS. II; 4 cr. Continuation of S. and G. 1. A study of the laws of vapors and their application to various types of steam engines and turbines, with special attention to the economy and efficiency of various designs of such prime movers. This is followed by the principles of combustion, boilers, power plant auxiliaries, and refrigerating machinery. Prerequisite: S. and G. 1. Mr. L. A. Wilson, Mr. Elliott.

3. THERMODYNAMICS. I; 3 cr. A course in the theory and principles underlying heat engines. This course is similar to course 1 except the study of fuels is replaced by the thermodynamics of vapors. Prerequisites: Physics 51, 52, 53, or 54; Mathematics 54, 55. Required of junior electrical and chemical engineering students. Mr. Nelson, Mr. Rose, Mr. Hansen, Mr. Azpell.

4. THERMODYNAMICS. II; 3 cr. Continuation of S. and G. 3. This course is similar to course 2 except fuels are studied in place of the thermodynamics of vapors. Prerequisite: S. and G. 3. Mr. Nelson, Mr. Rose, Mr. Hanson, Mr. Azpell.

7. THERMODYNAMICS FOR CIVIL ENGINEERS. II; 2 cr. A very abbreviated course in the thermodynamics of gases and vapors and their application to the more important types of steam engines, gas engines, and boilers. Prerequisites: Physics 51, 52; Mathematics 54, 55. Required of junior civil engineers. Mr. Nelson.

100. SENIOR THESIS. I, II; 1-5 cr. May be elected by seniors in Mechanical Engineering.

105. STEAM AND GAS ENGINE CALCULATIONS. I; 2 cr. A course devoted to the calculations used in practice for determining size and the more important details of steam engines, boilers, condensers, cooling towers, etc. Problems are assigned and discussed and solved in the drawing room. Prerequisites: S. and G. 1 and 2, or 3 and 4. Required of senior mechanical engineers. Mr. Larson.

106. STEAM TURBINE CALCULATIONS. II; 2 cr. This study covers theory and elements of design of steam turbines, also practical problems relating to turbine operation. Prerequisites: S. and G. 1 and 2, or 3 and 4. Mr. Larson.

108. HEATING AND VENTILATING. I, II; 3 cr. The principles and the theory of modern systems of heating and ventilating buildings of various types, accompanied by problems involving the design and specifications for such systems. Prerequisites: S. and G. 1 and 2, 3 and 4, or 7. Mr. Larson.

109. INTERNAL COMBUSTION ENGINES. I; 2 cr. The theory and design of gas, gasoline, and fuel oil engines; also such details as carburetion, fuel injection, and ignition. Prerequisites: S. and G. 1 and 2, or 3 and 4. Mr. G. C. Wilson.

110. ADVANCED HEATING AND VENTILATING PROBLEMS. I, II; 3 cr. Special problems taken from heating and ventilating consulting practice. Prerequisite: S. and G. 108. Mr. Larson.

112. REFRIGERATION. II; 2 cr. The theory and principles of refrigeration, including a study of the selection of equipment, the design and specifications of systems, and the properties of various working substances. Prerequisite: S. andG. 2 or 4. Mr. L. A. Wilson.

114. THEORY OF HEAT TRANSFER. II; 2 cr. The theory and design of heat transfer apparatus. This covers heaters and condensers as well as cooling systems for motors or electric generators. Prerequisite: S. and G. 2 or 4. Mr. Larson.

180. SPECIAL READING PROJECT. I, II; 1-3 cr. This course covers some special problem. It may be a commercial investigation, a library study, or a combination of the two. Prerequisite: S. and G. 2 or 4.

LABORATORY COURSES

Mr. G. C. Wilson and Laboratory Instructors

22. ELEMENTARY TESTING. II; 2 cr. Calibration of instruments, valve setting, and the determination of the efficiencies and characteristics of simple heat engines. Gas and fuel analysis. Prerequisite: Registration in Steam and Gas 2. Required of juniors in mechanical engineering. Lab. fee $8.00. including laboratory manual.

23. Advanced Testing of Heat Engines. I; 2 cr. Continuation of course 22, covering more complex types of heat engines, including refrigeration machinery, steam turbines, boilers and power plants. Required of seniors in mechanical engineering. Lab. fee $6.00.

25. Elementary Testing. II; 2 cr. Calibration of instruments and the adjustments of simple heat engines. Also, the determination of the efficiencies, losses, and characteristics of simple heat engines, turbines, and internal combustion engines. Prerequisite: Registration in S. and G. 4 or 7. Required of juniors in chemical engineering. Laboratory fee $8.00, including laboratory manual.

26. Advanced Testing of Heat Engines. I; 1 cr. Continuation of course 25, covering more complex types of heat engines, including air compressors, refrigeration machinery, boiler plant, and Diesel engine tests; also air measurement. Required of seniors in chemical engineering. Laboratory fee $3.00.

28. Elementary Testing. II; 2 cr. Same as S. and G. 25. Prerequisite: Registration in S. and G. 4 or 7. Required of juniors in electrical engineering. Laboratory fee $8.00, including laboratory manual.

29. Advanced Testing of Heat Engines. I; 1 cr. Continuation of course 28, covering more complex types of heat engines including air compressors, refrigeration machinery, boiler plant, and Diesel engine tests. Gas and fuel analysis. Required of seniors in electrical engineering. Lab. fee $3.00.

124. Advanced Engineering Testing. II; 1 cr. Continuation of S. and G. 23. Special tests of heat engines, air compressors, gas producers and engines, power plants, and other commercial tests. Required of seniors in mechanical engineering. Prerequisite: S. and G. 23. Lab. fee $3.00.

127. Heat Engine Testing. I; 2 cr. Calibration of instruments, adjustment, determination of losses and efficiencies of heat engines, including the principal types of steam and internal combustion engines and including power plant and refrigeration plant tests. Prerequisites: S. and G. 7, or 3 and 4. Required of seniors in civil engineering. Lab. fee $8.00, including laboratory manual.

128. Heating and Ventilating Laboratory. II; 2 cr. Covers the calibration of heating and ventilating instruments, checking the efficiencies of ventilating systems and air conditioners, comparative tests of unit heaters, and a study of methods for determining air infiltration into buildings. Prerequisite: Completion of a beginning S. and G. laboratory course. Lab. fee $6.00.

130. Internal Combustion Engine Laboratory. II; 2 cr. The calibration and comparison of high speed pressure indicators, the study of air fuel mixtures, efficiency and power tests on motors including aeroplane and automobile engine tests with an electric dynamometer. Prerequisite: Completion of a beginning S. and G. laboratory course. Lab fee is $3.00 per credit.

151. Advanced Steam and Gas Problems. I; 1 to 3 cr. Research or practical problems which can be worked out in the Steam and Gas Laboratory. The student may select his own project and is allowed to work it out on his own initiative with periodic faculty conferences. Prerequisite: Completion of a beginning S. and G. laboratory course. Lab. fee is $3.00 per credit.

152. ADVANCED STEAM AND GAS PROBLEMS. II; 1 to 3 cr. May be a continuation of the project started in course 151 or it may be an entirely different project. The course covers similar problems worked out in the same manner as in S. and G. 151. Prerequisite: Same as for S. and G. 151. Lab. fee is $3.00 per credit.

200. GRADUATE RESEARCH. I, II; 3 to 5 cr. This course covers the major research projects which are carried on for credit toward advanced degrees. Prerequisite: Graduate standing in Engineering. Lab. fee is $3.00 per credit.

STRUCTURAL ENGINEERING

WILLIAM SPAULDING KINNE, B.S., *Professor of Structural Engineering, Chairman*

FREDERICK EUGENE TURNEAURE, C.E., D.Engr., *Dean of the College of Engineering*

WILLARD SHERWIN COTTINGHAM, B.S., *Instructor in Structural Engineering*

2. BRIDGE STRESSES. II; 4 cr. Simple bridge stresses. Four recitations. Prerequisite: Mechanics 1. Mr. Kinne, Mr. Cottingham.

3. BRIDGE DESIGN. I; 3 cr. Roof trusses and plate girders. Prerequisites: Struct. Engr. 2, Mechanics 3. Mr. Kinne, Mr. Cottingham.

4. BRIDGE DESIGN. II; 2 cr. Riveted and pin-connected trusses. Prerequisites: Struct. Engr. 2, 3. Mr. Kinne, Mr. Cottingham.

10. STRUCTURAL DESIGN. I, II; 2 cr. A short general course in the designing of roofs and buildings designed for students in mechanical, electrical, and mining engineering. Prerequisites: Mechanics 1, 3. Mr. Kinne, Mr. Cottingham.

105. REINFORCED CONCRETE. I; 3 cr. Principles of reinforced concrete construction; analysis and problems in design. Prerequisites: Mechanics 1, 3. Mr. Turneaure, Mr. Kinne, Mr. Cottingham.

106. REINFORCED CONCRETE. I; 2 cr. Design and analysis of reinforced concrete arches. Prerequisites: Mechanics 1, 3. Mr. Kinne.

107. BRIDGE STRESSES. I; 3 cr. Statically indeterminate structures. Analysis of swing, cantilever, arch, and suspension bridges. Prerequisites: Struct. Engr. 2. Mr. Kinne.

108. BRIDGE STRESSES. II; 2 cr. Advanced theory and experimental work. Secondary stresses in framed structures. Tests on bridges under moving loads. Prerequisites: Struct. Engr. 2, 107. Mr. Turneaure.

109. BRIDGE DESIGN. II; 2 cr. Swing bridges. Design of truss turntable, and operating machinery for railway swing bridges. Prerequisites: Struct. Engr. 2, 3, 4, 107. Mr. Kinne.

111. REINFORCED CONCRETE. II; 2 cr. Analysis and problems in design. A continuation of Struct. Engr. 105, which is prerequisite. Mr. Kinne.

112. HIGHWAY BRIDGES AND CULVERTS. II; 2 cr. Design and analysis of highway bridges and culverts. Elective for senior civil engineers and graduates in civil engineering. Prerequisites: Struct. Engr. 2, 3, 4, 105. Mr. Kinne.

213. SPECIAL PROBLEMS. I, II; 1 to 3 cr. Special problems in the analysis of higher structures. Mr. Turneaure, Mr. Kinne.

TOPOGRAPHIC ENGINEERING

RAY SPRAGUE OWEN, B.S., *Associate Professor of Topographic Engineering, Chairman*
FRANKLIN THOMPSON MATTHIAS, *Assistant in Topographic Engineering*
HARRISON FRANCIS THRAPP, *Assistant in Topographic Engineering*

1. ELEMENTARY SURVEYING. I; 2 cr. The work consists of the practice and theory of pacing, taping and leveling. Lab. fee $4.50. Mr. Owen, Mr. Thrapp.

2. ELEMENTARY SURVEYING. II; 2 cr. A continuation of course 1 including the field and office work of a variety of practical problems in the adjustment and use of the engineer's level, compass, and transit. Lab. fee $4.50. Mr. Matthias, Mr. Thrapp.

3. LAND SURVEYING. I; 3 cr. The field work consists of the adjustment and use of the transit, sextant, and plane table in problems relating to land surveying and the making of a city plat. In class the theory involved in above field work is covered, including effect on results, of lack of adjustment, and instrumental inaccuracies, and their elimination, also the methods used in original land and city surveys and resurveys. Practice is given in the computation arising from the common problems of land surveying. Special emphasis is placed on methods of computation and arrangement of data. The office work of platting the field notes and making finished maps follows the field work. Prerequisites: T. E. 2 and trigonometry. Lab. fee $3.00. Mr. Owen.

104. ADVANCED SURVEYING. II; 3 cr. Mining, topographic, and hydrographic surveying, stream gauging, and field astronomy. The classroom work includes the methods and computation relating to above subjects while the field work consists of solar and stellar observations, and topographic surveys, with finished maps. Prerequisite: T. E. 3. Lab. fee $4.50. Mr. Owen.

106. SUMMER SURVEY CAMP. Four weeks at the close of the school year are spent in the field and office practice while in camp at Devils Lake, Wisconsin. An area of several square miles is surveyed and mapped, based upon a careful triangulation with base line measurement. In addition students carry on both river and lake surveys, including the gauging of the Baraboo River, both by current and rod floats. The survey begins the week preceding Commencement and is required of all civil engineers. Prerequisite: T. E. 104 or its equivalent. (Six weeks with Railways 22.) Average cost to student $100.00 for six weeks, including fees, board, and spending money. Mr. Owen, Mr. Wesle, and instructors.

108. SHORT COURSE IN SURVEYING. I, II; 3 cr. Planned to meet the demands of electrical and mechanical engineering students for a general study of the subject, including the use of transit, level, and tape, and the principles of topographic, hydrographic, and land surveys, also the drawing of profiles and computation of areas. Prerequisite: Trigonometry. Reserved for sophomore electrical engineers the first semester. Open to all qualified students the second semester. Lab. fee $4.50. Mr. Matthias.

109. RAPID TOPOGRAPHY SUMMER CAMP. Adapted for training topographers for the United States Geological Survey. Practice is had in the use of the plane table in the sketching of topography. Prerequisite: T. E. 106. Registration and lab. fee $5.00 per credit.

COLLEGE OF AGRICULTURE

C. L. CHRISTENSEN, DEAN

PLAN OF THE COLLEGE

The work of the College is conducted on a three-fold basis. Each department aims:

First, to give instruction to students at the University;

Second, to develop science through investigation and experiment;

Third, to disseminate information among the farmers and farm women of the state by means of publications, farmers' courses, institutes, and the agricultural extension service.

The College of Agriculture is one of the general divisions of the University. Instruction in the general sciences, languages, and mathematics is given to agricultural and home economics students in the College of Letters and Science; but for the purely agricultural and home economics subjects, separate buildings, equipment, and staff of instructors are maintained. Students at this college have the same standing as students of other colleges and have the advantages incident to a large university, such as the general laboratories, libraries, and student organizations. Aside from the purely instructional work of the College, the facilities for research afford special opportunities for both regular and advanced students to secure a knowledge of the best methods in agriculture and home economics.

EQUIPMENT

BUILDINGS

The buildings occupied by the College of Agriculture are located at the west end of Observatory Hill. They have been erected and equipped with particular attention to the special needs of the work in the various departments.

The administrative offices of the College and Experiment Station, Agricultural Extension and Farmers' Institutes, lecture rooms, laboratories, and offices for several of the departments are located in Agricultural Hall. At the rear of the main building is a large wing which furnishes quarters for the library and reading room or the ground floor. The second and third floors are occupied by an auditorium with a seating capacity of 750, which is used primarily for general assemblies.

West of the main building is a group comprised of Hiram Smith Hall, the Dairy Laboratory, and the Mailing room.

The Soils Building, with greenhouses adjoining, provides lecture rooms and laboratories for the instructional and research work of the department, as well as offices for the instructional and research work of the department, as well as offices for the State Soil Survey.

The Horticulture and Plant Pathology Departments are located in the Horticultural Building, which, with the adjoining greenhouses, is provided with modern equipment for instruction and research in these subjects.

The Agronomy Building contains the offices of the department, a large grain judging room, laboratories for seed testing and inspection, grain curing, cleaning and storage of seed grains.

The Agricultural Engineering Building provides offices, lecture and drafting rooms, power and farm machinery laboratories, a laboratory for the smaller farm tools and implements, and a concrete construction laboratory.

The Departments of Agricultural Chemistry and Genetics are located in the Agricultural Chemistry Building. It contains large laboratories, and an assembly room with seating capacity of 400, in addition to special laboratories for advanced students and the chemistry laboratories of the Experiment Station, including those of the feed and fertilizer inspection service.

The Department of Home Economics is located in the Home Economics Building, where offices, classrooms, and laboratories are provided, and in the practice cottage where the work in household administration, house decoration, and dietetics has ample scope for practical solution. The department is provided with all the necessary furnishings and apparatus to give thorough instruction in the subjects of house sanitation, art and design, food preparation, dietetics, textiles, sewing, dressmaking, house decoration, and institutional economics.

The Live Stock Pavilion provides a large arena which is used for stock judging work and exhibition purposes. The pavilion has seating arrangements for 2,500 people. Beneath the amphitheater seats there are stalls for the housing of horses belonging to the University Farm. In addition to this there are offices, operating room, and dispensary for Veterinary Science.

The Poultry Building provides offices and classrooms. Pens of all of the important breeds are provided and practical instruction is given in all lines of poultry raising. A separate research poultry plant is maintained on an outlying portion of the University Farm. The Economic Entomology Department has a building by itself.

The University Farm buildings include barns for the horses, cattle, sheep, and swine as well as two large stock judging rooms. Other buildings are provided for storing farm machinery, silage, manure, and tobacco.

A group of small buildings formerly devoted to the manufacture of hog cholera serum is now being used for the testing of commercial serums and for investigational work in diseases of livestock.

LIBRARY

The Agricultural College Library includes about 30,000 bound volumes and 25,000 pamphlets relating to agriculture and home economics. This library is a part of the general University Library, but is kept in special quarters in Agricultural Hall, so as to be readily available to students in this College. It is especially strong in the files of scientific agricultural journals, both American and foreign, and the record books of pure-bred animals. A trained librarian and assistants are in attendance to aid students.

FARM LANDS

The College of Agriculture is provided with four farms, the University Farm, Eagle Heights Farm, Gregg Farm, and the Hill Farm, totaling about 846 acres of tillable land. These farms are operated to facilitate both instruction and research in agriculture.

LIVE STOCK

The University herds and flocks represent the principal breeds of dairy and beef cattle, draft-horses, swine, sheep, and poultry, including many individuals that are well-known prize winners.

COURSES OF INSTRUCTION

GRADUATE COURSES offer to advanced students opportunities for professional training and original investigation, made possible through an active Experiment Station, associated with numerous scientific laboratories. The special lines of study in agriculture and home economics are left largely to the selection of the student. Students may participate in experiments in progress and, after suitable experience, conduct independent investigations. When contributions to knowledge of permanent value are made they may be published through the bulletins with proper credit to the contributor.

LONG COURSE IN AGRICULTURE OR HOME ECONOMICS. These four-year courses leading to the degree of Bachelor of Science embrace general training in chemistry, physics, bioolgy, bacteriology, and other branches which have applications in agriculture or home economics. The field sare so broad, however, that it is impossible for the student to pursue in four years all the technical courses offered, in addition to acquiring the necessary fundamental studies, and hence much liberty of election is allowed.

MIDDLE COURSE IN AGRICULTURE, leading to the title of Graduate in Agriculture, consists of two full college years and is planned especially for those who wish greater specialization in agriculture with less of general scientific training.

COURSES FOR THE TRAINING OF TEACHERS. Graduates of the four-year courses in Agriculture or Home Ecoonmics who fulfill the special educational professional requirements will be entitled to receive a special license to teach agriculture, home economics, or the vocation of home making, and a general license to teach other subjects. See pages 279, 289, and 349 of this catalog.

SUMMER SESSION COURSES include work in agricultural bacteriology, agricultural chemistry, agricultural economics, agricultural education, agricultural engineering, agronomy, animal husbandry, dairying, plant pathology, poultry, soils, and home economics. The home economics work includes courses in art and design, millinery, food study and cookery, dietetics, research in nutrition, teaching home economics, sociological study of the family, and extension work.

SHORT COURSE IN AGRICULTURE. This course, consisting of two winter sessions of fifteen weeks each, is provided for those who can devote only a limited time to study and who, therefore, desire the greatest amount of directly useful knowledge that can be acquired in the brief time allowed. This course begins about November 15 and closes about March 15. An illustrated circular describing this course may be had on request to Prof. V. E. Kivlin, College of Agriculture, Madison, Wis.

WINTER DAIRY COURSE. This course is open to persons who have had at least six months' experience in a creamery or cheese factory and covers two terms of six weeks each, beginning about November 1. The course is designed to train creamery butter makers and factory cheese makers in the science and practice of their respective lines. Certificates are given to those who satisfactorily complete the full course and who have worked in a creamery or cheese factory for two seasons of not less than seven months each, one before and the other after the period spent in the Dairy Course. An illustrated circular describing this course in detail will be sent upon application to Prof. H. C. Jackson, College of Agriculture, Madison, Wis.

SUMMER DAIRY COURSE. This course is intended for beginners or those having little practical knowledge of creamery or dairy work. Students are admitted at any time during the spring and summer after March 1. They are expected to remain at least ten weeks, although they may continue the work longer, if desirable. Laboratory exercises and theoretical instruction are given as required.

EXTENSION COURSES GIVEN ON THE CAMPUS

FARMERS' WEEK. This is a popular course of addresses, demonstrations and exercises, covering a period of one week, designed to give busy farmers the most useful instruction and practice in the science of agriculture in the shortest possible time at a season when they can be away from home for a brief period. This course early in February, is given by the staff of the College of Agriculture, assisted by other speakers. Programs may be had upon application to Prof. K. L. Hatch, College of Agriculture, Madison, Wis.

WOMEN'S WEEK IN HOME ECONOMICS. This course for one week is designed to give women practical and helpful instruction in the various phases of home economics. The plan of instruction includes lectures and demonstrations in all phases of home management. The course is held at the same time as the Farmers' Week to afford an opportunity for farmers' wives and daughters to attend. Detailed information will be furnished upon request to Prof. Abby L. Marlatt, Department of Home Economics, Madison, Wis.

SPECIAL DAIRY COURSE. This is a one-week course of lectures, conferences, and demonstrations, designed to meet the needs of creamery and cheese factory operators and managers, and give them advanced instruction in connection with problems of management of their establishment as well as to inform them on recent advances in the science of dairying. The course is held at the time of the Farmers' Week. A special course for Cow Testing Association men is held at the same time. Detailed programs may be secured upon application to Prof. H. C. Jackson, College of Agriculture, Madison, Wis.

YOUNG PEOPLE'S WEEK. A week's course of lectures, demonstrations, and exercises which are of interest to farm boys and girls is held each year during Commencement week. Those who have won scholarships in Boys' and Girls' Club Work, pursue this course. Each day, special classes for the girls in attendance will be held at the Department of Home Economics. For further information, address Prof. T. L. Bewick, College of Agriculture, Madison, Wis.

RURAL CHURCH SUMMER SCHOOL. A course of lectures, discussions and demonstrations is held during the first two weeks of the University Summer Session. It is especially designed to be of service to town and open-country ministers and includes the entire field of rural social and economic work. For information and circular write Prof. J. H. Kolb, College of Agriculture, Madison, Wis.

AGRICULTURAL EXPERIMENT STATION

As the Wisconsin Agricultural Experiment Station is organically associated with the College of Agriculture, members of the college faculty constitute the staff of the Station. The purpose of the Station is the promotion of agricultural science by research and experimentation, and funds for the work come from both state and federal appropriations. Each of the several departments has research continually in progress, some members of the staff devoting the major portion of

their time to investigations dealing with the problems of the farmer. As far as facilities permit, the subjects selected for research are those of greatest practical importance to Wisconsin farmers.

The publications of the Experiment Station include an annual report and a series of popular bulletins, research bulletins, and poster bulletins. Popular bulletins, including helpful discussions on results of experiments, are issued in editions of 20,000 to 50,000 copies and are distributed free to residents of the state upon application; the research bulletins contain technical data and discussions not designed for wide distribution and are sent to libraries, investigators, etc. Apply for the popular bulletins to Chris L. Christensen, Director, Madison, Wis.

AGRICULTURAL EXTENSION SERVICE

The extension work of the College of Agriculture is organized to co-ordinate and extend departmental service among Wisconsin farmers, and farm women, spreading and disseminating information gathered in laboratory and field plot. Under this service three lines of work are carried on:

1. Field demonstration work of the several departments.

2. The county agricultural or home demonstration agent system in which a resident instructor is located in a county.

3. Collective extension instruction given in connection with the farmers' weeks and women's schools, demonstration trains, etc.

Through such instruction and practical demonstrations many thousands of rural people who are unable to come to Madison for resident instruction are aided directly by the College. Many of the extension activities are organized on the project basis, and are partly supported by federal funds. This work is in home economics as well as in the field of agriculture. For printed matter and other information regarding this work, apply to K. L. Hatch, Associate Director.

FARMERS' INSTITUTES

The Department of Farmers' Institutes of the College of Agriculture is maintained by a legislative provision which appropriates $30,000 annually for the purpose of conducting Farmers' Institutes at various places throughout the state. In the year July 1, 1928 to July 1, 1929, 574 two-day and one-day institutes and single session meetings were held. The Department also held 95 special farmers' co-operative marketing institutes, with consideration of such commodities as American cheese, foreign cheese, butter, and eggs.

Persons desiring institutes in their communities should write to E. L. Luther, Superintendent, for application blanks and other information.

ORGANIZATIONS

Several societies maintained by the agricultural students meet frequently to discuss questions related to their special interest. These organizations are for drill in parliamentary practice and training in debate, as well as for the discussion of scientific and practical questions. The Euthenics Club is an organization of students in Home Economics to promote intellectual and social intercourse and stimulate greater interest in vital problems of the day. The Saddle and Sirloin Club is a student organization of those interested in animal husbandry; the Grafter's Club for those interested in horticulture; and the Apis Club for students of entomology.

An Agricultural Experiment Association with a paid membership of about 1,000 is maintained for the purpose of co-operating with the College and Experiment Station in advancing the agriculture of the commonwealth. By means of this organization, the members of which are located in all sections of the state, the College is in close touch with the great body of Wisconsin farmers.

A chapter of the national honorary agricultural fraternity, Alpha Zeta, and a chapter of the national honorary home economics sorority, Omicron Nu, are maintained by faculty and student members. The students publish a monthly magazine, *The Country Magazine,* under the direction of the Department of Agricultural Journalism.

ADMISSION REQUIREMENTS

The general requirements for admission are set forth in Part III of this announcement, beginning with page 33.

STUDENT EXPENSE

Fees, tuition, personal expenses, scholarships, loan funds, self-support, etc., are discussed in Part II of this announcement, beginning with page 15.

FEES AND TUITION IN SPECIAL COURSES

	Lab. Fee and Deposit	Non-resident Tuition	General Fee
Short Course—three terms of five weeks each, per term	4.50	17.22	3.34
Infirmary fee, per three terms			2.50
Gymnasium fee, per three terms			1.50
Memorial Union fee, per student			1.00
Winter Dairy Course—twelve weeks	13.00	41.33	9.50
Summer Dairy Course—five weeks	7.00	17.25	6.00

CURRICULA IN AGRICULTURE

Students of the Long and Middle Courses must take 16 to 18 credits each semester, exclusive of military science, physical education, or band instruction, except during the first semester of the freshman year, when only 14 credits are required. Electives may be added to make a total of 20 credits, provided the student has received a grade of at least B in each subject for the preceding semester. All students, including seniors, must carry at least 16 credits each semester unless excused by the Executive Committee. Before being graduated from either of these courses, the student must have had farm experience satisfactory to the department in which he majors.

THE LONG COURSE

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (AGRICULTURE)

The general requirement for graduation in the Long Course is 133 credits and 133 grade-points in addition to convocation and military science, physical training, or band instruction. At the beginning of the sophomore year the student chooses as adviser a member of the department in which he expects to major.

Students in the Long Course who wish to qualify for the University Teachers' Certificates are referred to page 289 for a statement of the requirements.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
Math. 71—Mathematics for agricultural students	4	Botany 1—General botany	5
An. Husb. 1—Elem. livestock judging, or	3	Agron. 1—General farm crops	3
Agron. 1—General farm crops	(3)	or	
Convocation	0	An. Husb. 1—Elem. livestock judging	(3)
Physical activity requirement	0	Physical activity requirement	0
	15		16

Students will elect their animal husbandry or agronomy in the first semester and the alternative subject in the second semester. Upon approval of the Executive Committee, a student may substitute for Mathematics 71 some other course in mathematics.

SOPHOMORE YEAR

Agr. Bact. 1—General survey	5	Agr. Econ. 1—Principles of agr. econ.	3
Soils 1—Soil fertility	5	—or— Agr. Chem. 1, 2—Agr. chemistry and analysis	5
Econ. 1a—General economics	4	Agricultural option	3
Agricultural option	3	Botany 146, Physiology 3, or substitute	4
Electives	1-6	Electives	1-8
Physical activity requirement	0	Physical activity requirement	0
	16-18		16-18

Students majoring in the following departments will take the following subjects instead of Botany 146 or Physiology 3:

Agricultural Economics, Rural Sociology, Dairy Husbandry—Economics 1b.
Agricultural Journalism—Rural Sociology 25.
Agricultural Engineering—Advanced mathematics.
Agricultural Education—Three credits in the Department of Education.

JUNIOR YEAR

Science or mathematics	5	Science or mathematics	5
Electives in College of Letters and Science	5	Electives in College of Letters and Science	5
Major and electives	6-8	Major and electives	6-8
	16-18		16-18

SENIOR YEAR

Major and electives	16-18	Major and electives	16-18

The ten credits of chemistry, zoology, physics, geology, geography, botany, physiology or mathematics in addition to that of the freshman year, as shown in the junior year, are taken outside the College of Agriculture, and are to be fundamental to the major.

The 10 credits of electives in the College of Letters and Science shall include a minimum of 5 credits in language (German, French, Italian, Spanish), English, philosophy, psychology, sociology, political science or history.

Each student shall complete a minimum of 50 credits in the College of Agriculture, including required agricultural courses, options, majors and electives.

The major consists of a minimum of 15 or a maximum of 25 elective credits in a department, but certain courses outside a given department may be counted in the major if reported in advance to the faculty. A thesis, if required, must represent some phase of the students work in the field of his major, for which a total of 4 credits will be allowed.

AGRICULTURAL OPTIONS

Sophomores in the Long Course must choose two courses from the following group. Only one subject in a given department can be counted as an option in meeting this requirement, but subjects not chosen as options may later be taken as electives.

Agr. Engr. 1—Land surveying and drainage	3	Dairy 1—Introduction to dairying	3
Hort. 1—Principles of fruit growing	3	Hort. 3—Vegetable gardening	3
Poultry 1—Poultry raising	3	Econ. Ent. 1—Farm insects	3
Vet. Sci. 1—The animal body	3	Agr. Engr. 5—Farm field machinery	3

THE MIDDLE COURSE

LEADING TO THE TITLE OF GRADUATE IN AGRICULTURE

This course is designed to meet the needs of students who have had a high-school training but who cannot spend more than two years at the university. Requirements for admission are the same as for the Long Course.

The total requirements for graduation in the Middle Course are 64 credits and 64 grade-points. All Middle Course students are required to take convocation and two full years of physical training, military science, or band instruction.

A maximum of ten elective credits may be taken outside the College of Agriculture. Subjects of the Long Course taken in the College of Letters and Science and not required in the Middle Course are considered electives outside the College of Agriculture.

Students taking the Middle Course and desiring to transfer to the Long Course must be prepared to spend more than the usual four years in order to complete the requirements.

This course gives the maximum opportunity for choosing work for a vocational objective. Students should have an objective in mind when entering the course and plan their work so prerequisites may be taken for all courses desired. Early in the first semester the Assistant Dean should be consulted concerning objectives and future courses desired. Dairy manufacturing, poultry, animal husbandry, horiculture, or farm crops are usual fields of specialization, but others may be made.

FRESHMAN YEAR

	Credits		Credits
Engl. 1a—Freshman composition	3	English 1b—Freshman composition	3
Chemistry 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
Elective	6	Electives	8
Convocation	0	Physical activity requirement	0
Physical activity requirement	0		
	14		16

SOPHOMORE YEAR

Electives	17	Electives	17
Physical activity requirement	0	Physical activity requirement	0
	17		17

CURRICULA IN HOME ECONOMICS

ABBY L. MARLATT, DIRECTOR, PROFESSOR OF HOME ECONOMICS

The Department of Home Economics offers courses dealing with the principles underlying the proper management of the home, the care of children, the hygienic and sanitary conduct of institutions, and the economic conditions affecting the work of women. The courses are planned to meet the needs of four classes of students:

1. Those who desire a general knowledge of the subject matter of home economics as part of a general education. A wide range of electives in Letters and Science is possible in the general course. Home Economics may also be taken as a minor with the major leading to a B.A. degree.

2. Those who desire to make a detailed study of home economics in preparation for a professional career other than teaching.

3. Those who wish to teach home economics in secondary schools, vocational schools, extension courses, and institutions of higher learning.

4. Graduate students who have the requisite knowledge to benefit by research work in subjects connected with the home.

GENERAL REQUIREMENTS

The degree of Bachelor of Science, Home Economics Course, is conferred upon those who complete a four- or five-year major in home economics. A total of 120 credits and 120 grade-points is required for graduation, or 124 credits when a teachers' certificate is desired. Two years of physical education are also required. Sixteen credits exclusive of physical education may be elected each semester, with the privilege of increasing to 18 credits provided the student has received a grade of B or higher in each subject for the preceding semester. All students, including seniors, must elect a schedule of at least 14 credits each semester, unless given permission by the Executive Committee to carry a reduced schedule.

At least 8 credits in foreign language beyond beginning courses are required of all students except those entering with 4 high-school units in one language or a total of 5 units in two languages. Students entering with 2 or more units of a foreign language are expected to continue that language for 8 credits, but such students desiring to change to another language or those entering with less than 2 units are required to take 16 credits in one foreign language, the first 8 credits of which are counted as electives.

In the Course in Home Economics a student must have at least 25 grade-points and 25 credits before she may become a sophomore, at least 58 grade-points and 58 credits before she may become a junior, and at least 88 grade-points and 88 credits before she may become a senior.

No student who does not earn at least one grade-point per credit during the last two semesters of residence will be recommended for a degree.

All students entering the College of Agriculture with advanced standing of two or more credits in Home Economics are not required to take Home Economics 9, 1 credit.

A student given partial credit by the Advanced Standing Committee in any required subject, and who shall complete a more advanced required course in some other department for which the partially credited course is a prerequisite, shall be permitted to substitute electives to make up deficiencies in credits in the required course.

MAJORS

The requirements for a major in Home Economics are not less than 18 nor more than 40 credits in strictly home economics subjects. A minimum of 12 credits or a maximum of 32 in strictly home economics subjects, inclusive of the thesis, may be taken during the junior and senior years. Home Economics 2, 9, and 109 are general courses in art and on the family, required of all majors in Home Economics. They are not counted in either the minimum or maximum credits for the major, but are included in the 120 required for graduation. The teachers' courses, 52, 53, 158, and 194, may be elected and counted not only toward the 120 required for graduation, but also as part of the 124 credits necessary for receiving the University Teachers' Certificate; they are not, however, considered as home economics electives.

The majors which lead to professional work in the field of home economics are: (1) teaching in home economics, (2) food major—either hospital dietitian or institutional management, (3) textile major, (4) applied bacteriology major, (5) nursing or hospital administration major, (6) major in related art. There is also a non-professional course which allows a wide latitude in the choice of a major.

THESIS

All candidates for a degree are required to present a thesis. A thesis must represent original work upon some subject which has been arranged after consultation with the student's adviser and the head of the department in which the work is done. On the advice of the major professor, course 80 may be taken for 4 credits to count as a thesis substitute, and at her direction the finished typewritten report may be deposited in the University Library as a thesis or retained in the departmental office.

MINORS FOR LETTERS AND SCIENCE STUDENTS

A minor in Home Economics is not less than 10 or more than 20 credits in home economics subjects. The following may be elected:

(1) The minor in foods must include Home Economics 1a-b, and other related courses, such as 47, to make 10 to 20 credits. The teaching minor includes Home Economics 52.

(2) The minor in clothing and textiles must include Home Economics 2, 5, 10, 11, and other courses to complete 15 credits. The textile teaching minor may include courses 2, 5, 10, 11, 50, 97, 52, 53, and other vocational and related courses to make 20 credits.

(3) The minor in housing problems is intended to be taken with a major or minor in sociology so that those intending to do the work of sanitary inspector, visiting housekeeper, or visiting teacher, or other social welfare work, will have a broad foundation knowledge of the fundamental problems in housing conditions as well as fundamentals in home and budget making for a family. This minor includes Home Economics 1a, 1b, and other related courses.

(4) The minor in related art is intended to be taken by home economics general majors, majors in home economics journalism, and majors in Industrial Education and Applied Arts. A minor in related art must include courses elected from the following list to complete 15 credits: Home Economics 2, 12, 8, 18, 20, 93, 94, 95, 114, 116, 121, 194.

NON-PROFESSIONAL COURSE IN HOME ECONOMICS

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (HOME ECONOMICS)

This course is planned for students who do not wish to be trained in the professional home economics majors, and therefore is less severely technical and allows a more liberal choice of electives. Science requirements and required credits in home economics are greatly reduced; but, on the other hand, a student may elect much more freely in any college after she has taken certain fundamental home economics subjects.

The same number of credits are required for graduation in the General Course in Home Economics as for the Bachelor of Arts degree. Students are expected to earn 14 to 16 credits per semester, making an average of 30 credits per year, or 120 credits and 120 grade-points for the course. In addition the student is required to take physical education during the first two years, and convocation is required for the first half of the first semester of the freshman year.

From 48 to 58 credits may be chosen by the student in any college in addition to the 10 credits which she is required to elect in the College of Letters and Science. Not more than 22 of these credits may be elected in home economics subjects, such election being dependent on having selected the necessary prerequisites. It is wise to select electives with a definite goal in mind so that at graduation intensive study will have been made in some one subject or related subjects.

General majors interested in becoming costume designers, interior decorators or textile designers should, in addition to the fundamental courses offered in Home Economics, avail themselves of the opportunities offered in the Departments of Art History and Art Education.

If the student taking the non-professional course elects carefully in the courses in education and psychology during her undergraduate work, she may enter as a graduate student qualifying for nursery school teaching.

To make such plans it is desirable that the student plan the desired electives with her faculty adviser as early as possible in the sophomore year. The required work of this general major is as follows:

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Foreign language (second year)	4	Foreign language (second year)	4
Chem. 1a—General chemistry	5	Home Econ. 3—Introduction to food study	3
Home Econ. 9—Introduction to home economics	1	Chem. 1b—General chemistry	5
Home Econ. 2—Art and design	3	Physical education	0
Convocation	0		
Physical education	0		
	16		15

In addition to 10 credits of chemistry, 4 to 6 credits of science are required during the freshman and sophomore years, to be selected from the list below. Upon approval of the Executive Committee a student may substitute one of these optional sciences for Chemistry 1b.

Agr. Bact. 4—Household bacteriology... 5	Physiol. 1—Elements of human physiology 4
Agr. Chem. 3—Household chemistry..... 5	
Physics 65—General physics 6	

SOPHOMORE YEAR

Engl. 30 or 33—English literature.....3-2	Electives 15
Home Econ. 5—Introduction to textile study 3	Physical education 0
Electives 10	
Physical education 0	
15-16	15

JUNIOR YEAR

Home Econ. 7—House architecture and sanitation 2	Electives 15
Home Econ. 17—House architecture lab. 2	
Electives 11	
15	15

SENIOR YEAR

Home Econ. 80 or 100..... 2	Home Econ. 80 or 100..... 2
Home Econ. 110—Household administration 2	Home Econ. 109—Humanics..... 4
Home Econ. 112—Household admin. lab. 2	Electives 9
Electives 9	
15	15

PROFESSIONAL COURSES IN HOME ECONOMICS

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (HOME ECONOMICS)

The professional majors are six in number and are as follows:

1. The general professional major (see page 278) may be taken as a teaching major for secondary or vocational schools, for home economics extension, general home economics commercial consultant, and for all professional types of work where foods, clothing and textiles, household administration, etc., are needed as a preparation;
2. Professional majors in foods (see page 280) leading to positions as hospital dietitians or in institutional management;
3. Clothing and textiles (see page 281);
4. Related art (see page 282);
5. Applied bacteriology (see page 282);
6. Nursing or hospital administration major (see page 283).

These majors are technical in nature with a large background of science. The first two years are common to all professional majors and are as follows:

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Foreign language (second year)	4	Foreign language (second year)	4
Chem. 1a—General chemistry	5	Chem. 1b—General chemistry	5
Home Econ. 9—Introduction to home economics	1	Home Econ. 3—Introduction to food study	3
Home Econ. 2—Art and design	3	Physical education	0
Convocation	0		
Physical education	0		
	16		15

SOPHOMORE YEAR

Physics 65—General physics	3	Physics 65—General physics	3
Home Econ. 5—Introd. to textile study	2	Home Econ. 50—Textiles	3
Agr. Chem. 3—Household chemistry	5	Agr. Bact. 4—General survey	5
Physiol. 1—Elements of physiology*	4	Electives	4
Elective	2	Physical education	0
Physical education	0		
	16		15

*Five-year nursing course majors should substitute Physiology 4, six credits.

GENERAL PROFESSIONAL MAJOR

The junior and senior years of this major offer the possibility of 30 elective credits if the high-school language is continued, giving in four years 36 free electives out of 120 credits required for the Bachelor of Science degree. This major may be taken as a general education, or may be directed towards teaching, extension, commercial work, social welfare, home economics journalism, etc. The requirements of the junior and senior years are as follows:

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 6—Nutrition and dietetics	2
Home Econ. 7, 17—House architecture and sanitation	4	Home Econ. 16—Dietetics laboratory	2
Home Econ. 10—Clothing economics	2	Home Econ. 18—House decoration laboratory	2
Home Econ. 20—Costume appreciation and selection	2	Home Econ. 11—Problems in clothing construction	3
Electives	4	Electives	6
	15		15

SENIOR YEAR

Home Econ. 110, 112—Household administration	4	Home Econ. 109—Humanics	4
Home Econ. 80 or 100	2	Home Econ. 80 or 100	2
Electives	10	Electives	10
	16		16

TEACHING HOME ECONOMICS IN HIGH SCHOOLS AND GRADES. For the high-school teaching major in home economics a total of 124 credits and 124 grade points is required for graduation. It is desirable that electives be grouped for a definite purpose such as a teaching minor in addition to the home economics teaching major. Teaching minors may be chosen in the various departments; a minor varies from 10 to 20 credits of work chosen for a distinct purpose in a single department. The following minors have proved very satisfactory in connection with a home economics teaching major: chemistry, bacteriology, mathematics, modern language, physiology, physics, sociology, journalism, education. Students in the sophomore year should discuss the matter of majors in home economics and minors in other departments with their faculty advisers.

REQUIREMENTS FOR TEACHERS' CERTIFICATES. Students receiving the degree in the home economics professional major and taking additional work in education to make 124 credits for graduation, will receive the degree of Bachelor of Science (Home Economics and Education) and will be entitled to receive the University Teachers' Certificate upon recommendation of fitness by the Department of Home Economics and upon completing as a part of their elective work the following courses: Education 31, Principles of education, 3 credits; Educ. Psych. 75, Psychology and practice of teaching, 5 credits; Home Economics 52, 4 credits; elective in the Department of Education, 3 credits; making a total of 15 credits. Home Economics 53, Clothing methods, is also required of all candidates for the University Teachers' Certificate who are planning to teach clothing.

Students entering with advanced standing in Home Economics 52 must take Home Economics 158; credit in Home Economics 52 is required of all. Persons not desiring to qualify for a teachers' certificate but wishing a general course in home economics may omit the teacher training courses.

Students desiring to qualify for the University Teachers' Certificate should register with the Director of the School of Education during the first semester of the junior year. They will find it advantageous to select an additional subject in which they may qualify under the head of a minor, so that when they are placed in small high schools they will be equipped to teach not only their major subject of home economics, but also a minor subject. A suggested list of minors includes mathematics, English, modern language, history, Latin, physiology, physics, chemistry, botany, and biology. The selection of a minor should be made as early in the course as possible so that the free electives may be utilized to best advantage.

VOCATIONAL SCHOOL CERTIFICATE. Upon completion of a course of training in a professional major, including the 15 credits for the teachers' certificate and summer school courses in vocational education, and upon recommendation of fitness by the Department of Home Economics, the student will be certified to the State Board of Vocational Education, which, on approval of the student's record, will issue a certificate as instructor in vocational courses in homemaking.

In addition to the four-year course, the candidate for the teachers' certificate in vocational education is expected to have practical experience in house management; therefore between the junior and senior years the student should spend the vacation period in practical home management, reporting details of the work to the instructor in charge of the household administration class. Study of standards is provided at the practice cottage, which is a laboratory in connection with the Home Economics Department.

EXTENSION IN HOME ECONOMICS. The extension major in home economics follows the general plan of the teaching major, substituting for the required courses in education electives in psychology, rural sociology, agricultural journalism and agricultural economics.

A suggested minor in agriculture is as follows: 10 credits to be chosen from Rural Sociology 25, 126; Agricultural Journalism 8, 111; Horticulture 3, 8; Agricultural Education 5; Economic Entomology 1, Poultry Husbandry 1.

COMMERCIAL CONSULTANT IN GENERAL HOME ECONOMICS. A student who wishes to become a commercial consultant in this field should include in her four-year course at least 10 credits of electives in economics, sociology, or journalism, as a preparation for work with public utilities, food companies, newspapers, magazines, etc.

SOCIAL WELFARE WORK. If a home economics graduate plans to enter social welfare work, she should elect a minor in sociology which includes Economics 1a and two courses from each of the following groups to make a total of 15 credits:

Group A—Sociology 1, 139, 172, 197
Group B—Sociology 2, 141, 161, 177

HOME ECONOMICS JOURNALISM. To prepare for newspaper writing on home economics subject matter the electives taken with the general professional major requirements may be Agricultural Journalism 8, 106, 111; Journalism 123.

MAJOR IN FOOD AND NUTRITION

The major in food and nutrition is planned to meet the demands for trained dietitians in hospitals, Red Cross nutrition service, child health workers in social welfare associations, consultant dietitians in medical clinics, dietitians in cafeterias, tea rooms, and public schools, and research assistants in experiment stations. The schedule for the first two years is found on page 278.

In the first semester of the junior year majors in institutional management will take Home Economics 22 for 2 credits. Hospital dietitians are advised to elect Chemistry 20 and 21 in the first or second semester of the junior year and Physiological Chemistry 104 in the senior year or the summer session. Those wishing to teach should elect two additional clothing courses and the required education courses in the junior year.

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 6—Nutrition and dietetics	2
Home Econ. 7, 17—House architecture and sanitation	4	Home Econ. 16—Dietetics laboratory	2
Electives	8	Electives	11
	15		15

SENIOR YEAR

HOSPITAL DIETICIAN

Home Econ. 110, 112—Household administration	4	Home Econ. 109—Humanics	4
Home Econ. 125—Dietotherapy	3	Home Econ. 80 or 100	2
Home Econ. 80 or 100	2	Home Economics elective or Chemistry	2
Home Economics elective or Chemistry	2	Free electives	7
Free electives	4		
	15		15

INSTITUTIONAL MANAGEMENT (124 CREDITS)

The institutional major elects fewer science courses and more economic and sociology courses, with applied economic work along food, marketing, and equipment studies. The total credits are the same as for the teaching major.

Home Econ. 110, 112—Household administration	4	Home Econ. 109—Humanics	4
Home Econ. 134—Institutional equipment and furnishing	2	Home Econ. 133—Tea room and restaurant management	3
Home Econ. 80 or 100	2	Home Econ. 122—Organization and administration of institutions	2
Electives	8	Home Econ. 80 or 100	2
		Electives	5
	16		16

MAJOR IN CLOTHING AND TEXTILES

The following schedule in the major in clothing and textiles is planned to meet the needs of the student who expects to teach clothing and textiles. Students who elect a minor in sociology may prepare themselves for social work and those wishing to go into store work may elect courses in economics and salesmanship which will fit them for such positions. Those preparing for costume design work should take added courses in fine and applied arts and history.

Students without teaching experience should take two food courses to prepare for general home economics teaching.

Home Economics electives are to be selected from the following courses: 1a, 20, 32, 96, 103, 104, 106.

JUNIOR YEAR

Home Econ. 7, 17—House architecture and sanitation	4	Home Econ. 8—House decoration	2
Home Econ. 10—Clothing economics	2	Home Econ. 18—House decoration lab	2
Electives	9	Home Econ. 11—Problems in clothing construction	3
		Electives	8
	15		15

SENIOR YEAR

Home Econ. 110, 112—Household administration	4	Home Econ. 109—Humanics	4
Home Econ. 53—Clothing methods	2	Home Economics electives	2
Home Econ. 80 or 100	2	Home Econ. 80 or 100	2
Home Econ. 97—Advanced clothing construction	2	Free electives	7
Free electives	5		
	15		15

MAJOR IN RELATED ART

The related art major includes courses in home furnishing, costume design, applied design, clothing and foods. It gives preliminary training for commercial positions as advisers in home furnishing departments, as editors of women's sections in magazines and papers, as professional costume designers (after further art training), and as interior decorators and furnishers. *This is not a teaching major for grades or high schools.*

Students preparing for editorial work should elect a journalism minor; those preparing for professional costume designing should elect additional courses in clothing and in applied arts; and those preparing for interior decorating and house furnishing work should elect Home Econ. 114, Studies and practice in interior decorating and furnishing, 2 credits, and Home Econ. 116, Seminary in interior decorating and furnishing, 4 credits.

All students in this major should elect Art Education 50 and 51, Freehand drawing, 6 credits, during the sophomore or junior year. In the senior year four credits in advanced courses in foods or clothing must be taken.

JUNIOR YEAR

Home Econ. 7, 17—House architecture	4	Home Econ. 8, 18—House decoration	4
Home Econ. 20—Costume appreciation and selection	2	Home Econ. 94—Advanced applied design	3
Home Econ. 95—Hand loom weaving	1	Electives	9
Electives	8		
	15		16

SENIOR YEAR

Home Econ. 110, 112—Household administration	4	Home Econ. 109—Humanics	4
Home Econ. 80 or 100	2	Home Econ. 80 or 100	2
Electives	9	Electives	9
	15		15

MAJOR IN APPLIED BACTERIOLOGY

Students may include beyond their sophomore year, see page 278, such detailed work in applied bacteriology as will equip them to become bacteriological technicians in the various laboratories maintained in connection with municipal water and sewage plants, manufactories of biological products, and milk plants, as well as with public health laboratories, hospital laboratories, private laboratories, in physicians' offices, and in laboratories in connection with public and private sanatoria. There is a demand for such technicians, and many of the home economics graduates have found the work both attractive and stimulating. The major consists of a minimum of 19 credts, including the required course in bacteriology and the thesis. Electives may be chosen from the following:

Agr. Bact. 125—Food bacteriology	3	Agr. Bact. 121—Dairy bacteriology	3
Agr. Bact. 124—Bacteriology technique	3	Agr. Bact. 200—Research	2
Agr. Bact. 200—Research	2	Agr. Bact. 231—Seminary	1
Agr. Bact. 231—Seminary	1	Agr. Bact. 100—Thesis	2
Agr. Bact. 100—Thesis	2	Vet. Science 126—Infection and immunity	3
Path. 102—Medical bacteriology	5	Zool. 119—Animal parasites	3
Zool. 111—Micro-technique	3		

JUNIOR YEAR

Home Econ. 4—Problems of food supply	3	Home Econ. 6—Nutrition and dietetics	2
Home Econ. 7, 17—House architecture and sanitation	4	Home Econ. 16—Dietetics laboratory	2
Electives	9	Electives	12
	16		16

SENIOR YEAR

Home Econ. 110, 112—Household administration	4	Home Econ. 109—Humanics	4
Electives	12	Chem. 113—Water analysis	1
		Electives	11
	16		16

NURSING OR HOSPITAL ADMINISTRATION MAJOR

The five-year combined course in home economics and nursing leads to the degree of Bachelor of Science (Home Economics) and to the Certificate of Graduate Nurse. The requirements are as follows:

FRESHMAN AND SOPHOMORE YEARS

Students take the required work as outlined for the general professional majors on page 278, except that English 33a for 2 credits and Psychology 1 for 3 credits take the place of electives in the sophomore year.

JUNIOR YEAR

Home Econ. 7 and 17—House architecture and sanitation	3	Home Econ. 6—Nutrition and dietetics	2
Home Econ. 47—Diet problems in feeding children	3	Home Econ. 16—Dietetics laboratory	2
Engl. 33b—Introduction to English literature	2	Home Econ. 22—Marketing and large quantity cookery	2
Nursing 1—Elementary principles	2	Home Econ. 133—Tea room and restaurant management	3
Electives	5	Electives	7-8
	15		15-16

Either Anatomy 120 or Physiology 4 must be elected during the junior year.

Following the junior year in the College of Agriculture, the professional course consists of 27 months in residence in the Nurses' Dormitory. During this period the student has instruction in medicine, surgery, and principles of nursing, ward practice in the wards and out-patient department of the hospital, and practical training in public health nursing. The resident course is divided into four half years of academic and professional education and three additional months of special training. In each half year there are one semester of four months of academic and ward work, six weeks (52 hours per week) of ward or field work, and two weeks of vacation. A complete outline of this work may be found under School of Nursing, page 340.

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters

I—course given during the first semester

II—course given during the second semester

I, II—semester course given each semester

cr.—number of credit hours per semester

*—to be arranged

Courses numbered from 1 through 100 are open for credit to under-graduates only; from 101 to 199 to both undergraduates and graduates; over 200 to graduates only, or very exceptionally to advanced undergraduates.

AGRICULTURAL BACTERIOLOGY

EDWIN GEORGE HASTINGS, M.S., *Professor of Agricultural Bacteriology, Chairman*
EDWIN BROWN FRED, Ph.D., *Professor of Agricultural Bacteriology*
WILLIAM DODGE FROST, Ph.D., D.P.H., *Professor of Agricultural Bacteriology*
IRA LAWRENCE BALDWIN, Ph.D., *Associate Professor of Agricultural Bacteriology*
ELIZABETH MCCOY, Ph.D., *Assistant Professor of Agricultural Bacteriology*
MILDRED A. ENGELBRECHT, M.S., *Instructor in Agricultural Bacteriology*
HARRY EDWIN SAGEN, M.S., *Instructor in Agricultural Bacteriology*

Students majoring in this department may take Medical Bacteriology 102 or 104 or Veterinary Science 126, and count five of these credits toward the major requirement.

1. GENERAL SURVEY OF BACTERIOLOGY. I; 5 cr. The relation of micro-organisms to soil fertility, to animal diseases, and to food. Prerequisite: Chemistry 1a. Required of all agricultural students. Lab. fee $6.75. Mr. Baldwin, Mr. Sagen.

2. GENERAL SURVEY. II; 4 cr. The relation of micro-organisms to chemical transformations, especially as regards their relation to water, food, sewage disposal, and industrial processes. For chemistry course students. Prerequisite: Chemistry 1b. Lab. fee $6.75. Mr. Baldwin, Mr. Sagen.

4. GENERAL SURVEY. II; 5 cr. Survey of bacteriology with special emphasis on the relation of micro-organisms to foods and domestic sanitation. One out-of-town class trip taken. Prerequisite: Chemistry 1a. Required of students in home economics. Lab. fee $6.75. Mr. Frost, Miss Engelbrecht.

100. THESIS. Yr; 2 cr. A definite problem in dairy, soil, or household bacteriology or in animal diseases. Prerequisites: Agr. Bact. 1, 2, or 4, and consent of instructor. Lab. fee $2.25 per lab. cr. Staff.

121. Dairy Bacteriology. II; 3 cr. The bacteriology of milk production and distribution and of dairy manufacturing. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee $4.50. Mr. Hastings.

123. Soil Bacteriology. II; 3 cr. The relation of micro-organisms to soil fertility. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee $4.50. Mr. Fred.

126. Physiology of Bacteria. I; 3 cr. The chemistry and physics of bacterial processes. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee $4.50. Mr. Baldwin, Mr. Allen.

130. Determinative Bacteriology Yr; 2-5 cr. Training in the common methods of the bacteriological laboratory. Prerequisite: Agr. Bact. 1, 2, or 4, or Medical Bact. 102. Lab. fee $2.25 per lab. cr. Mr. Frost, Miss Engelbrecht.

200. Research. Yr; 2-5 cr. A detailed study of a definite problem in the field of agricultural bacteriology. Prerequisites: Agr. Bact. 121, and 123, 124, 125, or 130. Lab. fee $2.25 per lab. cr. Staff.

231. Seminary. Yr; 1 cr. Discussion of the research work of the department and of current problems in the fields covered by the department. Staff.

AGRICULTURAL CHEMISTRY

Edwin Bret Hart, B.S., *Professor of Agricultural Chemistry, Chairman*
Stephen Moulton Babcock, Ph.D., LL.D., Sc.D., *Professor of Agricultural Chemistry, Emeritus.*
William Harold Peterson, Ph.D., *Professor of Agricultural Chemistry*
Harry Steenbock, Ph.D., *Professor of Agricultural Chemistry*
William Edward Tottingham, Ph.D., *Associate Professor of Agricultural Chemistry*
Karl Paul Link, Ph.D., *Associate Professor of Agricultural Chemistry*
Conrad Arnold Elvehjem, Ph.D., *Assistant Professor of Agricultural Chemistry*
Blanche Marye Riising, B.S., *Instructor in Agricultural Chemistry*

The courses offered in this department are intended to give a broad view of farm chemistry useful to the general agricultural student, and to develop men fitted for instructional or experimental work in the various fields of chemical activity applied to agriculture. Courses 120 and 122 are for students desiring a more detailed knowledge of the special subjects treated and are preliminary to greater specialization. These courses should be preceded or accompanied by work in biology and organic chemistry. Physiology and bacteriology are desired prerequisites. All other advanced courses in this department are open to undergraduates and graduates who have had the necessary preliminary training.

1. Agricultural Chemistry. II; 3 cr. A general discussion of chemistry applied to the farm, including the chemistry of plants and animals and the processes involved in their growth. Prerequisite: Chemistry 1b or concurrent registration. Mr. Elvehjem.

2. Agricultural Analysis. II; 2 cr. Analytical chemistry applied to agricultural materials; quantitative analysis of soils, fertilizers, manures, feeding stuffs, and insecticides. Prerequisites: Chemistry 1b and 12. Lab. fee $4.50. Mr. Elvehjem.

3. HOUSEHOLD CHEMISTRY. I; 5 cr. The composition, physical properties, and nutritive value of foods; chemistry of the home, cleaning materials, dyes, etc. Required of all home economics students. Prerequisite: Chemistry 1b. Lab. fee $6.75. Mr. Peterson.

100. THESIS. Yr; 2 cr. May be taken in plant, animal, fermentation, or dairy chemistry. Lab. fee $2.25 per lab. cr. Staff.

120. PLANT CHEMISTRY. II; 2 or 5 cr. The mechanism and course of chemical processes in the growth of plants, including the effect of environmental factors. Selected methods for the determination of plant constituents. Prerequisites: Chemistry 1b and 120. Lab. fee $2.25 per lab. cr. Mr. Tottingham.

121. DAIRY CHEMISTRY. 1; 2 or 5 cr. The chemistry of milk and its products, including the chemistry of fermentation and detection of adulterants. Prerequisites: Chemistry 1, 12, and 120. Lab. fee $2.25 per lab. cr. Mr. Hart.

122. ANIMAL CHEMISTRY. I; 2 or 5 cr. The chemistry of feeds, processes of digestion, use of nutrients, and metabolic changes involved in the nutrition of animals. Prerequisites: Chemistry 1, 12, and 120. Lab. fee $2.25 per lab. cr. Mr. Steenbock.

124. ADVANCED BIO-CHEMISTRY. I; 1-3 cr. A survey of important analytical processes used in the study of bio-chemical problems. Prerequisites: Chemistry 1, 12, 120, and Agr. Chem. 122. Lab. fee $2.25 per lab. cr. Mr. Elvehjem.

125. THE VITAMINS. II; 1-3 cr. Lectures and laboratory work on the vitamins, including the animal technique used in their identification. Prerequisite: Agr. Chem. 122. Lab. fee $2.25 per lab. cr. Mr. Steenbock.

126. MODERN VIEWS OF ANIMAL NUTRITION AND THEIR APPLICATION. II; 2 cr. A course of lectures and conferences on the newer knowledge of nutrition applied to man, poultry, dairy cattle, swine, etc. Prerequisite: Agr. Chem. 122. Mr. Hart.

127. FERMENTATION BIO-CHEMISTRY. II; 1-2 cr. Lectures and laboratory work on the chemistry and bacteriology of fermentation. Lab. fee $2.25 per lab. cr. Mr. Peterson, Mr. Fred.

128. CARBOHYDRATE CHEMISTRY. II; 3 cr. Laboratory work with conferences on the chemistry of the carbohydrates. Includes a study of the properties and methods of separation and identification of the more important sugars. Lab. fee $2.25 per lab. cr. Mr. Link.

230. PLANT NUTRITION. Yr; *cr. The influences of fertilizers upon the development and composition of plants in field and pot experiments, including the effects of environmental factors. Prerequisite: Agr. Chem. 120. Lab. fee $2.25 per lab. cr. Mr. Tottingham.

231. ANIMAL NUTRITION. Yr; *cr. Composition and digestibility of foods and their influence upon growth, production of milk, etc. Prerequisite: Agr. Chem. 122. Lab. fee $2.25 per lab. cr. Mr. Hart, Mr. Steenbock, Mr. Elvehjem.

232. Advanced Dairy Chemistry. Yr; *cr. The proximate analysis of milk and its products, and a study of the changes which occur in the manufacture of dairy products. Prerequisites: Agr. Chem. 121. Lab. fee $2.25 per lab. cr. Mr. Hart.

233. Seminary. Yr; 1 cr. Original articles of importance are studied in detail, to broaden and deepen the understanding and to act as a stimulus to further research. Mr. Hart and staff.

AGRICULTURAL ECONOMICS

Benjamin Horace Hibbard, Ph.D., *Professor of Agricultural Economics, Chairman*
Preston Essex McNall, M.S., *Professor of Agricultural Economics*
George Simon Wehrwein, Ph.D., *Professor of Agricultural Economics*
Henry Harrison Bakken, M.A., *Assistant Professor of Agricultural Economics*
John Sweet Donald, B.S., D.D.S., *Assistant Professor of Agricultural Economics*
Rudolph Knugaard Froker, M.A., *Assistant Professor of Agricultural Economics*
Isaac Fults Hall, Ph.D., *Assistant Professor of Agricultural Economics*
Austin Clair Hoffman, M.S., *Assistant Professor of Agricultural Economics*
William P. Mortenson, Ph.D., *Assistant Professor of Agricultural Economics*
Miles Charles Riley, LL.B., *Lecturer in Agricultural Economics*
Marvin Arnold Schaars, M.S., *Instructor in Agricultural Economics*

The courses in agricultural economics are intended to give the students a knowledge of the economic principles which relate to the production and marketing of farm products, and to the economic conditions of the agricultural classes. As such, it is a field of general interest to all concerned with farmers and their welfare.

There are two methods of taking agricultural economics. First, it may be taken as a joint major along with work in one or more other departments, economics being recognized as a phase of farming coordinate with many other lines of inquiry; second, agricultural economics may be taken as a full major by those who decide to make it a main line of study preparatory to teaching, research, or work of an economic character. The major consists of 15 credits, including the thesis.

1. Principles of Agricultural Economics. II; 3 cr. Application of economics to agriculture. Required of all agricultural students. Prerequisite: Economics 1a. Mr. Hibbard.

8. Farm Records and Accounts. II; 2 cr. Inventories, bookkeeping, and accounting principles as applied to farm operations. Mr. Mitchell.

10. Farm Organization and Management. II; 3 cr. Farm methods and practices as applied to business management on the farm. Prerequisite: Junior standing. Mr. McNall.

14. Farm Business and Legal Practice. II; 3 cr. Mr. Riley.

100. Thesis. Yr; 2 cr. Staff.

107. Farm Cost Accounting. II; 2 cr. Systems of cost accounting in their application to the problems of farm organization and operation. Prerequisite: Agricultural Economics 8 or equivalent. Mr. McNall.

117. Outlines of Land Economics. I; 3 cr. This course undertakes to cover the theoretical principles underlying landed property, including the theories of rents, taxation and conservation, together with the leading facts of land utilization. Prerequisite: Economics 1a. Mr. Wehrwein.

126. International Trade in Agricultural Products. II; 3 cr. Review of theories of international trade and foreign exchange; domestic and world markets and practices; world survey of population and agricultural production; history of foreign trade in agricultural products; analysis of commodities and countries; barriers to foreign trade. Prerequisite: Economics 1a. Mr. Schaars.

127. Cooperative Markering. II; 3 cr. The economic and legal basis of farmers' marketing organizations, their historical and current development, organization set-up, scope and purpose, special problems, possibilities and limitations, progress and future. Prerequisite: A course in marketing or concurrent registration. Mr. Schaars.

128. Marketing Agricultural Products. II; 3 cr. Development of agricultural marketing; services, agencies, methods; emphasis on principles and practices; price factors; commodity exchanges; current marketing problems; governmental relations; weaknesses and suggestions for improvement. Prerequisite: Economics 1a. Mr. Schaars.

152. Farmer Movements. I; 2 cr. A discussion of the great farmer movements, such as the Grange, the Alliance and the American Farm Bureau Federation. Prerequisite: Agricultural Economics 1. Mr. Hibbard.

155. Prices of Agricultural Products. II; 3 cr. An analysis and interpretation of the factors affecting the prices of agricultural products, together with a study of price movements—trends, cycles and minor fluctuations. The interrelationship of price, demand and supply of various types of agricultural products. Attention will be given to the interpretation of materials contained in public and private outlook reports. Prerequisite: Agricultural Economics 1. Mr. Mortenson.

180. Topical Work. Yr; *cr. Staff.

200. Research. Yr; *cr. Cooperation and marketing, Mr. Bakken and Mr. Schaars. Farm surveys and financial accounts in their relation to farm management, Mr. McNall. Cost accounting and its relation to farm management, Mr. McNall. History of agricultural production, Mr. Hibbard. Farmer movements, taxation and farm credit, Mr. Hibbard. Land economics and land problems, Mr. Wehrwein. Prices of agricultural products, Mr. Mortenson.

221. Land Income. II; 2 cr. The economic characteristics of land; the economics of land ultilization with reference to costs and income; theories of rent; valuation and taxation of land. Prerequisite: Graduate standing. Mr. Wehrwein.

226. Land Problems. Yr; 2 cr. The economic status of the agricultural classes with special reference to the relations of landlord and tenant. Prerequisite: Graduate standing. Mr. Hibbard, Mr. Wehrwein.

228. SEMINARY: HISTORY OF MARKETS AND MARKETING. II; 2 cr. A study of the historical development, including the economic principles involved, of markets from early continental fairs; inquiring into the practices and customs of auctions, clearing houses, exchanges and boards of trade; and giving attention to the emergence of modern sales agencies operating under cooperative, private and governmental initiative. Prerequisite: Graduate standing. Mr. Bakken, Mr. Schaars.

229. ADVANCED AGRICULTURAL ECONOMICS. Yr; 2 cr. The fundamentals of economics in their application to agricultural problems. Recent works in English, German and French will be used. Prerequisite: Graduate standing. Mr. Hibbard.

AGRICULTURAL EDUCATION

JOHN AMBROSE JAMES, B.S., *Professor of Agricultural Education, Chairman*
KIRK LESTER HATCH, B.S., *Professor of Agricultural Education*
THOMAS LYMAN BEWICK, M.S., *Professor of Agricultural Extension*
WARREN WILLIAM CLARK, B.S., *Associate Professor of Agricultural Extension*
VINCENT EARL KIVLIN, M.S., *Assistant Professor of Agricultural Education*
IVAN GLEN FAY, B.S., *Assistant Professor of Agricultural Education*

Students in the College of Agriculture who wish to prepare for the teaching of agriculture in secondary schools must complete a major and certain elective courses in animal husbandry, poultry, dairying, agronomy, horticulture, soils, agricultural engineering, agricultural economics, and agricultural journalism as a background of agriculture and also the fifteen credits in education required for the University Teachers' Certificate as outlined below. The major consists of a minimum of fifteen elective credits in any department in the College of Agriculture but preferably in Agricultural Education where twelve of the credits for the teachers' certificate are a portion of the major, thus allowing for greater choice of electives.

Students completing the requirements for graduation in Agriculture as suggested above and qualifying for a University Teachers' Certificate will receive the degree Bachelor of Science (Agriculture and Education) and a license to teach issued by the State Superintendent of Public Instruction. Such students must (a) register for the certificate in the School of Education at the beginning of the junior year, (b) receive the recommendation of the teacher training committee of the College of Agriculture, (c) complete the following courses:

	Credits
Educ. 31—Principles of secondary education	3
Educ. Psych. 75—Psychology and practice of teaching	5
Agr. Educ. 1—Rural education	2
Agr. Educ. 128—Program building in vocational agriculture	2
Agr. Educ. 50—Teaching of agriculture	3
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Students beginning work for a certificate may arrange their courses most satisfactorily by starting to meet the requirements during the second semester of the sophomore year or the first semester of the junior year. Education 31

and Educ. Psych. 75 should definitely be completed before the beginning of the senior year. During the senior year the three courses in agricultural education are prescribed. This provides the best sequence and one which interferes least with technical subjects. Students should secure a list of the desirable technical agricultural elective courses from the chairman of the Department ot Agricultural Education, and discuss with him the requirements for the certificate.

Graduates of professional courses in the state teachers' colleges who are majoring in agriculture and who wish to qualify for the University Teachers' Certificate, should elect 8 credits as follows:

	Credits
Education (advanced)	3-4
Agricultural Education (advanced; or 50)	3
Agricultural Education 128	2

Candidates may be excused from the departmental teachers' course with the approval of the Chairman of the Department of Agricultural Education.

MAJOR. Not more than 5 credits in education taken in Letters and Science may count on the major in agricultural education. These 5 credits shall in no way be counted as a portion of the 50 credits required in the strictly agricultural subjects.

There is a demand for men trained as principals and superintendents for rural communities and small cities. Teachers' college graduates and others with teaching experience are urged to consider this opportunity. The opportunity for electives outside this college makes it possible to take many courses in the Department of Education and thus to prepare for this field.

1. RURAL EDUCATION. II; 2 cr. Origin and development of vocational education for rural communities. Problems, principles, and practices of rural education. For future leaders, farmers, and teachers. Open to sophomores. Mr. James.

5. JUNIOR EXTENSION. I; 2 cr. Place of boys' and girls' clubs in rural education. Educational values, methods of organization, leadership, meetings, demonstrations, follow-up materials, exhibits and reports. For prospective extension workers and teachers. Lectures and demonstrations. Mr. Bewick.

25. RURAL LIFE (Rural Soc. 25). I; 3 cr. Counts as part of education major. Mr. Kolb.

50. TEACHING OF AGRICULTURE. I, II; 3 cr. Directed teaching based upon participation in agricultural activities of the Wisconsin High School, problems of subject matter and methods of teaching. Open only to seniors registered for a teachers' certificate. Mr. Kivlin.

100. THESIS. Yr; 2 cr. Original work on problems of agricultural extension or teaching. Staff.

103. SEMINARY. I, II; *cr. Special problems in rural education and educational problems of county agent, demonstrator, extension workers, teachers, and rural leaders. Mr. James.

110. Training Course for County Agents. II; 2 cr. Development and administration of the county agent system. The agent's responsibilities to the federal and state governments and the community. Projects, plans for work, and county organization; relation of college specialists and local organization. Open only to seniors and graduate students. Mr. Clark.

128. Program Building in Vocational Agriculture. I, II; 2 cr. Factors determining the program of work, directed practice, part-time and evening schools, etc., adapted to teaching agriculture in secondary schools. Prerequisites: Agr. Educ. 1 and senior standing. Mr. Kivlin.

200. Research. Yr; *cr. Topical work relative to problems of elementary, vocational, or college agricultural education; extension, county agent, or demonstration work. Mr. James, Mr. Clark.

AGRICULTURAL ENGINEERING

Edward Richard Jones, M.S., *Professor of Agricultural Engineering, Chairman*
Floyd Waldo Duffee, B.S., *Professor of Agricultural Engineering*
Otto Reinhart Zeasman, B.S., *Associate Professor of Soils and Agricultural Engineering*
Fred Benjamin Trenk, M.S., *Instructor in Agricultural Engineering (Forestry)*
Stanley Arthur Witzel, C.E., *Instructor in Agricultural Engineering*

The undergraduate courses in this department are service courses for students majoring in other departments, as well as the basis for advanced work of majors in agricultural engineering, both the non-technical and the technical.

The laboratories are well-equipped with farm machinery, engines and tractors for the study of general mechanical principles. Some of the laboratory work is given in the fields of the university farms. The university marsh of 100 acres of tile-drained land is an excellent drainage laboratory.

Students inclined toward engineering and desiring to return to their farms or to take positions as agricultural agents or farm managers or to enter the farm equipment business, are advised to major in non-technical engineering, which has no special requirement in mathematics. They are advised to take, in addition to their major studies, liberal electives in soils, agronomy, agricultural economics, and business methods. A major in non-technical agricultural engineering may be combined with a University Teachers' Certificate giving the legal qualifications to teach in the high schools.

Those desiring to enter the more technical fields of mechanical, electrical, civil, or structural engineering as applied to agriculture, are recognized as majors in technical agricultural engineering, and are requested to consult the department chairman before or during the first semester of the freshman year so that the proper sequence of studies in mathematics, drawing, and mechanics may be followed, substituting Mathematics 51 for Mathematics 71. In addition to the required courses in the College of Agriculture the student takes Mathematics 52, 54, and 55; Drawing 1, 2, and 3; Mechanics 1, 2, and 3; and Physics 51 and 52. Graduating from agriculture at the end of four years, it is possible for these men to finish the course in civil, mechanical, or electrical engineering with about three semesters of additional

work. This gives them thorough training in pure engineering, which, in addition to an agricultural background, is so essential to professional agricultural engineers. These men are in keen demand by rural power, construction and reclamation companies and the manufacturers of farm machinery and equipment.

Throughout the year the majors in both technical and non-technical agricultural engineering function as a student branch of the American Society of Agricultural Engineers, and during the first semester of either the junior or senior years they take Agricultural Engineering 121.

1. Land Drainage. I; 3 cr. Principles, practices and economics of land drainage. Design of drainage systems, computation of gradients, tile testing, and water measurement. Subdivision of land, levelling, chaining, plane-table mapping, contours, and profiles. Engineering students previously trained in topographic surveying substitute additional drainage work. Optional subject for all agricultural students. Lab. fee $2.25. Mr. Jones.

2. Farm Structures. I; 3 cr. Requirements of farm buildings and their economical design, including the house, animal and machinery shelter, feed and vegetable storage, and other farm structures. Wall insulation, heating, lighting and ventilation. Water supply, sewage disposal and concrete construction. Lab. fee $2.25. Mr. Jones.

3. Gas Engines. I; 3 cr. Construction and operation of gasoline engines; farm electric light plants and electric motors; power transmission. It is desirable to have this course preceded by Shop 2. Lab. fee $4.50. Mr. Duffee.

5. Farm Field Machinery. II; 3 cr. Lectures and laboratory studies on the construction and operation of tools and machinery for preparing the seed bed, sowing and planting, tilling and harvesting farm crops. Optional subjects for all agricultural students. Lab. fee $2.25. Mr. Duffee.

8. Mechanical Practices. II; 2 cr. Laboratory practices in (1) gas engines (2) farm machinery (3) rope work, knot tying, belt lacing, harness repair and soldering (4) domestic engineering (5) land drainage or (6) tractors. Synoptic courses for vocational teachers electing any four of these six units. Lab. fee $4.50. Mr. Jones, Mr. Duffee.

100. Thesis. Yr; 2 cr. Lab. fee $2.25 per lab cr. Staff.

101. Drainage Design. (formerly numbered 102) II; 2 cr. Preliminary and final surveys and designs for farm and community drainage systems near Madison and other convenient places. Optional work is provided for those specializing in irrigation. Field work and conferences by appointment. Prerequisite: Agr. Engr. 1 or Top. Engr. 1 and 2. Mr. Jones.

103. Farm Tractors. (formerly numbered 101) II; 3 cr. Laboratory tests of gas engines and field practice with farm tractors. Prerequisite: Agr. Engr. 3. Lab. fee $4.50. Mr. Duffee.

105. Belt and Tractor Machinery. II; 2 cr. Threshers, silo fillers, and other belt-driven farm machines, large and small; tractor plow; machinery calibration tests. Lectures, laboratory studies, and field demonstrations. Prerequisites: Agr. Engr. 5 and 103 or concurrent registration. Offered 1931-32 and in alternate years. Lab. fee $2.25. Mr. Duffee.

121. Seminary. I; 1 cr. Review of current literature and studies of agricultural engineering problems. For juniors, seniors and graduate students. Mr. Jones and staff.

180. Special Problems. Yr; *cr. Open to technical majors who have had prerequisite training for advanced work in farm machinery, farm power, farm structures, land clearing, drainage or forestry. Lab. fee $2.25 per lab. cr. Staff.

200. Research. Yr; *cr. Agricultural Engineering problems for students qualifying for advanced degrees. Lab. fee $2.25 per lab. cr. Mr. Jones, Mr. Duffee, Mr. Witzel.

ELECTIVES IN THE COLLEGE OF ENGINEERING

Shop 2. Bench Work, Forge, and Welding. I, II; 1 cr. Forge and bench work in iron and steel. The processes involved in forging, welding, and brazing of iron and steel. The use of the chisel, file, and drill in finishing and fitting. Lab. $3.00. Mr. Schumann, Mr. Peters.

Shop 15. General Farm Carpentry. I, II; 1 or 2 cr. The use and care of tools and principles involved in the construction of such structures as concrete forms and farm buildings; framing of doors and windows, and interior finishing. Lab. fee $3.00. Mr. Cluley.

ELECTIVES GIVEN BY FOREST PRODUCTS STAFF

1. Forestry and Utilization of Wood. I; 2 cr. General introductory course. Includes identification of native trees, forest conditions and forest policy in the United States and utilization of wood. Mr. Tiemann.

102. Wood Technology. II; 2 cr. The structure and identification of commercial species of wood. Forms a logical sequence to Course 1 but can be taken independently. Especially suited for students who expect to go into some wood-using business, or for students intending to specialize in forestry elsewhere. Mr. Tiemann.

AGRICULTURAL JOURNALISM

ANDREW WINKLE HOPKINS, B.L., *Professor of Agricultural Journalism, Chairman*
WILLIAM ALLISON SUMNER, B.S., *Associate Professor of Agricultural Journalism*
WAIDA GERTRUDE GERHARDT, B.S., *Instructor in Agricultural Journalism*
GRACE LANGDON, M.A., *Instructor in Agricultural Journalism*
RUPERT HENRY RASMUSSEN, M.S., *Instructor in Agricultural Journalism*

The ability to write simple, understandable English is invaluable to the teacher, extension worker, county and home demonstration worker, and farmer. To render the greatest service the technically trained worker must use the printed page. Selling and advertising are important in the neglected half of farming—the business side. More and more farmers are coming to appreciate the need of salesmanship, sales letter writing, effective classified and display advertisement, and systematic sales campaigns.

For students returning to the farm, Agricultural Journalism 1 and 3 are suggested. For prospective teachers and extension workers, courses 1, 3 and 103 are recommended. For research workers and future college staff workers Agricultural Journalism 1, 103 and 105 are advised.

Majors in the department will be expected to take Agricultural Journalism 1, 2, 3, 100, 103, 111, 150, and 200. Courses in the Department of Journalism in the College of Letters and Science may be taken and not to exceed 5 credits from the following courses may count on the major: Journalism 2, Newspaper reporting and correspondence; Journalism 3, Copy reading; Journalism 7, Community newspaper; Journalism 104, Editoral writing.

1. WRITING FARM NEWS. I; 3 cr. An elementary course to help students who expect to write news articles about farming for publication in the weekly or daily papers or the various agricultural journals. Mr. Sumner.

2. PRACTICE IN EDITING. I, II; 1 cr. The editorial, business, and circulation problems of the Wisconsin Country Magazine are analyzed and actual practice given on the magazine. Mr. Sumner.

3. AGRICULTURAL ADVERTISING. II; 3 cr. How to write "want ads", advertisements to sell livestock, dairy products, fruit, berries, truck, food products; how to write the business letters of the farmer; the preparation of booklets, posters, sales bills, and other mediums. Lectures and assignments for practice. Mr. Sumner.

8. WRITING HOME ECONOMICS NEWS. I; 3 cr. A course in the fundamentals of writing home economics material. Designed to aid teachers and extension workers in publicity and to give training to students who plan to make a profession of journalism. Mr. Sumner.

100. THESIS. Yr; 2 cr. Original studies of a journalistic or advertising nature. Practical problems are investigated. Mr. Hopkins, Mr. Sumner.

103. AGRICULTURAL PUBLICITY METHODS. II; 2 cr. Outlining and finding effective methods of publicity. This course takes up the publicity campaign, the different mediums as to their advantage and uses, publicity copy, exhibits, and charts. Prerequisite: Agr. Journ. 1 or 8. Mr. Hopkins.

104. The History of Farm Papers. II; 2 cr. A survey of the farm paper field, past and present. Not offered 1931-32. Mr. Sumner.

105. Writing and Editing Farm Bulletins. I; 2 cr. A course for those who have to use or write station or extension bulletins and circulars Mr. Sumner.

106. Advertising Survey for Home Economics. II; 2 cr. A general course to present to the home economics student who expects to enter the business world, a background of sales and advertising methods and practices. Mr. Sumner.

111. Writing Farm and Home Features. II; 2 cr. A course to follow the elementary courses in writing farm and home stories. The technique of writing the longer feature stories for the farm papers and women's magazines is given primary consideration. Prerequisite: Agr. Journ. 1 or 8. Mr. Sumner.

150. Seminary. I, II; 2 cr. Mr. Hopkins, Mr. Sumner.

200. Research. I, II; *cr. A practice problem such as confronts the county agent, scientist, publicity man, extension worker, or editor is analyzed and an effort made for a constructive solution. Advertising problems and policies such as confront the breeder or pure-bred seed grower may be studied. Prerequisite: Agr. Journ. 1, 3, or 8. Mr. Hopkins, Mr. Sumner.

AGRONOMY

Ransom Asa Moore, *Professor of Agronomy, Chairman*
Edmond Joseph Delwiche, M.S., *Professor of Agronomy*
Laurence Frederick Graber, Ph.D., *Professor of Agronomy*
Benjamin Donald Leith, B.S., *Professor of Agronomy*
George Byron Mortimer, B.S., *Professor of Agronomy*
George McSpadden Briggs, B.S., *Associate Professor of Agronomy*
Andrew Hamilton Wright, M.S., *Associate Professor of Agronomy*
Eugene Davenport Holden, M.S., *Assistant Professor of Agronomy*
Alden Lescombe Stone, *Assistant Professor of Agronomy*

Practical Major. Students majoring in agronomy and wishing to prepare for farming, farm managers, county agricultural agents, crop reporting positions, commercial positions in seed trade, or teachers of secondary school agriculture, should elect 10 credits from the following: Physics 61, 5 cr.; Zoology 3, 3 cr.; Geology 1, 5 cr.; Geography 106, 3 cr.; Botany 2, 5 cr.; Chemistry 11, 3 cr.; Mathematics 2, 4 cr.; Mathematics 3, 3 cr.

It is suggested that the courses selected in agronomy be taken in the following order. For the sophomore year, 120, 3 cr.; 102, 2 cr.; for the junior year, 106, 3 cr.; for the senior year, 107, 2 cr.; 121, 3 cr.; 130, 3 cr.; 131, 2 cr.

Practical majors desiring to teach secondary school agriculture should note the regular teacher training requirements given under Agricultural Education.

SCIENTIFIC MAJOR. Student desiring to prepare as professional agronomists such as plant breeders, either institutional or commercial research and extension specialists, teachers, or seed analysts should take a more specialized major emphasizing scientific subjects. In the sophomore year Chemistry 11, 3 cr., and Zoology 3, 3 cr., should be taken together with an additional 4 cr. in either science or mathematics. Soils 1, 5 cr. and Agricultural Chemistry 1 and 2, 5 cr., are suggested. In the junior or senior year, Chemistry 20 and 21, 4 cr., Genetics 101, 3 cr., Botany 117, 3 cr., Soils 127, 2 cr., and Plant Pathology 101, 3 cr.

Departmental requirement should be followed as suggested under the practical major with the addition of Agronomy 205, 2 cr., in the senior year. If graduate work is intended a foreign language should be added beginning with the junior year. Not to exceed five credits from the following courses may be counted as a portion of the major requirement in Agronomy: Soils 120, Soil management; Soils 127, Soil science and plant nutrition; Plant Pathology 101, Diseases of plants; Plant Pathology 116, Diseases of field crops; Botany 117, Structure of economic plants; and Botany 129, Classification of cultivated plants.

1. GENERAL FARM CROPS. I, II; 3 cr. Includes a study of varieties and types, botanical relations, adaptations, cultural practices, judging, and studies of individual crops. Required of all agricultural students. Lab. fee $4.50. Mr. Mortimer.

100. THESIS. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Staff.

101. SPECIAL CROP PROBLEMS. Yr; *cr. Offered at Madison and the branch experiment stations. Lab. fee $2.25 per lab. cr. Staff.

102. PASTURES AND PASTURE PROBLEMS. I; 2 cr. Pasture studies based on kinds; best methods of establishing, maintaining and improving them; and the crops best suited to this use. Prerequisite: Agronomy 1. Mr. Mortimer.

106. FORAGE CROPS. II; 3 cr. Growing and handling forage crops, with emphasis on recent developments in relation to livestock farming. Prerequisite: Agronomy 1. Mr. Moore, Mr. Graber.

107. FORAGE PROBLEMS. II; 2 cr. Physiological, anatomical, and morphological aspects of forage plants in relation to field practices, with emphasis on food reserves, winter injury, and other agronomic problems. For seniors and graduate students. Lab. fee $4.50. Mr. Graber.

120. SEED AND WEED CONTROL. I; 3 cr. A study of the economic relations of farm seeds and weeds to profitable agriculture. Prerequisite: Agronomy 1. Lab. fee $4.50. Mr. Stone.

121. GRAIN PRODUCTION AND CROP JUDGING. I; 3 cr. Varieties, uses, distribution, and approved practices in growing, together with judging competitive farm crop displays. Prerequisite: Agronomy 1. Lab. fee $4.50. Mr. Mortimer.

130. PLANT BREEDING. II; 3 cr. Methods and principles involved in the improvement of crops. Prerequisites: Agronomy 1 and Botany 1. Mr. Leith.

131. SEMINARY. Yr; 1 cr. A review of current literature and studies of agronomic problems. For seniors and graduate students. Prerequisites: Agronomy 1 and Botany 1. Staff.

200. RESEARCH. Yr; *cr. Agronomic problems for students qualifying for advanced degrees. Given in connection with thesis or graduate study. Lab. fee $2.25 per lab. cr. Staff.

205. CROP ENVIRONMENT. II; 2 cr. Reports and discussions on the findings in fields related to crop plants, and their interrelations. Offered 1930-31 and in alternate years. Mr. Wright.

ANIMAL HUSBANDRY

GEORGE COLVIN HUMPHREY, B.S., *Professor of Animal Husbandry, Chairman*
GUSTAV BOHSTEDT, Ph.D., *Professor of Animal Husbandry*
JAMES GARFIELD FULLER, M.S., *Professor of Animal Husbandry*
ARLIE MAX MUCKS, B.S., *Associate Professor of Animal Husbandry*
JOHN MERRILL FARGO, M.S., *Assistant Professor of Animal Husbandry*
ISAAC WALKER RUPEL, M.S., *Assistant Professor of Animal Husbandry*
ARTHUR OWEN COLLENTINE, *Instructor in Animal Husbandry*
ALBERT JULIUS CRAMER, B.S., *Instructor in Animal Husbandry*
ROY THEODORE HARRIS, *Instructor in Animal Husbandry*
JAMES JEROME LACEY, *Instructor in Animal Husbandry*
BENJAMIN HAMILTON ROCHE, M.S., *Instructor in Animal Husbandry*

Two majors are offered students in animal husbandry. The practical major is intended primarily for students who intend to return to the farm as farm managers or herdsmen, or who intend to qualify as vocational agricultural teachers or county agricultural agents. Students taking this major should elect Agricultural Chemistry 1 and 2 and Physiology 3, Animal physiology, in their sophomore year. In the junior and senior years they should elect animal husbandry courses in feeding, judging, breeding and production. Students who wish to qualify for a teacher's certificate should elect teachers' courses not later than the beginning of the junior year. Agricultural Journalism 3, Advertising; Agricultural Economics 10, Farm Organization and Management; Dairy Husbandry 5, City milk supply; and Agricultural Bacteriology 121, Dairy bacteriology; and practical courses in other departments are suggested.

The scientific major is planned for men desiring to go into college or experiment station work and is suggested for those intending to do extension work. For training in this field students should elect Veterinary Science 1 and Dairy Husbandry 1 in the sophomore year. Organic chemistry should be taken in the junior year in addition to courses suggested in the practical major. In the senior year desirable electives, in addition to some production courses, are Agricultural Chemistry 121, Dairy chemistry; Agricultural Chemistry 122, Animal chemistry; and Genetics 101 and 102. Not to exceed five credits from the following courses may be counted as a portion of the major requirements in animal husbandry: Agricultural Chemistry 121 and 122, Genetics 101 and 102, Veterinary Science 2 and 3.

1. LIVESTOCK PRODUCTION. I, II; 3 cr. Livestock survey, breed history, judging, market classification; practical problems, lectures, and laboratory exercises. Required of all agricultural students. Lab. fee $4.50. Mr. Fuller.

100. THESIS. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Mr. Humphrey and staff.

124. ANIMAL BREEDING. II; 2 cr. The principles and approved methods relating to the breeding of livestock. Prerequisite: An. Husb. 1. Mr. Fargo.

126. LIVESTOCK FEEDING. I; 4 cr. A study of the principles of feeding and the composition of feeds; practice in formulating rations for the various classes of livestock; evaluation of feeds and feeding practices from a study of experiments and customs. Prerequisite: An. Husb. 1. Mr. Bohstedt, Mr. Rupel.

129. SHEEP PRODUCTION. II; 2 cr. A study of breed history and judging; farm flock management for production of market and pure-bred sheep, including wool-grading and judging; fattening western lambs for market. Prerequisite: An. Husb. 1. Lab. fee $2.25. Not offered 1930-31.

130. SWINE PRODUCTION. I; 3 cr. Judging of breeding and market hogs; history of the hog industry in America; systems and costs of production and marketing; the hog carcass and consumption of pork products; and the breeding, feeding, and management of breeding and market hogs. Prerequisites: An. Husb. 1 and 126. Lab. fee $4.50. Mr. Fargo.

131. HORSE PRODUCTION. I; 2 or 3 cr. Pedigree work, conformation study, judging, production problems, and fundamentals in breaking and hitching. Prerequisite: An. Husb. 1. Lab. fee $2.25. Mr. Fuller.

132. BEEF CATTLE PRODUCTION. II; 2 cr. Pedigree work, judging, feeding, and marketing beef cattle; production problems. Prerequisite: An. Husb. 1. Lab. fee $2.25. Mr. Fuller.

133. DAIRY CATTLE AND MILK PRODUCTION. II; 3 cr. Selection of animals for milk production and for breeding purposes. Present day types and breed characteristics. Herd management, advanced registry testing, calf raising, selling of surplus breeding stock. Control measures relating to quality in commercial and special grades of milk. A two-day tour to visit leading pure-bred herds, dairy equipment plants, and farms producing certified milk is required; the cost is from $10.00 to $15.00. Prerequisite: An. Husb. 1. Lab. fee $4.50. Mr. Rupel.

134. SPECIAL PROBLEMS. Yr; *cr. Special problems on feeding, management, breeding, or judging of livestock, including laboratory, library, or field work with conferences and reports. These problems will be assigned by respective members of the staff. Consent of instructor required. Lab. fee $2.25 per lab. cr. Mr. Fuller and staff.

135. ANIMAL HUSBANDRY SEMINARY. Yr; 1 cr. Studies and discussions of research work in animal husbandry and related fields; reports on articles of interest. For advanced and graduate students. Mr. Bohstedt.

200. RESEARCH. Yr; *cr. A detailed study of a definite research problem in animal husbandry. Conference on experimental methods. Lab. fee $2.25 per lab. cr. Mr. Bohstedt and staff.

DAIRY HUSBANDRY

HOWARD CAMPBELL JACKSON, Ph.D., *Professor of Dairy Husbandry, Chairman*
EDWARD HOLYOKE FARRINGTON, M.S., *Professor of Dairy Husbandry, Emeritus*
WALTER VAN PRICE, Ph.D., *Professor of Dairy Husbandry*
HUGO HENRY SOMMER, Ph.D., *Professor of Dairy Husbandry*
JOHN LANGLEY SAMMIS, Ph.D., *Associate Professor of Dairy Husbandry*
LOUIS CHARLES THOMSEN, B.S., *Assistant Professor of Dairy Husbandry*
HANS TJELLESEN SONDERGAARD, *Instructor in Dairy Husbandry*

The department offers instruction in the science and art of manufacturing dairy products, suited to the needs of (a) farm dairymen, (b) investigators or teachers, (c) managers, operators, or inspectors of creameries, cheese factories, city milk, ice cream plants, and condenseries.

Students majoring in dairy manufacturing should elect Physics 61, 5 cr., Chemistry 120-121, 5 cr., Agricultural Chemistry 1 and 2, 5 cr., and Dairy Husbandry 1, 3 cr., in the sophomore year. Agr. Chem. 121, Dairy chemistry, 5 cr., and Agr. Bact. 121, Dairy bacteriology, 3 cr., should be taken in the junior year; and Dairy Husbandry 3, 5, and 8, 3 cr. each, Dairy Husbandry 4, 4 cr. and Dairy Husbandry 123, 2 cr. should be taken in the senior year as a minimum.

Dairy Husbandry is intimately connected with the Departments of Animal Husbandry, Agricultural Bacteriology, and Agricultural Chemistry, and with marketing given in the Department of Agricultural Economics. Students preparing for dairy manufacturing should consider courses in these departments when selecting electives related to the major.

1. INTRODUCTION TO DAIRYING. II; 3 cr. A general survey course designed to give the student an understanding of the relationship of dairy manufacturing to general farm problems. Emphasis is given to methods of quality control, judging, and elementary analysis of dairy products. Lab. fee $4.50. Mr. Jackson, Mr. Thomsen.

3. CREAMERY OPERATION AND MANAGEMENT. I; 1-3 cr. The theory and practice of cream separation, the pasteurization and handling of dairy products under commercial conditions, composition and flavor control of butter, and the management and operation of creameries. Lab. fee $2.25 per lab. cr. Mr. Jackson, Mr. Thomsen.

4. CHEESE-MAKING. I; 4 cr. A combined lecture and laboratory course to study the manufacture of cheese. Several types of cheese will be made by the students in the laboratory to acquaint them with commercial practices and to illustrate the importance of certain physical, chemical, and biological factors which influence curd-making and cheese-ripening. Lab. fee $4.50. Mr. Price.

5. CITY MILK SUPPLY AND ICE CREAM MAKING. I; 3 cr. The commercial handling of market milk and preparations. Milk ordinances and board of health regulation of milk supplies. Theory and practice of ice cream making. Lab. fee $4.50. Mr. Sommer.

8. DAIRY MECHANICS. II; 3 cr. Dairy plant construction, heating, ventilation, sewage disposal, refrigeration, installation and operation of dairy machinery. Lab. fee $2.25. Mr. Thomsen.

100. THESIS. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Staff.

102. DAIRY PRACTICE. Yr; 1-4 cr. One credit for each 48 hours of work. Lab. fee $2.25 per lab. cr. Mr. Jackson.

121. ADVANCED DAIRY MANFACTURING PROBLEMS. Yr; 1-3 cr. Problems relating to dairy manufacturing. Lab. fee $2.25 per lab. cr. Staff.

123. SEMINARY. Yr; 1 cr. For advanced and graduate students. Mr. Sommer and staff.

124. PHYSICAL CHEMISTRY OF DAIRY PRODUCTS. II; 3 cr. Physical chemistry of dairy products, laboratory exercises on hydrogen ion concentration, oxidation-reduction potentials, surface tension, absorption, viscosity and plasticity, isoelectric point of proteins, colloidal properties of milk constituents. Offered 1931-32 and in alternate years. Lab. fee $4.50. Mr. Sommer.

200. RESEARCH. Yr; *cr. Experimental study of problems in dairy manufacturing. Lab. fee $2.25 per lab. cr. Staff.

ECONOMIC ENTOMOLOGY

HARLEY FROST WILSON, M.S., *Professor of Economic Entomology, Chairman*
CHARLES LEWIS FLUKE, JR., Ph.D., *Associate Professor of Economic Entomology*
EDWARD M. SEARLS, M.S., *Assistant Professor of Economic Entomology*
ERWIN CHARLES ALFONSUS, B.S., *Instructor in Economic Entomology*

Students majoring in economic entomology and desiring to be trained in entomological or beekeeping research for the positions offered by the state agricultural experiment stations and the government service, should follow the curriculum as outlined. Those preparing for entomological chemical work, especially with insecticides, should elect more work in chemistry and physics. Students pursuing specialized lines, such as biological control of insects, insect physiology, and insects in relation to plant diseases, should elect more work in plant pathology, botany, and physiology.

Those interested in the opportunities in the field of entomology and beekeeping should write to the Department of Economic Entomology for a special circular of information.

1. FARM INSECTS. II; 3 cr. A study of the insect groups, especially those in relation to the farm and home. Each student makes a collection of at least one hundred specimens, which he classifies. Optional subject for all agricultural students. Lab. fee $4.50. Mr. Fluke.

2. ELEMENTARY ECONOMIC ENTOMOLOGY. I; 3 cr. The fundamental principles of entomology are stressed, giving the student a foundation in the subject which prepares him for advanced studies of insects. Lab. fee $4.50. Mr. Fluke.

10. ELEMENTARY BEEKEEPING. I; 2 cr. Elementary principles of beekeeping with lectures and practical laboratory work. A general survey of the subject is taken up, with the fall and winter care in the apiary being stressed. Lab. fee $2.25. Mr. Alfonsus.

100. THESIS. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Mr. Wilson and staff.

103. Orchard Insects. II; 2 cr. A laboratory study of the life histories and controls of the principal insect pests of the orchard and bush fruits. Prerequisite: Economic Entomology 1 or 2, or Zoology 3. Offered 1930-31 and in alternate years. Lab. fee $2.25. Mr. Fluke.

105. Field Crop and Garden Insects. II; 2 cr. A laboratory study of the principal insect pests of field, garden, and truck crops; their life histories and controls. Prerequisite: Economic Entomology 1 or 2, or Zoology 3. Offered 1931-32 and in alternate years. Lab. fee $2.25. Mr. Searls.

110. Commercial Honey Production. II; 2 cr. Lectures and laboratory periods dealing with the yearly management of the apiary for intensified honey production, building up in the spring, swarm control, supering for the honey flow, and care of bees in the fall and winter. Prerequisite: Economic Entomology 10. Lab. fee $4.50. Mr. Alfonsus.

120. Taxonomy and Topical Work. I, II; *cr. a. Biological relations of insects; physiology of insects. b. Methods in entomology and insect photography. c. Taxonomy of adult insects. Prerequisite: Economic Entomology 1 or 2. Lab. fee $2.25 per lab. cr. Mr. Wilson, Mr. Fluke, Mr. Searls.

123. Taxonomy of Insect Larvae. I; 3 cr. A study in the identification and morphology of immature insects. Lecture and laboratory. Prerequisites: Economic Entomology 2 and 120 or consent of instructor. Lab. fee $4.50. Mr. Searls.

125. Insects in Relation to Plant Diseases. I; 2 cr. A study of the principal insect carriers and their habits; types of insect injuries affecting health of plants; modes of insect transmission and dissemination of plant diseases; and the methods of rearing and handling the carriers. Arranged to meet the needs of students in entomology, plant pathology, horticulture, and agronomy. Prerequisite: A course in entomology and plant pathology or consent of instructor. Lab. fee $2.25. Mr. Searls.

130. Seminary. I, II; 1 cr. For advanced and graduate students. Mr. Wilson.

200. Research. Yr; *cr. Lab. fee $2.25 per lab. cr. Mr. Wilson and staff.

FORESTRY

(See Forest Products Laboratory, page 438.)

GENETICS

LEON JACOB COLE, Ph.D., *Professor of Genetics, Chairman*
ROYAL ALEXANDER BRINK, D.Sc., *Associate Professor of Genetics*
MALCOLM ROBERT IRWIN, Ph.D., *Assistant Professor of Agricultural Bacteriology and Genetics*
AGNES ZEIMET, M.A., *Instructor in Genetics*

The following courses are designed for those who desire a general knowledge of the subjects of heredity and breeding, or who contemplate following these lines, either from the theoretical or practical point of view. Special opportunity is offered those doing advanced work to get practical experience in the methods of experimental breeding.

100. THESIS. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Mr. Cole, Mr. Brink.

101. PRINCIPLES OF BREEDING. I; 3 cr. Elementary principles of heredity in their application to plant and animal breeding. Additional prescribed reading and written reports for graduate credit. Prerequisite: A course in biology. Mr. Cole.

102. ELEMENTARY LABORATORY. I; 1-2 cr. Breeding experiments illustrating the principles of heredity. Prerequisite: Genetics 101 or concurrent registration. Lab. fee $2.25 per lab. cr. Mr. Brink and staff.

104. PLANT GENETICS. I; 3 cr. Variation and inheritance in plants, including genetics of sterility and disease resistance, and principles of plant improvement. Prerequisite: Genetics 101 or equivalent in zoology or botany. Mr. Brink.

105. ANIMAL GENETICS. II; 2 cr. Inheritance of economic characters in domesticated animals; study of animal breeding methods; evaluation and analysis of pedigrees; application of genetics to the problems of livestock production. Prerequisite: Same as for Genetics 104. Mr. Cole.

106. BIOMETRIC METHODS. II; 2 cr. Lectures and laboratory work in calculation of statistical measures of variability and correlation and their practical application. Determination and usage of probable errors of such measures and for Mendelian data. Prerequisite: Same as for Genetics 104. Lab. fee $2.25. Mr. Brink.

120. SEMINARY. Yr; 1 cr. Consent of instructor required before election. Mr. Cole.

121. TOPICAL WORK. Yr; *cr. Either (a) assigned topics in laboratory or field work with reading, conference, and report, or (b) practice work, including practical experience in the various lines of research carried on in the department; problems, technique, and methods of record keeping. For those not prepared to elect Course 200. May be taken in connection with, or subsequent to, Genetics 101; consent of instructor required. Lab. fee $2.25 per lab. cr. Mr. Cole, Mr. Brink.

200. RESEARCH. Yr; *cr. For students qualified by preliminary training. Work may be based on the analysis of available data, or upon new data acquired by experiment. The summer season offers exceptional opportunity for breeding work with both animals and plants. Opportunity is offered to a limited number of properly qualified students for research under direction during the summer. Such work may extend through the whole season and is applicable toward advanced degrees. Lab. fee $2.25 per lab. cr. Mr. Cole, Mr. Brink.

HOME ECONOMICS

CLOTHING AND TEXTILES

HAZEL MANNING, M.S., *Professor of Home Economics, Chairman*
BESSIE FLORILLA TYRRELL, M.A., *Assistant Professor of Home Economics*
CECELIA FRANCES ABRY, M.S., *Instructor in Home Economics*
MARION ABBIE JUAIRE, M.S., *Instructor in Home Economics*

5. INTRODUCTION TO TEXTILE STUDY. I, II; 2 or 3 cr. Includes microscopic study of fibres, commercial weaves, and physical tests of fibres and fabrics. Technique of hand and machine sewing, making of cotton garments, with special reference to comparative expenditure and wise choice of fabrics. Lecture and two laboratory periods. Lab. fee $4.50-$6.75. Miss Tyrrell, Miss Juaire, Miss Abry.

10. CLOTHING ECONOMICS. I; 2 cr. Lecture and required reading covering economic and sociological phases of the development of the ready-to-wear clothing industry in the United States. Economic study of distribution through department, chain, specialty, and mail-order houses. The psychology of advertising methods used in salesmanship. Study of family clothing budgets. Open to election by juniors and seniors in any college. Miss Manning, Miss Abry.

11. PROBLEMS IN CLOTHING CONSTRUCTION. II; 3 cr. Designing and modeling a dress, using renovated textile materials, adapting patterns, constructing a tailored garment in wool, and designing and making a gown in silk. Prerequisites: Home Economics 2, 5, 50. Lab. fee $4.50. Miss Juaire.

32. CHILDREN'S CLOTHING. II; 2 cr. Studies in choice, selection, design, hygiene, and economics of ready-to-wear versus homemade clothing for children. Case studies of shop practices; budget standards in the home. Prerequisites: Home Economics 5 and junior standing. Lab. fee $2.25. Miss Tyrrell or Miss Manning.

50. TEXTILES. I, II; 3 cr. Advanced study of chemistry of fibres, bleaching, scouring, dyeing, chemical examination of fabrics; test for adulteration of fabrics. A trip to Milwaukee to visit factories is part of the required study. Prerequisites: Home. Econ. 2 and 5, Agr. Chem. 3. Lab. fee $6.00. Miss Abry.

53. TEACHING OF CLOTHING METHODS. I, II; 2 cr. Planning equipment, supplies, and exhibits for high-school courses. Construction of illustrative material planned for courses of study in secondary schools. Selection of suitable material, patterns, and methods for high-school instruction. Reports and demonstrations. Required of all students who are preparing to teach clothing. Prerequisites: Home Econ. 2, 5, 10, 11, 20, 50. Lab. fee $4.50. Miss Manning and staff.

80. TOPICAL WORK. Yr; *cr. Lab. fee $2.25 per lab. cr. Miss Manning, Miss Tyrrell, Miss Juaire, Miss Abry.

96. DECORATIVE DETAILS IN HOUSEHOLD TEXTILES. I; 2 cr. Arts and techniques used in textiles and clothing construction. Lectures and laboratory work. Open to juniors and seniors in any college. Lab. fee $4.50. Miss Tyrrell.

97. Advanced Clothing Construction. I; 2 cr. Study of different materials as adapted to costume designing; technique, design and manufacture of tailored evening and afternoon costumes. Prerequisite: Home Economics 11. Required of textile majors. Open to seniors. Lab. fee $4.50. Miss Juaire.

100. Thesis. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Miss Manning and staff.

103. Economic History of Textile Industry. II; 2 cr. A survey of the development of the textile industry from medieval industrial organization to present day problems of factory and sweat-shop work. Miss Manning.

104. History of Costume in Its Sociological Aspects. I; 2 cr. History of costume in classical antiquity and its subsequent development, with its periodic recurrence in design and its relation to the leisure class and to the cost of living. Open to seniors and graduates. Miss Manning.

106. Seminary in History of American Costume. II; 2 cr. From the revolution to the present day. Relation of the costume to the social and economic history and growth of the United States. European influence upon materials, processes, dyes, and technique of manufacture of textiles used in relation to women's clothing. Prerequisite: Senior standing. Miss Manning.

200. Research in Textile Chemistry. I, II; *cr. Lab. fee $2.25 per lab. cr. Miss Manning.

202. Graduate Seminary in Textiles. I, II; *cr. Miss Manning.

FOODS AND ADMINISTRATION

Abby Lillian Marlatt, M.S., Sc.D., *Professor of Home Economics, Chairman*
Bernice Frances Dodge, M.S., *Associate Professor of Home Economics*
Helen Tracy Parsons, Ph.D., *Associate Professor of Home Economics*
May Louise Cowles, Ph.D., *Assistant Professor of Home Economics*
Ruth Adele Henderson, M.A., *Assistant Professor in the teaching of Home Economics*
Stella Trout Patton, M.S., *Assistant Professor of Home Economics*
Dorothea Rickaby Schindler, B.S., *Assistant Professor of Home Economics*
Dorothy Reed Mendenhall, B.A., M.D., *Lecturer in Home Economics*
Grace Irene Bennett, M.A., *Instructor in Home Economics*
Dorothy Hussemann, M.S., *Instructor in Home Economics*
Katherine Jones, M.A., *Instructor in the teaching of Home Economics*
Frances Roberts, B.S., *Instructor in Home Economics*

1a. General Survey, Elementary Dietetics. I; 2-4 cr. Detailed study of standards in diet for all ages; diet for the sick. Laboratory practice in the study of the more common foods and their preparation and service in meals for the family group. Special problems in planning low-cost meals in preparation for social welfare case-work. Open to juniors and seniors. Lab. fee $2.25 per lab. cr. Miss Marlatt, Mrs. Schindler.

3. Introduction to Food Study. II; 3 cr. Study of the principles used in the selection and preparation of food and meal service. Prerequisite: High-school physics and chemistry, Chemistry 1a, or Biology 1. Lab. fee $4.50. Miss Marlatt and staff.

4. Problems of Food Supply. I; 3 cr. Effect of manufacture upon cost and quality of food; methods and apparatus used in preparation and preservation of foods; study of pure food laws; weights and measures; comparative cost studies of fuels and refrigeration; labor costs in relation to food prices. Prerequisites: Agr. Chem. 3, bacteriology, physics, Home Econ. 3. Lab. fee $4.50. Miss Patton.

6. Nutrition and Dietetics. II; 2 cr. Dietary standards, balanced rations, dietary needs as modified by age, sex, occupation. Newer knowledge of body building, growth factors, relation of nutrition to physical development. How to plan meals so that family needs are met biologically and economically. Prerequistes: Home Econ. 3 and 4, Physiology 1, Agr. Chem. 3. Mrs. Schindler,

9. Introduction to Home Economics. I; 1 cr. The history of the home, social customs, and their value in the evolution of the family. Staff.

16. Dietetics Laboratory. II; 2 cr. Includes study of chemical and physical properties of foods, planning, preparation, and selection of foods, service of meals to meet body needs of individuals and family groups. Study of basal metabolism, a diet study upon self, and detailed dietary study of a group at the practice cottage. Nursery school dietaries planned and the pre-school child's eating habits studied. Nutrition demonstration with animals. Prerequisites: Same as for Home Econ. 6. Lab. fee $4.50. Mrs. Schindler, Miss Hussemann.

47. Diet Problems in Feeding Children. I; 3 cr. Deals with food requirement of young children and studies in establishment of correct feeding habits in children in the nursery school. Lab. fee $2.25. Mrs. Schindler, Miss Roberts.

80. Topical Work. Yr; *cr. Lab. fee $2.25 per lab. cr. Miss Marlatt and staff.

100. Thesis. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Miss Marlatt and staff.

105. Experimental Food Study. I, II; 2 cr. A laboratory course in quantitative experimental work in the field of cookery. An introduction to research work in foods and nutrition. Lab. fee $4.50. Miss Marlatt.

125. Diftotherapy. I, II; 3 cr. The adaptation of diet to the disorders of nutrition. Prerequisites: Home Econ. 6 and 16. Lab. fee $2.25 per lab. cr. Miss Parsons, Miss Hussemann.

127. Problems in Human Nutrition. I, II; *cr. Miss Parsons.

200. Research in Foods and Nutrition. I, II; *cr. Lab. fee $2.25 per lab. cr. Miss Marlatt, Miss Parsons.

202. Topical Work in Foods and Nutrition. I, II; *cr. Miss Marlatt, Miss Parsons.

HOUSING AND HOUSE MANAGEMENT

1b. General Survey, Elementary House Management. II; 2-4 cr. Lectures, 2 cr.; laboratory, 1 cr.; practice cottage, 1 cr. The house, its plans, and its care, so as to lessen labor, secure more sanitary conditions, and give an appreciation of fundamental factors in house decoration, cost of living, the budget, and problems in home management. Especially planned for social welfare workers. Reference work is required. Laboratory includes the house plan, color in house, scoring the room, wood finishes, textile problems, such as adulteration and cleaning, manufacturing of clothing, and supervised house practice work. Open to juniors and seniors in all colleges. Lab. fee $2.25 per lab. cr. Miss Cowles and staff.

7. House Architecture and Sanitation. I; 2 cr. Historic and present day architectural styles illustrated by slides and field trips. Study of problems involved in building the present day house, including choice of site, details of house construction, plumbing, heating, ventilation lighting, sanitation. Discussion of house arrangements which save labor and time in house management. Prerequisite: Home Econ. 2. Miss Marlatt, Miss Cowles, Miss Roberts.

17. House Architecture Laboratory. I; 2 cr. Practice in reading blue prints; planning and drawing floor plans and exteriors of one- and two-story houses suited to needs of special project. Working drawings of labor-saving details and built-in furniture. Prerequisite: Home Econ. 7 or concurrent registration. Lab. fee $4.50. Miss Cowles, Miss Roberts.

72. Home Nursing. I; 1 cr. A two-hour laboratory course in first aid and home nursing. Open to juniors and seniors in any college. Miss Murray.

80. Topical Work. Yr; *cr. Lab. fee $2.25 per lab. cr. Staff.

100. Thesis. Yr; 2 cr. On the advice of the major professor Home Economics 80 may be substituted. Lab. fee $2.25 per lab. cr. Miss Marlatt and staff.

109. Humanics. II; 1-4 cr. Studies in family relationships and child training. Prenatal and natal care of mother and child; study of beliefs and customs affecting human environment today; value of the family as a basis for advancement; the influence of inheritance and environment of the child in the home; problems of the first year in human life; effect of community standards on family problems; value of home training in education of the child; place of the nursery school in the education of parents and the child; growth of the pre-school child; play of the pre-school child; home problems in adolescence; attitudes toward realities affected by family relationships; influence of the home on developing abnormal mental states; discussion of the home as the best place to rear children. Observation in hospitals and in the Dorothy Roberts Nursery School. Lectures, conference and discussion periods. Open to seniors and graduate students. Miss Marlatt, Mrs. Mendenhall, and Miss Bennett.

110. Household Administration. I; 2 cr. A study of the social and economic functions of the home, their historic and present status, with special attention given to standards of living, the management of the family income, household organization, and management. Miss Cowles.

112. Projects in Household Administration. I; 2 cr. Discussion, conferences, and reports to give students familiarity with the economic problems of the home. The buying problem which the purchaser for the family confronts. Problems arising from the change in character of household production. Study of fluctuations in prices of goods bought by the consumer. Study of problems connected with family income, its amount and source. Students live in the home economics cottage for laboratory practice in solution of problems. Prerequistes: Senior standing in a home economics major. Lab. fee $4.50. Miss Dodge, Miss Cowles.

120. Problems of Consumption. II; 2 cr. The character of the consumer as spender of the family income. Examination of studies of family expenditures to gain knowledge of present day tendencies in consumption. The origin of standards for choice, the character of the goods available as it influences the choice of the buyer of the family's goods. Discussions and conferences. Content of course will be adapted to the needs of students. Miss Cowles.

202. Topical Work in Child Welfare. I, II; *cr. Studies on children in the Dorothy Roberts Nursery School. Independent studies on young children. Miss Marlatt and Miss Bennett.

223. Seminary in Housing Problems. II; 2-3 cr. A study of housing situation in the United States at the present time; the origin of the housing problem in the change in industrial conditions and the shift in the population from country to city; the relation of utilization of land, of transportation, and of distribution of wealth to the housing problem; evolution of the remedies for housing diffculties suggested or used in the United States or Europe, including provision of housing by the government, by employers, legislation of various types, and other remedies. Miss Cowles.

INSTITUTIONAL MANAGEMENT

22. Marketing and Large Quantity Cookery. I; 2 cr. Time study, economic study, and marketing study in the selection, purchase, and preparation of foods in large quantities. Lab. fee $2.25. Miss Dodge, Miss Mullen.

122. Organization and Administration of Institutions. II; 2 cr. Organization and administration, methods of accounting in office and storeroom, taking of inventories, planning of work for employees. Miss Dodge.

133. Tea Room and Cafeteria Management. II; 3 cr. A study of the organization of tea rooms and cafeterias, necessary equipment, service problems, menu making and catering, accounting and advertising. Practice in lunch room management in departmental laboratories. A field trip to Chicago is required. Lab. fee $2.25. Miss Dodge and staff.

134. Institutional Equipment and Furnishing. I; 2 cr. A study of institutional planning and building; the selection, cost, and care of labor-saving equipment and other furnishings for hospital, dormitory, or tea room. Prerequisites: Food major, senior standing. Miss Dodge and staff.

202. Topical Work in Institutional Management. I, II; *cr. Miss Dodge.

222. Laboratory and Research Work. I, II; 2-4 cr. Detailed study of accounting and organization and labor problems as an interne in the University Commons. Lab. fee $2.25 per lab. cr. Miss Dodge.

TEACHER TRAINING

52. Teaching of Home Economics. I, II; 4 cr. Study of problems of the home economics teacher, including lesson plans, courses of study, equipment, reference and illustrative material. Observation and practice work in presentation is afforded. Open also to seniors in School of Education. Lab. fee $2.25 per lab. cr. Miss Henderson, Miss Jones.

53. Teaching of Clothing Methods. I, II; 2 cr. Planning of equipment, supplies, and exhibits for high-school courses. Construction of illustrative material planned for courses of study for secondary schools. Selection of suitable material, patterns and methods for high-school instruction. Reports and demonstrations. Required of all students who are preparing to teach clothing. Prerequisites: Home Econ. 2, 5, 10, 11, 20, 50. Lab. fee $4.50. Miss Manning and staff.

126. Extension Course in Home Economics. I; 2 cr. A course to train extension workers for community leadership and to prepare them to cooperate with all agencies for community development. The course consists of discussions of problems in community orgnizations for health projects, child welfare work, community enterprises, such as co-operative buying, food centers, thrift work, laundries, and hot school lunches; the planning of projects to develop community leaders; and the consideration of principles of economics, psychology, and sociology as applied to the problems of rural life and extension work. Other than professional majors must obtain consent of instructor. Miss Marlatt and staff.

158. Advanced Course in Home Economics Education. I, II; 2 cr. Educational problems. For selected seniors and graduate students who are prepared to do intensive study in special educational methods and tests applied to high-school classes in home making. Miss Henderson.

194. Problems in Teaching Related Art. II; 2 cr. Studies and class discussions. Open to graduate students and for those who have had teaching experience. Mrs. Randolph.

202. Topical Work in Home Economics Education. Yr; *cr. Miss Henderson.

290. Supervision of Home Economics. I; 2 cr. The course is designed to meet the needs of those who desire to become trainers of teachers in home economics. It includes detailed study of the educational literature; place of home economics in the school system; study of administrative problems; the psychological methods used in measuring quality of instruction. Miss Henderson.

RELATED ART

MRS. RUTH SACKETT RANDOLPH, B.S., *Assistant Professor of Home Economics, Chairman*
ELLEN HILLSTROM, M.A., *Associate Professor of Home Economics*
HELEN LOUISE ALLEN, M.A., *Instructor in Home Economics*

The Department of Related Art aims to promote interest in art as it relates to costume and to the home. It offers to teaching majors in home economics, to majors in art education, and to students interested in commercial work, an opportunity to study design in interiors, costumes, textiles, furniture, and decorative details.

2. ART AND DESIGN. I, II; 3 cr. A study of principles underlying line, mass, and color arrangement in art related to the home and to costume. Lab. fee $4.50. Mrs. Randolph and staff.

8. HOUSE DECORATION. I, II; 2 cr. Problems involved in the decoration and furnishing of the present day home; relation of the decorative scheme to the architectural features; effects of various line, mass and color arrangements; background treatments; methods of lighting; choice of floor covering, draperies, furniture, pictures, and accessories. Illustrated lectures and discussion. Prerequisites: An elementary course in design and junior standing. Miss Hillstrom.

12. COLOR. II; 2 cr. This course is a continuation of the study of color in Home Economics 2. It offers an opportunity for the study of color and of colors as they affect each other. Emphasis is placed on developing a color sense and a vocabulary of colors. Practice is given in planning many types of color schemes in relation to costume design and interior decoration. Prerequisite: An elementary course in design. Lab. fee $4.50. Miss Allen.

18. HOUSE DECORATION LABORATORY. I, II; 2 cr. A study of problems in planning the decoration of a selected home. Prerequisites: An elementary course in design and junior standing. Should be taken with Home Economics 8. Lab. fee $4.50. Miss Hillstrom.

20. COSTUME APPRECIATION AND SELECTION. I, II; 2 cr. A course in fundamentals of design and style in dress and accessories as a basis for the selection or design of becoming and appropriate clothes. A study of figure, color and personality types, and the relation of carriage and coiffure to personal appearance. Lectures, demonstrations and laboratory work. Prerequisites: An elementary course in design and sophomore standing. Lab. fee $4.50. Mrs. Randolph.

80. TOPICAL WORK. Yr; *cr. Lab. fee $2.25 per lab. cr. Mrs. Randolph, Miss Allen.

93. STAGE COSTUMING. II; 2 cr. Practice in designing modern, imaginative and historic costumes for the stage. Sketching and the fundamentals of modeling in materials on the figure. Emphasis on style, color and originality. Planned for students preparing to become costume designers, consultants and play directors. Prerequisites: Home Economics 20. Lab. fee $4.50. Mrs. Randolph.

94. Advanced Applied Design. II; 3 cr. Design and its application to accessories for home and clothing with emphasis on the textile arts. Prerequisites: An elementary course in design and junior standing. Lab. fee $4.50. Mrs. Randolph.

95. Hand Loom Weaving. I, II; 1-3 cr. This course is planned to develop a keener appreciation of the factors involved in textile selection as well as educational application in occupational therapy. It involves the planning of problems in design, color and texture; the preparation of the materials for the loom and the setting up and weaving. Practical problems in both Colonial and Scandinavian weaving are given. The lectures cover the construction of patterns, the reading of patterns from woven materials, and the history of hand weaving. Prerequisites: Home Economics 2 and 5, or consent of instructor. Lab. fee $2.25 per lab. cr. Miss Allen.

100. Thesis. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Mrs. Randolph and staff.

114. Studies and Practice in Interior Decorating and Furnishing. I, II; 2 cr. Prerequisites: Home Economics 8, 18, 94, and 116 or concurrent registration. Miss Hillstrom.

116. Seminary in Interior Decorating and Furnishing. Yr; 2 cr. Prerequisites: Senior standing and a knowledge of history and historic styles of ornament. Miss Hillstrom.

121. Advanced Costume Design. II; 2 cr. Advanced problems in designing modern dress and accessories. Field trips to costume studios and factories. Prerequisites: Senior standing and an elementary course in costume design. Lab. fee $4.50. Mrs. Randolph.

194. Problems in Teaching Related Art. II; 2 cr. Prerequisite: Graduate standing or teaching experience. Mrs. Randolph.

202. Topical Work in Related Art. Yr; *cr. Mrs. Randolph, Miss Hillstrom.

HORTICULTURE

James Garfield Moore, M.S., *Professor of Horticulture, Chairman*
James Johnson, Ph.D., *Professor of Horticulture*
James Garfield Milward, M.S., *Professor of Horticulture*
Ray Harland Roberts, Ph.D., *Professor of Horticulture*
Franz August Aust, M.S., M.L.D., *Associate Professor of Horticulture*
John William Brann, M.S., *Assistant Professor of Horticulture and Plant Pathology*
Conrad Louis Kuehner, B.S., *Assistant Professor of Horticulture*
George William Longenecker, B.S., *Instructor in Horticulture*
Norman Arthur Morris, B.S., *Instructor in Horticulture*
William Butler Ogden, B.S., *Instructor in Horticulture*

The courses offered in horticulture permit the student to specialize in fruit growing, landscape design, or vegetable production. The choice of electives taken in other departments to supplement horticultural courses will be determined by the specialization and the particular phase of the work the student expects to enter. Courses 1, 2, 5, 6, and 7 should be of particular in-

terest to students specializing in other departments who are fitting themselves to be county agents, teachers in vocational or high schools, or farm managers or operators.

Majors in general horticulture may count a maximum of five credits towards the major requirement by electing Economic Entomology 1 and Plant Pathology 5. Students specializing in landscape gardening may count toward the major five credits in the above mentioned courses or in the following: Rural Sociology 25, Art Education 52, 62, and Topographic Engineering 108. Such students are also referred to courses in city planning, offered by the College of Engineering.

1. Principles of Fruit Growing. I; 3 cr. The principles of fruit growing and their application to our common tree fruits. Optional subject for all agricultural students. Lab. fee $2.25. Mr. Moore.

2. Advanced Fruit Growing. Yr; 2 cr. Lecture and laboratory work dealing with orchard practice, pruning, spraying, cultivation, harvesting, storing, and marketing fruits. Prerequiste: Hort. 1 or consent of instructor. Lab. fee $2.25. Mr. Roberts.

3. Vegetable Gardening. II; 3 cr. Principles and practices involved in the growing of vegetables. Practical work in the gardens. Lectures and laboratory. Optional subject for all agricultural students. Lab. fee $4.50. Mr. Moore.

4. Vegetable Forcing. I; 3 cr. Principles involved in growing vegetables under glass with practical work in the forcing house. Forcing house constructon and heating. Offered 1930-31 and in alternate years. Lab. fee $4.50. Mr. Moore.

5. Small Fruit Culture. I; 2 cr. Principles and practices of the successful culture of cane, bush, and other small fruits. Mr. Moore.

6. Principles of Landscape Design. I; 3 cr. Discussion of the principles of landscape art. Field and laboratory work in the study of decorative plants and making of planting plans. A trip to some nursery will be taken for the purpose of studying plant materials and nursery practice. Lab. fee $4.50. Mr. Aust, Mr. Longenecker.

7. Plant Propagation. II; 2 cr. Principles and practices involved in propagating horticultural plants. Lectures and laboratory. Lab. fee $2.25. Mr. Moore.

8. Floriculture. II; 3 cr. Propagation and care of house, garden, and lawn plants with reference to home floriculture. Designed for women. Lab. fee $2.25. Mr. Moore.

11. Potatoes and Truck Crops. I; 2 cr. Lectures and laboratory work on the methods of growing and improving potatoes, including variety, identification, and disease control. Also a general consideration of the more important truck crops, as cabbage, onions, celery. Lab. fee $2.25. Mr. Milward, Mr. Brann, Mr. Combs.

12. Elementary Home Grounds Design. II; 2 cr. Continuation of Horticulture 6, which is prerequisite. Emphasizing practice in home grounds design. A class trip will be taken for the purpose of studying different landscape treatments. Lab. fee $4.50. Mr. Aust, Mr. Longenecker.

13. Elementary Landscape Construction. I; 2 cr. Lawn construction, grading, and estimating materials. Prerequisite: Agr. Engineering 1. Lab. fee $4.50. Offered 1932-33 and in alternate years. Mr. Aust.

14. Landscape Construction Problems. I; 2 cr. Construction of walls, steps, ramps, drives, and walks. Making planting lists and specifications. Lab. fee $4.50. Offered 1931-32 and in alternate years. Mr. Aust.

15. Water Problems. II; 3 cr. Drainage, pools, and water features. Lab. fee $4.50. Offered 1931-32 and in alternate years. Mr. Aust.

100. Thesis. Yr; 2 or more cr. Research work on horticultural subjects. Fees depend upon character of thesis work. Lab. fee $2.25 per lab. cr. Mr. Aust, Mr. Johnson, Mr. Moore, Mr. Roberts.

110. Seminary. Yr; 1 cr. For advanced and graduate students. Mr. Roberts, Mr. Aust.

121. Horticultural Problems. Yr; 1-3 cr. The student is assigned a special problem in the phase of horticulture in which he is particularly interested. Prerequisite: Consent of instructor. Lab. fee $2.25 per lab. cr. Staff.

122. Systematic Pomology. I; 3 cr. Classification, identification, judging and distribution of our common fruits. Prerequisite: Consent of instructor. Offered 1931-32 and in alternate years. Lab. fee $4.50. Mr. Moore.

126. Rural Improvement. II; 3 cr. A discussion of farmstead, community center, and regional planning and their relation to rural conditions. Lectures, assigned readings, reports. Prerequisite: Economics 1a. Mr. Aust.

131. Advanced Home Grounds Design. I; 3 cr. Designs of estates and country home grounds and related problems. Lecture and laboratory. Prerequisites: Hort. 6 and 12. Lab. fee $4.50. Mr. Aust.

132. Civic Problems. II; 3 cr. Landscape problems in connection with public buildings. Park and cemetery design. Lecture and laboratory. Prerequisites: Hort. 6 and 12. Lab. fee $2.25. Mr. Aust.

134. Landscape Plants. II; 2 cr. Advanced study of annuals, herbaceous perennials, shrubs, and trees. Prerequisite: Hort. 6. Lab. fee $2.25. Offered 1932-33 and in alternate years. Mr. Aust.

135. Plant Ecology in Design. I; 2 cr. A study of plant forms, color, and texture in landscape design. Prerequisite: Hort. 104. Lab. fee $2.25. Offered 1931-32 and in alternate years. Mr. Aust.

LIBRARY

Clarence Scott Hean, B.A., *Librarian*

1. Library Practice. I; 1 cr. The classification and arrangement of books, filing of bulletins, use of card catalogs, periodical indexes, abstract journals, public documents, standard reference works, including handbooks in the various fields of knowledge, and the compiling of bibliographies. Mr. Hean.

PLANT PATHOLOGY

GEORGE WANNAMAKER KEITT, Ph.D., *Professor of Plant Pathology, Chairman*
JAMES GEERE DICKSON, Ph.D., *Professor of Plant Pathology*
BENJAMIN MINGE DUGGAR, Ph.D., *Professor of Botany and Plant Pathology*
EDWARD MARTINIUS GILBERT, Ph.D., *Professor of Botany and Plant Pathology*
LEWIS RALPH JONES, Ph.D., Sc.D., *Professor of Plant Pathology*
RICHARD ENGLISH VAUGHAN, M.S., *Professor of Plant Pathology*
JOHN CHARLES WALKER, Ph.D., *Professor of Plant Pathology*
ALBERT JOYCE RIKER, Ph.D., *Associate Professor of Plant Pathology*
JOHN WILLIAM BRANN, M.S., *Assistant Professor of Horticulture and Plant Pathology*
JOHN JEFFERSON DAVIS, B.S., M.D., *Curator of the Herbarium*
CLARICE AUDREY RICHARDS, Ph.D., *Lecturer in Forest Products*

Courses 104, 149, 220, 221, and 252 are offered in the Department of Botany, College of Letters and Science.

5. CROP DISEASES AND THEIR CONTROL. I; 2 cr. Lectures and demonstrations dealing with the occurrence, symptoms, and control of the more important diseases of the commonly cultivated crops. Lab. fee $2.25. Mr. Vaughan and staff.

100. THESIS. Yr; 2 cr. Investigation of some problem in plant pathology. Subject should be chosen early, preferably the preceding spring, in order to take advantage of the summer season to secure material. Lab. fee $2.25 per lab. cr. Staff.

101. DISEASES OF PLANTS. I; 3 cr. The nature, causes, and remedies of the diseases of economic plants, including field and laboratory studies of a typical series of examples. Prerequisites: Botany 1 and Agr. Bact. 1. Lab. fee $4.50. Mr. Walker, Mr. Gilbert.

102. METHODS IN PLANT PATHOLOGY. I; 3 cr. Isolation of parasites, technique of cultural methods, spore germination, and infection. Prerequisite: Plant Path. 101. Lab. fee $4.50. Mr. Riker.

104. MORPHOLOGY OF FUNGI. I; 3 cr. Prerequisite: Botany 1. Lab. fee $3.50. Mr. Gilbert.

116. DISEASES OF FIELD CROPS. II; 2 cr. Arranged to meet the needs of students in plant pathology and agronomy. Prerequisite: Plant Path. 101. Offered 1931-32 and in alternate years. Lab. fee $2.25. Mr. Dickson.

117. DISEASES OF ORCHARD FRUITS. II; 2 cr. A study of the more important diseases of deciduous orchard fruits. Prerequisite: Plant Path. 101. Offered 1931-32 and in alternate years. Lab. fee $2.25. Mr. Keitt.

119. DISEASES OF TIMBER. I; 2 cr. A survey of fungi causing rot in living trees and structural timbers, and control measures. Prerequisite: Plant Path. 101. Offered 1931-32 and in alternate years. Lab. fee $2.25. Miss Richards.

120. Diseases of Vegetable Crops. II; 2 cr. A study of the more important field and storage diseases of vegetable crops. Prerequisite: Plant Path. 101. Offered 1932-33 and in alternate years. Lab. fee $2.25. Mr. Walker.

122. Fungicides in Relation to Host and Parasite. II; 1 cr. Advanced course, primarily intended for students specializing in plant pathology and horticulture. Prerequisite: Plant Path. 101. Offered 1932-33 and in alternate years. Mr. Keitt.

149 Special Physiology of Pathogenic Fungi. II; 2 cr. Prerequisite: Botany 146. Mr. Duggar.

200. Research. Yr; *cr. Lab. fee $2.25 per lab. cr. Staff.

220. Advanced Mycology. Yr; 2 cr. Prerequisite: Botany 104. Lab. fee $2.00 per semester. Mr. Gilbert.

221. Classification of Parasitic Fungi. Yr; 1 cr. Prerequisite: Botany 104 or Plant Path. 101. Mr. Davis.

223. Seminary in Plant Pathology. Yr; 1 cr. For advanced and graduate students. Mr. Jones and staff.

252. Cytology of Fungi. II; *cr. Prerequisite: At least one semester of general cytology. Lab. fee $2.00 per cr. Mr. Gilbert.

POULTRY HUSBANDRY

James Garfield Halpin, B.S., *Professor of Poultry Husbandry, Chairman*
John Barry Hayes, B.S., *Associate Professor of Poultry Husbandry*
Gerald Everett Annin, B.S., *Instructor in Poultry Husbandry*
Clayton Ernest Holmes, B.S., *Instructor in Poultry Husbandry*

Students majoring in poultry husbandry may prepare for commercial poultry farming, for one of the various lines of commercial work with which poultry husbandry is related, or for educational work in extension, instruction, or research. Poultry majors should supplement their training by electing such courses as Animal Husbandry 126, Agr. Chem. 1 and 2, Agr. Econ. 127 and 128, and Genetics 101. Students preparing for educational work along the more scientific lines should elect Chemistry 120, Agr. Chem. 122, Zoology 105 and 109. Opportunities are provided for students majoring in poultry husbandry to become familiar with methods of poultry management by working at the university poultry plant, local hatcheries, etc. Not to exceed five credits from the following courses may be counted as a portion of the major requirement in poultry husbandry: Veterinary Science 125, Diseases of poultry; Animal Husbandry 126, Livestock feeding; Agricultural Chemistry 122, Animal chemistry; Agricultural Economics 127, Cooperative marketing; Agricultural Economics 128, Marketing agricultural products; and Genetics 105, Animal genetics.

1. Poultry Raising. I; 3 cr. A general survey course designed to give the student an understanding of the various problems concerned in poultry raising. Emphasis is given to the study of the various breeds and varieties, breeding and selection for egg production. Optional subject for all agricultural students. Lab. fee $2.25. Mr. Holmes.

2. Poultry Feeding. II; 2 cr. A study of the feeding and management of poultry. Mr. Holmes.

5. Incubation and Brooding. II; 2-3 cr. Designed to give poultry majors and other students interested in artificial incubation and brooding an understanding of the factors influencing the hatchability of eggs; a practical study of embryology; practical problems in the operation of incubators and brooders. Prerequisite: Poultry Husbandry 2 or concurrent registration. Lab. fee $2.25 per lab. cr. Mr. Holmes.

8. Marketing Poultry Products. I; 2 cr. A consideration of those factors tending to produce quality in market poultry. Laboratory practice in fattening, dressing, grading, and packing various classes of market poultry; a consideration of those factors tending to produce quality in market eggs. Laboratory practice in candling, grading, and packing market eggs; methods of marketing poultry products. Prerequisite: Poultry Husbandry 1. Lab. fee $2.25. Mr. Holmes.

100. Thesis. Yr; 2 cr. Mr. Halpin, Mr. Holmes.

106. Poultry Judging. I; 3 cr. Origin, history, and points of excellence of the various breeds and varieties of poultry as described in the American Standard of Perfection. A study of the inheritance of common characters in poultry. Prerequisites: Poultry Husbandry 1 or Genetics 101. Lab. fee $2.25. Mr. Halpin.

107. Advanced Poultry Management. II; 3 cr. Influence of recent investigations in poultry husbandry as they affect modern methods of feeding, housing, breeding, care and management of poultry. Special emphasis on rations and practices where poultry is kept on a large scale. Prerequisites: Poultry Husbandry 1 and 2 or Animal Husbandry 126. Mr. Halpin.

200. Research Problems. Yr; *cr. Lab. fee $2.25 per lab. cr. Mr. Halpin, Mr. Holmes.

RURAL SOCIOLOGY

John Harrison Kolb, Ph.D., *Professor of Rural Sociology, Chairman*
Ellis Lore Kirkpatrick, Ph.D., *Associate Professor of Rural Sociology*
Arthur F. Wileden, M.S., *Assistant Professor of Rural Sociology*
Conrad Ferdinand Taeuber, M.A., *Instructor in Rural Sociology*

The courses in this department are intended to give a broad view of group life and activities in relation to rural social institutions such as family, church and school. Attention is given to the elements composing and the factors affecting standards of living in rural communities. Emphasis is placed on research and extension aspects of particular problems within the field.

Students majoring in this department will be expected to take courses 25, 100, 126, 200 and 225. They must take course 1 and may take other courses in the Department of Sociology in the College of Letters and Science. In addition they may take not to exceed 5 credits from the following courses to apply on their major: Agricultural Economics 8, 10, 107, 117, 127, 128, 150 and 152; Agricultural Education 1, 5 and 110, Agricultural Journalism 1, 103 and 111 and Horticulture 6 and 126.

25. Rural Life. I; 3 cr. The rural life movement with special attention given to the group organization or rural society; rural social institutions, such as the family, the school, the church, social and welfare agencies; principles and policies of rural community organizations. Prerequisite: Sophomore standing. Mr. Kolb.

100. Thesis. Yr; 2 cr. Original work on problems pertaining to rural communities. Staff.

126. Rural Standards of Living. II; 2 cr. Development of standards of living in rural communities. Consideration of all elements composing the standard of living: food, housing, transportation, education, religion, art, and recreation, in relation to income, trading centers, social institutions, and local groupings. Prerequisite: Junior standing. Mr. Kirkpatrick.

200. Research. Yr; *cr. Rural social organization and rural life, Mr. Kolb; Rural standards of living, Mr. Kirkpatrick.

225. Seminary in Rural Social Organization. I; 2 cr. The theory and practice of rural social organization related to rural population groups, to villages and small town groups, and to towns and county organization policies. Emphasis is given to research methods of study. Prerequisite: Rural Sociology 25. Mr. Kolb.

SOILS

Andrew Robinson Whitson, B.S., *Professor of Soils, Chairman*
Clinton Joseph Chapman, B.S., *Professor of Soils*
Fred Ludwig Musbach, B.S., *Professor of Soils*
Emil Truog, M.S., *Professor of Soils*
Edward John Graul, M.S., *Associate Professor of Soils*
Otto Reinhart Zeasman, B.S., *Associate Professor of Soils and Agricultural Engineering*
Arthur Robert Albert, B.S., *Assistant Professor of Soils*
Russell Hayden Austin, Ph.D., *Assistant Professor of Soils.*
Harold Haight Hull, M.S., *Instructor in Soils*

Soils 1 is prerequisite to all other courses in soils. Soils 122 may be elected by middle course sophomores. Soils 1 and 120 are general in character and are adapted to the needs of all students of agriculture. Advanced students specializing in this subject are advised to elect courses in chemistry, soils bacteriology, plant physiology, agronomy, or geology, according to their special needs, during their senior and graduate years. The summer period is particularly suited to advanced work in soil fertility; for courses offered see summer session bulletin.

General Major. Students majoring in soils and preparing for practical farming or for positions as farm manager, teacher of agriculture, or county agricultural agent, should take Physics 61, 5 cr., Botany 146, 4 cr., and science or mathematics, 5 cr.; and select the courses in soils in the following order: For the sophomore year,, 1, 5 cr.; 122, 3 cr.; for the junior year, 120, 2 cr.; for the senior year, 127, 2 cr.; 128, 2 cr.; and thesis, 4 cr., or 121, 4 cr. In addition to these suggestions, students are urged to elect courses in the Departments of Agronomy, Botany, Agricultural Economics, Agricultural Engineer-

ing, Animal Husbandry, Bacteriology, and Geology to supplement the required work in soils. General majors desiring to teach should consult the chairman of the Department of Agricultural Education concerning requirements not later than the beginning of the junior year.

TECHNICAL MAJOR. Students desiring to prepare for the work of soil surveying, land classification, or field experimentation should follow the general suggestions given above for the general major, but choose supplementary electives from the following group: Agr. Engr. 5, 102; Agronomy 102, 106, 120; Botany 109; Chemistry 11 or 12; Geology 1, 11; Soils 121.

Students preparing to become soil chemists should take Soils 1, 5 cr., and Soils 122, 3 cr., in the sophomore year; Soils 127, 2 cr., and Soils 121, 4 cr., in the junior year; and Soils 120, 2 cr., Soils 125, 3 cr., Soils 100, 4 cr., and Soils 128, 2 cr. in the senior year. In addition, Chemistry 12, 3 cr., Zoology 3, 3 cr., Geology 2, 3 cr., Agronomy 106, 3 cr., should be elected in the sophomore year; Chemistry 120-121, 3 or 5 cr., and a language in the junior year; and Agr. Bact. 123, 4 cr., Chemistry 130-131, 5 cr., Agronomy 102, 2 cr., in the senior year.

Students are urged to consult a member of the department not later than the second semester of their sophomore year so that a logical sequence of courses may be arranged. Agr. Bact. 123, Soils bacteriology, will be considered as a part of the major.

1. PRINCIPLES OF SOIL FERTILITY. I; 5 cr. Discussions and laboratory work on the formation, composition, tilth, and fertility of soils in relation to the growth of plants. Prerequisite: Chemistry 1b or concurrent registration. Lab. fee $4.50. Mr. Graul and staff.

100. THESIS. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Mr. Whitson and staff.

120. SOIL MANAGEMENT. I; 2 cr. Lectures and field work, maintenance of fertility, including principles of fertilizer practice, and adaptation of system of agriculture to type of soil and climate. Prerequisite: Soils 1. Mr. Whitson.

121. SOIL ANALYSIS. II; 4 cr. Lectures and laboratory. Soil acidity methods, limestone analysis, determination of essential elements, availability methods, complete soil analysis. The use of chemical analysis in soil diagnosis. Prerequisites: Soils 1, Chemistry 12. Lab. fee $4.50. Mr. Truog.

122. SOIL PHYSICS AND TILLAGE. II; 2-3 cr. Lectures and laboratory. The physical properties of the soil constituents, tilth, soil moisture, heat, in relation to the growth of plants, with practical applications to farm practice. Prerequisite: Soils 1. Lab. fee $2.25 per lab. cr. Mr. Graul.

125. SOIL AND LAND CLASSIFICATION; AGRICULTURAL CLIMATOLOGY. II; 3 cr. Lectures and field work in soil mapping. The principles of climatology and soil and land classification in relation to agriculture, including a study of the soils and climate of the United States and of the chief foreign countries. Prerequisite: Soils 1 or graduate standing. Mr. Whitson.

127. SOIL SCIENCE AND PLANT NUTRITION. I; 2 cr. Lectures and discussions. The constitution of the soil, especially as a medium for plant growth. The newer applications of scientific principles to such problems as soil acidity, use of fertilizers, soil amendments, and toxic agents. Prerequisite: Soils 1 or graduate standing. Mr. Truog.

128. Seminary in Soils. I, II; 1 cr. Mr. Whitson, Mr. Truog.

180. Topical Work. Yr; *cr. Mr. Whitson, Mr. Truog, Mr. Graul.

200. Research. I, II; *cr. Lab. fee $2.25 per lab. cr. Mr. Whitson, Mr. Truog, Mr. Graul.

228. Field Course. Yr; 2-4 cr. Soil and crop rotation problems, soil acidity and legumes, farm soil survey, factors determining fertility balance sheet, planning and use of experimental and demonstrational fertilizer plots. Prerequisite: Soils 1. Mr. Whitson, Mr. Musbach, Mr. Albert.

VETERINARY SCIENCE

Frederick Brown Hadley, D.V.M., *Professor of Veterinary Science, Chairman*
Alexander Septimus Alexander, F.H.A.S., M.D.C., *Professor of Veterinary Science*
Burr Abraham Beach, D.V.M., *Associate Professor of Veterinary Science*
Charles Roy Strange, D.V.M., *Instructor in Veterinary Science*

The courses described below have been planned to give the students an appreciation of the various branches of veterinary science. They are taught largely by the laboratory method. Besides giving information needed for the intelligent care and management of sick animals, they aid advanced students to secure a knowledge of animal breeding, animal pathology, and veterinary bacteriology.

1. The Animal Body. I; 3 cr. The structure, functions, and derived products of the animal body. The student learns about the form, capacity and productivity of farm animals as well as the fundamentals relative to their feeding and breeding. Optional subject for all agricultural students. Lab. fee $4.50. Mr. Hadley.

2. Non-Infectious Diseases of Livestock. I; 2 cr. Their causes, symptoms, prevention, and treatment, including conformation and soundness. Mr. Hadley.

100. Thesis. Yr; 2 cr. Mr. Hadley, Mr. Beach.

123. Infectious Diseases of Livestock. II; 2 cr. Their causes, diagnosis, control and eradication. Prerequisite: A course in veterinary science or bacteriology. Mr. Hadley.

124. Topical Work. Yr; *cr. Assigned work for advanced students. Mr. Hadley and staff.

125. Diseases of Poultry. II; 2 cr. A study of the more common diseases of poultry. Prerequisite: Vet. Science 1 or Poultry Husb. 1. Offered 1931-32 and in alternate years. Mr. Beach.

126. Infection and Immunity. II; 3 cr. An experimental study of the principles of infection and immunity. Prerequisite: A course in bacteriology: Offered 1930-31 and in alternate years. Lab. fee $4.50. Mr. Hadley and staff.

200. Research. Yr; 2 cr. Lab. fee $2.25 per lab. cr. Mr. Hadley, Mr. Beach.

PART V—
THE UNDERGRADUATE SCHOOLS

LAW SCHOOL
MEDICAL SCHOOL
SCHOOL OF NURSING
SCHOOL OF EDUCATION

LAW SCHOOL

RAY ANDREWS BROWN, B.A., LL.B., S.J.D., *Professor of Law*
WILLIAM HERBERT PAGE, B.A., LL.M., S.J.D., *Jackson Professor of Law*
WILLIAM GORHAM RICE, JR., LL.B., M.A., S.J.D., *Professor of Law*
OLIVER SAMUEL RUNDELL, LL.B., *Professor of Law, Acting Dean*
MALCOLM PITMAN SHARP, M.A., LL.B., S.J.D., *Associate Professor of Law*
RICHARD VALENTINE CAMPBELL, B.A., LL.B., J.S.D., *Assistant Professor of Law*
NATHAN PAUL FEINSINGER, B.A., J.D., *Assistant Professor of Law*
ALFRED LEROY GAUSEWITZ, B.A., LL.B., *Assistant Professor of Law*
HOWARD LEWIS HALL, B.A., LL.B., *Assistant Professor of Law*
FRANK TILDEN BOESEL, Ph.B., LL.B., *Lecturer in Law*
ERNEST C. FIELDER, LL.B., *Lecturer in Law*
JOHN BELL SANBORN, Ph.D., *Lecturer in Law*
JACOB HENRY BEUSCHER, LL.B., *Instructor in Law*
OLIVER H. MINER, LL.B., *Instructor in Law*

OBJECT OF THE COURSE

The Law School offers a course of study covering a period of three years. It is designed to teach the fundamental principles of the English and American law in a thorough manner, and to fit the student for the active practice of the profession.

ADMISSION

This subject, so far as it bears upon entrance into the University, is fully discussed under the general heading of Admission, page 33.

CANDIDATES FOR THE DEGREE. Applicants for admission to the Law School who expect to become candidates for the degree of Bachelor of Laws are required to have satisfactorily completed three full years of college work, equivalent to the first three years of either of the General Courses (B.A. or Ph.B.) in the College of Letters and Science of the University. See pages 55-68 for further details. The satisfactory completion of three years of work in a general course toward a bachelor's degree in arts, philosophy, or science in any college or university officially recognized by the University of Wisconsin or of any degree course offered by the University of Wisconsin will be regarded as satisfying this requirement.

ADVANCED STANDING. Applicants qualified to enter this Law School as candidates for a degree, who have satisfactorily completed one or more years of resident work in a law school of good standing, having a three-year course, will be given equivalent rank in this school upon presenting properly authenticated certificates of such work. The right is reserved to give credit only on examination and to withdraw credit given if the student's work in this School is unsatisfactory. All persons who intend to apply for advanced standing under the above rule should forward or present their credentials to the Dean of the School at least two weeks before the opening of the particular session which the student desires to attend.

UNCLASSIFIED STUDENTS. Applicants for admission who are not candidates for the law degree may be admitted as unclassified students provided they have met the general university entrance requirements and have satisfactorily completed two full years of college work, equivalent to the first two years of a general course in the College of Letters and Science at this University. Such unclassified students are subject to all the regulations and requirements of the School excepting those pertaining to graduation, and they are entitled to all the instructional facilities afforded other students. An opportunity is thus given to prepare for bar examinations in this and other states.

FEES AND EXPENSES

See section entitled Student Expense, beginning on page 15.

PRE-LEGAL STUDIES

The student should bring to the study of law, habits of concentration and industry and the intellectual tolerance that results from a course of liberal studies in a college of liberal arts. No prescribed course is practicable or desirable. A student whose interests and tastes incline him to the study of law will naturally select many electives from the field of the social sciences—economics, sociology, history, philosophy, psychology, political science. (See recommendations of the Law School faculty, section 19, page 61.) A knowledge of Latin is not indispensable to law but its study is strongly recommended, not only for its disciplinary and cultural value, but as a means of developing a clear English style in writing and speaking. The fundamental doctrines of the law dealing with the rights of the person and of property should be studied in their historical background. A student preparing for law should be well grounded in the history of England and the United States, particularly in those courses of an institutional character. Students who desire to pursue advanced work in Roman law, jurisprudence, or the history and philosophy of law, will find a reading knowledge of German and French indispensable.

As described in detail in section 19, page 61, students of the College of Letters and Science, who have completed the requirements of the first three years of one of the general courses may, in their senior year, elect the subjects required of first-year students in the Law School and credit this work toward both the arts and law degrees. By so arranging his work, a student may earn his B.A. degree at the end of four years and his LL.B. degree at the end of an additional two years, plus the period of office apprenticeship as described below under the heading of Graduation, paragraph (3).

REQUIRED AND ELECTIVE COURSES

Candidates for the degree are required to take all the subjects of the first year, twelve hours of work in the second year, and twelve hours in the third year. The work of the second and third years is elective. Elections in all cases are subject to the approval of the Dean.

PROCEDURE AND PRACTICE COURSES

Courses in procedure and practice extend throughout the last two years and comprise Evidence, four credits; Office Practice, two credits; Pleading, four credits; Practice, four credits; Practice Court, one credit. The purpose of the courses is to instruct the student in the principles of pleading and practice at common law and under the codes, and to give facility in their application by duplicating as far as possible the steps taken by an active practitioner in the preparation for trial of cases at law and in equity throughout the entire field of litigation. In Practice Court, the student prepares pleadings in assigned cases and carries a cause of action through the various steps from its inception to the final judgment. The course in office practice involves the drafting of ordinary legal documents, such as bills of sale, deeds, wills, and articles of incorporation, and the examination of abstracts of title.

STUDIES OUTSIDE THE LAW SCHOOL

Students of the Law School may pursue, without additional fees, studies in other departments of the University for which they are prepared, in so far as such studies do not interfere with their work in the Law School. Before registering in other departments, the student must obtain permission from the Dean of the Law School. Credit toward the law degree will be granted for Economics 208; no credit toward the law degree is given for other studies taken outside the Law School.

REQUIREMENTS FOR GRADUATION

The degree of Bachelor of Laws will be conferred upon all candidates who are at least 21 years of age, who are of good character, who, in the judgment of the Faculty, possess satisfactory legal attainments, and who have complied with the following conditions:

(1) Completion of seventy-four credits with a weighted average of seventy-seven.

(2) Residence of at least three years in a law school of good standing, having a three-year course, the last year of which must have been in this School.

(3) An apprenticeship of not less than six months in a law office, except as provided below. This requirement must be absolved at a time when the candidate is not in attendance upon the University. At the option of the candidate the requirement may be met by two periods of not less than three months each. The requirement must be entirely absolved after the student shall have received credit for not less than twenty semester hours in the Law School. Credit for office study will not be granted unless the student complies with the following regulations: (a) At the beginning of the clerkship, he must file a certificate by his preceptor stating the date on which the clerkship began. (b) A like certificate showing the date of completion of the clerkship must be filed at the completion of the period. (c) A monthly report, signed by the student and endorsed by the preceptor, showing the kind and amount of work assigned to the student during the period of the report must also be filed.

A candidate for graduation who has obtained credit for the courses in evidence, pleading, practice, office practice, and practice court, who has obtained at least 82 credits with a weighted average of C, and who has a residence of at least three years and three months in a law school of good standing, having a three-year course, the last year of which must have been in this School, will be relieved from the requirement of office clerkship.

Students completing the course with distinguished excellence may be recommended for the degree with honor.

ADMISSION TO THE BAR

The statutes of the state provide that any resident graduate of the Law Department of the University of Wisconsin shall be admitted to practice in all of the courts of this state by the Supreme Court upon the presentation of his diploma, and may be admitted to the Supreme Court when not in session by an order signed by one of the justices thereof and filed with the clerk of said court. (R. S. Wis., sec. 256.28.)

Under this statute and a rule of the federal court, it is customary for the graduating class, on motion of a member of the Faculty, to be admitted to the Supreme Court of the state and to the district and circuit courts of the United States immediately upon graduation. This entitles them to admission to the bar of any court of record in Wisconsin and all federal courts in the state.

THE ORDER OF THE COIF

The Order of the Coif is an honorary legal society having for its purpose the encouragement of scholarship and the advancement of ethical standards in the legal profession. Membership in it is dependent entirely upon the attainment of high scholastic standing. The name of the society is taken from the Order of Sergeants of the English bar. This Order is now extinct, but during its day it represented a select group of lawyers eminent for learning and professional attainments. The society has chapters in most of the leading law schools of the country. The Wisconsin chapter was established in 1907. Candidates for the law degree are elected to membership during the last semester of their third year.

WISCONSIN LAW REVIEW

The *Wisconsin Law Review* was established in 1920 by authority of the Regents. The *Review* appears quarterly, and deals primarily with questions in Wisconsin law and legal problems of particular interest to Wisconsin lawyers. The Board of Editors consists of the law faculty and a board of fourteen student editors selected from the student body. Eligibility to the board is determined largely by scholastic standings.

LIBRARY

The library of the Law School contains 42,000 bound volumes, comprising the official reports of the various states and territories and of the United States; a complete set of English, Irish, and Canadian reports; Australian Reports; the Reporter System; the various series of selected cases, as: American Decisions; American Reports; American State Reports; Lawyers Reports Annotated; Ruling Case Law; Corpus Juris; American Law Reports; British Ruling Cases; duplicates of the more important reports; complete sets of the leading law periodicals; the leading encyclopedias of law and other works of reference; a large collection of textbooks, statutes, digests, etc.

MORTIMER M. JACKSON PROFESSORSHIP OF LAW

The late Judge Mortimer M. Jackson by his will gave $20,000 to the University, the income to be used to maintain a chair of law. The Regents in 1890 formally established the Mortimer M. Jackson Professorship of Law. Judge Jairus H. Carpenter, for many years Dean of the Law School, was the first incumbent of this chair, which he held until his death in 1913. Professor Howard L. Smith held the professorship until his retirement in June 1926, and Dean Harry S. Richards from 1926 until his death in April 1929. Since June 1929 Professor W. H. Page has been the incumbent.

SUMMER SESSION

June 22 to August 28, 1931

The summer session of the Law School extends over a period of ten weeks. The work is carried on in the same manner and with the same thoroughness as during the regular session. Courses are arranged to meet the needs of beginning and advanced students. The courses are the equivalents of those given in the first, second, and third years of the long session and carry full credit toward the law degree. Full work during the summer session consists of twelve hours per week. Written examinations are held at the completion of the courses. Students successfully completing courses aggregating twelve hours per week for the summer will receive credit for one-third of a regular academic year's work. The session thus enables students of this and other law schools and teachers or students in the College of Letters and Science who have completed the equivalent of three years of college work to shorten considerably the calendar period of residence required here and elsewhere for the law degree. The courses are so arranged as to be of service to practicing lawyers who may wish to pursue systematic investigation of particular subjects.

During the summer of 1931 the following courses will be offered:

For first-year students: Introduction to Law and Torts. For second and third-year students: Agency, Bills and Notes, Conflict of Laws, Evidence, International Law, Mortgages, Servitudes.

COURSES OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
cr.—number of credit hours per semester

FIRST YEAR

101. CONTRACTS. Yr; 3 cr. Mr. Page.

105. CRIMINAL LAW. Yr; 2 cr. Mr. Gausewitz.

120. EQUITY. II; 2 cr. Mr. Beuscher.

125. INTRODUCTION TO LAW. I; 2 cr. Mr. Rice.

131. LAW CLUB WORK. I; 1 cr. Mr. Sharp.

147. PERSONAL PROPERTY. I; 2 cr. Mr. Brown.

148. REAL PROPERTY. II; 2 cr. Mr. Rundell.

151. TORTS. I; 3 cr; II, 4 cr. Mr. Campbell.

SECOND AND THIRD YEARS

201. ADMINISTRATIVE LAW. I; 2 cr. Mr. Brown.

205. AGENCY. I; 2 cr. Mr. Campbell.

209. BANKRUPTCY. I; 2 cr. Mr. Hall.

204. BILLS AND NOTES. II; 4 cr. Mr. Sharp.

208. BUSINESS ASSOCIATIONS (Seminary). II; 2 cr. Mr. Sharp.

212. BUSINESS WRONGS. II; 3 cr. Mr. Rice.

218. CONFLICT OF LAWS. II; 3 cr. Mr. Page.

215. CONSTITUTIONAL LAW. II; 4 cr. Mr. Brown.

219. CONTRACTS (Seminary). I; 2 cr. Mr. Page.

223. CONVEYANCING. I; 3 cr. Mr. Rundell.

227. CORPORATIONS. I; 4 cr. Mr. Sharp.

224. DAMAGES. II; 2 cr. Mr. Hall.

233. DOMESTIC RELATIONS (Seminary). I; 2 cr. Mr. Feinsinger.

237. EQUITY. I; 3 cr. Mr. Beuscher.

241. EVIDENCE. I; 4 cr. Mr. Gausewitz.

228. FUTURE INTERESTS. II; 4 cr. Mr. Rundell.

245. HISTORY OF ANGLO-AMERICAN LAW. I; 2 cr. Mr. Page.

249. INSURANCE. I; 3 cr. Mr. Gausewitz.

232. INTERNATIONAL LAW. II; 3 cr. Mr. Rice.

236. PROFESSIONAL CONDUCT. II; 1 cr. Mr. Fiedler.

253. MORTGAGES. I; 2 cr. Mr. Rundell.

240. MUNICIPAL CORPORATIONS. II; 2 cr. Mr. Campbell.

244. OFFICE PRACTICE. II; 2 cr. Mr. Gausewitz.

248. PARTNERSHIP. II; 3 cr. Mr. Feinsinger.

257. PERSONS. I; 3 cr. Mr. Feinsinger.

261. PLEADING. Yr; 2 cr. Mr. Boesel.

265. PRACTICE. Yr; 2 cr. Mr. Sanborn.

269. PRACTICE COURT. I; 1 cr. Mr. Gausewitz.

273. PUBLIC UTILITIES. I; 4 cr. Mr. Rice.

252. QUASI-CONTRACTS. II; 2 cr. Mr. Feinsinger.

277. SALES. I; 3 cr. Mr. Hall.

256. SERVITUDES. II; 3 cr. Mr. Miner.

281. SURETYSHIP. I; 2 cr. Mr. Hall.

260. TAXATION. II; 3 cr. Mr. Brown.

264. TRUSTS. II; 4 cr. Mr. Hall.

270. TRUSTS (Seminary). II; 2 cr. Mr. Hall.

285. WILLS. I; 3 cr. Mr. Page.

FOR STUDENTS IN SCHOOL OF COMMERCE

115. COMMERCIAL LAW. I; 2 cr. Mr. Campbell, Mr. Feinsinger.

116. CORPORATION LAW. II; 2 cr. Mr. Feinsinger.

MEDICAL SCHOOL

C. R. Bardeen, Dean

ADMISSION

It is understood that all applicants for admission to the Medical School must have satisfied the general entrance requirements of the University, either by satisfactory completion of certain prescribed work in some recognized secondary school, including graduation therefrom, or by passing entrance examinations. See Admission, page 33, for details.

Before being permitted to matriculate in the Medical School, candidates are required to have satisfactorily completed at least two full years of college work, including the following:

1. English composition—6 credits. This subject is to be carried during the freshman year at the rate of 3 credits per semester.

2. Foreign language—two years for a total of 14 to 16 credits. This includes specifically: (a) a knowledge of elementary Latin, obtained by the satisfactory completion of either two years of this language in high school or one year in college; (b) a reading knowledge of either French or German, as evidenced by the completion of the fourth semester of this language at the University of Wisconsin with a satisfactory grade, or by a certificate of reading knowledge from the appropriate department at this University. If the candidate has had no high-school work in Latin, French, or German, it will be necessary for him to carry 24 to 26 credits of foreign language in college unless he can gain a reading knowledge of French or German by private study.

3. Science—successful completion of laboratory courses in physics, general and organic chemistry, and biology. (Provision is made for studying this latter subject during the first year of the medical course in the event that a student should be unable to meet this requirement before matriculation in the Medical School.) In addition, students are advised to take one semester of quantitative analysis and a course in comparative anatomy before commencing their medical work. The required science studies are here briefly summarized; they or their equivalents may be pursued either at the University of Wisconsin in the regular year or the summer session, or in some other college.

	Credits	Hours of Class Work	Hours of Lab. Work
General chemistry and qualitative analysis	10	128	192
Organic chemistry	4–6	48	96
General physics	10	128	128
Biology, preferably animal biology	10	128	192
	34–36	432	608

ADMISSION WITH ADVANCED STANDING

First-Year Class: A student wishing to apply for admission to this class should send an official copy of his premedical credentials to the Dean of the Medical School not later than May 1 of the year in which he wishes to matriculate.

If the credentials are satisfactory, an application blank will be sent to the candidate for admission, to be filled out and returned to the Dean of the Medical School.

All students entering from other institutions are required to pass a reading knowledge examination in either German or French given by the appropriate department at Wisconsin before the time of matriculation.

SECOND-YEAR CLASS: There is seldom a vacancy in this class and students from other institutions are not encouraged to apply for admission.

THIRD- AND FOURTH-YEAR CLASSES: At the present time no applications to these classes are accepted.

COURSES OF STUDY AND DEGREES

The Medical School offers a four-year course leading to the degree of Doctor of Medicine. The requirements are outlined below. The Graduate School offers the degrees of Master of Arts, Master of Science, Master of Public Health, Doctor of Public Health, and Doctor of Philosophy to students who complete their requirements for these degrees by work in the medical sciences. The College of Letters and Science grants the degree of Bachelor of Science (Medical Science) to students who complete two years of prescribed premedical work and the first two years of the regular medical course; also the degree of Bachelor of Arts to students who complete the regular requirements for this degree as described on pages 55-67 and who during their senior year complete a major in medical science. See section 16, page 57.

CHOICE OF PREMEDICAL COURSES

The student who enters the College of Letters and Science with the intention of studying medicine should arrange at the office of the Assistant Dean of the Medical School a schedule of studies which will enable him to complete the required premedical college work within the period which he desires to devote to preparation for the medical course.

The minimum time required for the completion of this premedical work is two years. If three or four years are spent on premedical college work, the student has the choice of either broadening his course of study or of taking more advanced work in some special line. All good American medical schools now require at least two years of premedical college work, many require at least three years of college work, and a few require a bachelor's degree for entrance. If a student expects to take his medical course or to complete the clinical part of it elsewhere, he should keep this in mind when arranging the premedical schedule. He should likewise acquaint himself with the special premedical requirements maintained by the school of his choice.

The general regulations governing freshmen and sophomores in the College of Letters and Science apply to premedical students, excepting that those in the two-year course are permitted to take 17 or 18 credits per semester as circumstances may require. See pages 50-54. Each candidate for a bachelor's degree in either of the premedical courses is required to present a graduating thesis, the subject of which must be approved by the student's adviser and the chairman of the department of his major. This thesis must represent some phase of the student's work in his major study and must have the character of a scholarly dissertation on the subject.

PREMEDICAL CURRICULA

RECOMMENDED SEQUENCE FOR THE TWO-YEAR COURSE

LEADING EVENTUALLY TO THE DEGREE OF BACHELOR OF SCIENCE
(MEDICAL SCIENCE)

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman English	3	Engl. 1b—Freshman English	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
Physics 1 or 31—General physics	5	Physics 1 or 31—General physics	5
French 1a or German 1a	4	French 1b or German 1b	4
Physical activity requirement	0	Physical activity requirement	0
	17		17

SOPHOMORE YEAR

Chem. 20, 21, or 120, 121—Organic chem.	4-5	Zoology 2 or 104	5
Zoology 1—Animal biology	5	French 10b or German 2b	3-4
French 10a or German 2a	3-4	Latin 2—Caesar	5
Latin 1—Elementary Latin	5	Elective if Latin was taken in high school	(5)
Elective if Latin was taken in high school	(4-3)	Free elective	2
Physical activity requirement	0	Physical activity requirement	0
	16-18		15-16

RECOMMENDED SEQUENCE FOR THE THREE-YEAR COURSE

LEADING EVENTUALLY TO THE DEGREE OF BACHELOR OF ARTS

FRESHMAN YEAR

Engl. 1a—Freshman English	3	Engl. 1b—Freshman English	3
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
French 1a or German 1a	4	French 1b or German 1b	4
History or mathematics	3-4	History or mathematics	3-4
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

SOPHOMORE YEAR

Engl. 30a or 33a—Sophomore literature	3-2	Engl. 30b or 33b—Sophomore literature	3-2
Chem. 20, 21, or 120, 121—Organic chem.	4-5	Zoology 2 or 104	5
Zoology 1—Animal biology	5	French 10b or German 2b	3-4
French 10a or German 2a	3-4	Elective	5
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

JUNIOR YEAR

Physics 1 or 31	5	Physics 1 or 31	5
Foreign language	4-5	Latin 2—Caesar	5
Latin 1—Elementary Latin	5	Foreign language	4-5
Electives if foreign language and Latin were pursued in high school	(10)	Electives if foreign language and Latin were pursued in high school	(10)
	14-15		14-15

MEDICAL COURSES

Two courses are offered, a two-year course and a four-year course.

The two-year course, established in 1907, covers the first half only of a four-year medical curriculum and embraces certain basal and intermediate groups of studies. Combined with the two years of premedical work outlined above, this course leads to the degree of Bachelor of Science (Medical Science). On completion of this course, the student is expected to go elsewhere to complete the medical curriculum. Owing to the fact that opportunities for admission to the third year are few in most medical schools, this course is ordinarily limited to forty-eight students. Selection is made on the basis of premedical scholarship. Students are not promoted to the second year of the course until the completion of all of the required work of the first year with grades of fair or better.

The four-year course, established in 1925, embraces the basal and intermediate groups of the two-year course and in addition two years of clinical instruction at Madison and at the associate clinical teaching centers. Students are required to obtain a bachelor's degree before being admitted to the two years of clinical instruction. Upon the successful completion of the latter, the degree of Doctor of Medicine is granted. Owing to the necessity of restricting clinical instruction at the Wisconsin General Hospital so as to make such instruction facilitate, not hamper, care of patients, this four-year class is limited to forty-eight students or fewer. Selection is made on the basis of premedical scholarship. Students are not promoted from one year of the course to the next unless the required work of the year is completed with an average grade of B, with a grade of fair or better in each subject.

Transfer from the two-year to the four-year course can be made only in case vacancies occur in the latter. When such transfers occur, selection of students to fill vacancies will be made on the basis of preceding scholarship.

COURSES IN MEDICINE

LEADING TO THE DEGREE OF DOCTOR OF MEDICINE

FIRST YEAR

First Semester	Credits
Anatomy 110—Histology and organology	5
Anatomy 121—Gross anatomy	7
Physiological Chemistry 104	4
Physiology 105—Medical physiology	2
	18

Second Semester	Credits
Anatomy 121—Gross anatomy	6
Anatomy 126—Neural anatomy	5
Physiology 105—Medical physiology	7
	18

SECOND YEAR

Bact. 102—Medical bacteriology	4
Hygiene 101—Public health	2
*Pathology 101—General pathology	4
Medicine 110—Physical diagnosis	3
Thesis	2
	15

Medicine 102—Clinical laboratory diagnosis	3
Medicine 111—Medical diagnosis	2
Pathology 101—Special pathology	4
Pharmacology 104-105	4
Surgery 102—Surgical clinics	1
Surgery 103—Elements of surgery	1
Thesis	2
	17

*Until Christmas recess.

THIRD YEAR

First Semester	Credits
Medicine 301—Third-year medicine	6
Medicine 305—Therapeutics	1
Medicine 310—Pediatrics	1
Medicine 315—Dermatology	1
Surgery 301—Third-year surgery	6
Surgery 310—Ophthalmology	1
Surgery 330—Obstetrics and gynecology	2
	18

Second Semester	Credits
Medicine 301—Third-year medicine	5
Medicine 312—Neuropsychiatry	2
Surgery 301—Third-year surgery	4
Surgery 311—Rhinology, otolaryngology	1
Surgery 315—Orthopedics	1
Surgery 325—Urology	1
Surgery 330—Obstetrics and gynecology	1
Surgery 314—Plastic surgery	1
Surgery 316	1
Surgery 320—Radiography and radio therapy	1
	18

FOURTH YEAR

Hygiene 401—Sanitation and public health	1,
Medicine 401—Internal medicine	4. 5
Medicine 410—Pediatrics	3
Medicine 412—Neuropsychiatry	3
Medicine 415—Dermatology	1. 5
Medicine 420—Medical jurisprudence and ethics	1
Surgery 406	2
Surgery 416	1. 5
Surgery 405—Applied radiology	1. 5
Surgery 401—Surgery	4. 5
Surgery 410—Ophthalmology	1. 5
Surgery 411—Rhinology, laryngology, otology	1. 5
Surgery 425—Urology	1. 5
Physical examinations	2
Specific elective work	14
Free elective work	4
	48

DEPARTMENTS OF INSTRUCTION

For a description of the courses in botany, zoology, chemistry, physics, psychology, and languages, see departmental announcements in the College of Letters and Science.

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters.
I—course given during the first semester.
II—course given during the second semester.
I, II—semester course given each semester.
cr—number of credit hours per semester.
*—to be arranged.

Courses numbered from 1 through 100 are open for credit to undergraduates only; from 101 to 199 to both undergraduates and graduates; over 200 to graduates only, or very exceptionally to advanced undergraduates.

ANATOMY

Walter Edward Sullivan, Ph.D., *Professor of Anatomy, Chairman*
Charles Russell Bardeen, B.A., M.D., *Professor of Anatomy*
William Snow Miller, M.D., Sc.D., *Professor of Anatomy, Emeritus*
Theodore Hieronymus Bast, Ph.D., *Associate Professor of Anatomy*
Frederick Denkmar Geist, M.D., *Assistant Professor of Anatomy*
Otto Axel Mortensen, M.S., M.D., *Associate Professor of Anatomy*
Harland Winfield Mossman, Ph.D., *Assistant Professor of Anatomy*
John Holden Robbins, B.S., M.D., *Instructor in Anatomy*

There is offered a group of courses planned for a comprehensive view of the gross and microscopic anatomy and embryology of mammals, with especial reference to man. Opportunities are offered for advanced work and research. The laboratory is thoroughly equipped with apparatus, models, books, and materials.

39. Physical Education Anatomy. I; 3 cr. Lectures and laboratory work for students of physical education. Prerequisite: Zoology 1. Lab. fee $5.00. Dr. Bardeen.

110. Histology and Organology. I; 5 cr. The study of the tissues, followed by a study of the structure of the mammalian organs. Histogenesis and some organogenesis are included. Prerequisites: Junior standing, Zoology 1. Lab. fee $15.00. Dr. Bast, Dr. Geist, and staff.

120. Human Anatomy. II; 6 cr. For students of physical education. An opportunity to dissect is offered. Prerequisite: Zoology 3. Lab. fee $10.00. Dr. Bardeen.

121. Human Anatomy. I, 7 cr; II, 6 cr. In this course a thorough training is offered in the dissection of the human body and in descriptive human anatomy. Organogenesis is in part included. Prerequisites: Junior standing, Zoology 1. Lab. fee $17.50 per semester. Dr. Bardeen, Dr. Sullivan, Dr. Mossman, Dr. Mortensen.

122. Applied Anatomy. Yr; 2-4 cr. This course is given with the cooperation of the clinical staff. Dissections, cross-sections, models, and charts are used to review the anatomy of the human body. Along with this is a discussion of the clinical significance of the structures in question. Not more than two credits can be counted toward thesis. Prerequisite: Anatomy 121. Lab. fee $5.00. Dr. Robbins.

126. The Anatomy of the Nervous System. II; 5 cr. Dissection of the human brain and study of the microscopic anatomy of the central nervous system and sense organs. Neurogenesis is included in this course. Prerequisite: Anatomy 110. Lab. fee $10.00. Dr. Geist, Dr. Bast, and staff.

131. Historical Seminary. II; 1 cr. Dr. Miller.

200. Research. *cr. To qualified students the department is prepared to offer problems for investigation and training in methods of research. Special arrangements for this work may be made with the individual members of the staff. The department also welcomes independent investigators who wish to make use of its facilities for conducting research in anatomy. Lab. fee $5.00.

HYGIENE

In conjunction with the staffs of the State Laboratory of Hygiene, the Wisconsin Psychiatric Institute, the State Board of Health, and the Boards of Health of the cities of Milwaukee and Madison, courses in hygiene are offered by members of the faculty of the Medical School under the general supervision of Professor Stovall.

5. Disease Prevention. II; 2 cr. The more important aspects of personal and public hygiene; designed especially for general students who desire a knowledge of community and personal hygiene. Dr. Clark.

101. Public Health. I; 2 cr. Lectures and field work for medical students. Given in conjunction with Bacteriology 102. Prerequisite. Second-year medical standing. Dr. Clark, Dr. Harper, Dr. Stovall.

102. Bacteriology for Health Officers. I; 4 cr. Given in conjunction with medical bacteriology but with special work in the State Laboratory of Hygiene and some special lectures. Lab. fee $15.00. Dr. Clark, Dr. Stovall.

106. Physiology for Health Officers. II; 5 cr. Given in conjunction with Courses 105 and 107 in medical physiology but with special reference to the needs of health officers. Special topics in respiration, dietetics, chemistry of food, air, water, sewage, etc. Dr. Eyster, Dr. Dawson.

401. Practical Field Work. I, II; 1 cr. Prerequisite: Fourth-year medical standing.

MEDICAL DIVISION

GENERAL MEDICINE

JOSEPH SPRAGG EVANS, B.A., M.D., *Professor of Medicine, Chairman*
ROBERT VAN VALZAH, B.A., M.D., *Professor of Clinical Medicine*
WILLIAM SHAINLINE MIDDLETON, M.D., *Associate Professor of Medicine*
ELMER LOUIS SEVRINGHAUS, M.A., M.D., *Associate Professor of Medicine*
RAY CARRINGTON BLANKINSHIP, M.D., *Associate Professor of Clinical Medicine*
SARAH ISABELLE MORRIS, M.D., *Associate Professor of Clinical Medicine*
KARVAR LOUIS PUESTOW, M.S., M.D., *Assistant Professor of Clinical Medicine*
HARRY MAXWELL KAY, M.D., *Associate in Clinical Medicine*
JOHN EDWARDS BENTLEY, B.S., M.D., *Instructor in Clinical Medicine*
ALBERT JAY BONER, B.S., M.D., *Instructor in Clinical Medicine*
MARIE LOUISE CARNS, M.A., M.D., *Instructor in Clinical Medicine*
CHESTER M. KURTZ, M.S., M.D., *Instructor in Clinical Medicine*
LINDLEY VINCENT SPRAGUE, M.D., *Instructor in Clinical Medicine*
PATRICIA M. WERRELL, B.A., *Instructor in Electrocardiography*
FRANK LAWRENCE WESTON, B.S., M.D., *Instructor in Clinical Medicine*

110. PHYSICAL DIAGNOSIS. I; 3 cr. Normal physical diagnosis. Prerequisites: Anatomy 110, 121, 126; Physiology 105. Lab. fee $5.00. Dr. Van Valzah.

111. MEDICAL DIAGNOSIS. II; 2 cr. Pathological clinical diagnosis. Prerequisites: One semester each of Pathology 101, Bacteriology 102, Medicine 110. Lab. fee $5.00. Dr. Van Valzah.

118. PHYSICAL EXAMINATIONS. II; 3 cr. For students in physical education. Prerequisites: Anatomy 120, Physiology 115. Dr. Morris.

200. ADVANCED WORK AND RESEARCH. * cr.

301. THIRD-YEAR MEDICINE. I, 6 cr; II, 5 cr. Lectures, clinics, conferences, and ward work. Prerequisites: Medicine 102, 110, 111, Surgery 102, 103. Lab. fee $25.00. Dr. Evans, Dr. Middleton, and staff.

305. THERAPEUTICS. I, II; 1 cr. Prerequisites: Medicine 102, 111. Given in conjunction with Department of Pharmacology. Dr. Evans and staff.

306. ADVANCED WORK AND RESEARCH IN THERAPEUTICS. * cr. Given in conjunction with Department of Pharmacology.

401. FOURTH-YEAR MEDICINE. I, II; 4½ cr. Prerequisites: Medicine 301, Surgery 301.

CLINICAL PATHOLOGY

WILLIAM DAVISON STOVALL, M.D., *Professor of Hygiene*
WILLIAM E. BAYLEY, M. D., *Instructor in Clinical Pathology*

102. CLINICAL LABORATORY DIAGNOSIS. II; 3 cr. Prerequisites: Bacteriology 102, Pathology 101, Physiology Chemistry 104. Lab. fee $10.00. Dr. Stovall and staff.

DERMATOLOGY

OTTO HOTTINGER FOERSTER, M.D., *Professor of Dermatology*
HARRY ROBERT FOERSTER, B.S., M.D., *Assistant Professor of Dermatology*
ROSCOE LYLE MCINTOSH, B.S., M.D., *Assistant Professor of Dermatology*

200. ADVANCED WORK AND RESEARCH. *cr.

315. DERMATOLOGY. I; 1 cr. Prerequisites: Medicine 102, 111.

415. FOURTH-YEAR DERMATOLOGY. I, II; 1½ cr. Prerequisite: Medicine 315. Through the courtesy of the Drs. Foerster of Milwaukee, this course is given in Milwaukee, and through the courtesy of the directors of the Milwaukee City Dispensary, the work is in part carried on there.

MEDICAL JURISPRUDENCE AND MEDICAL ETHICS

420. MEDICAL JURISPRUDENCE AND MEDICAL ETHICS. 1 cr. Assigned reading and examination.

PEDIATRICS

JOHN EUGENE GONCE, JR., B.A., M.D., *Associate Professor of Pediatrics*
HORACE KENT TENNEY, M.D., *Assistant Professor of Pediatrics*

200. RESEARCH. *cr.

310. PEDIATRICS. I; 1 cr. Prerequisites: Medicine 102, 111.

410. FOURTH-YEAR PEDIATRICS. I, II; 3 cr. Prerequisite: Medicine 310. Through the courtesy of the Board of Directors and of the Medical Staff of the Children's Hospital of Milwaukee, each fourth-year student is given three weeks' special training in pediatrics at this hospital. This work is given by members of the staff of the hospital, of which Dr. A. J. Kastner is at present chief.

NEUROPSYCHIATRY

WILLIAM FREDERICK LORENZ, M.D., *Professor of Neuropsychiatry, Chairman*
WILLIAM JEFFERSON BLECKWENN, B.S., M.D., *Associate Professor of Neuropsychiatry*
HANS HEINRICH REESE, M.D., *Associate Professor of Neuropsychiatry*
MABEL GARDEN MASTEN, B.S., M.D., *Assistant Professor of Neuropsychiatry*
MORTON KAY GREEN, M.D., *Clinical Associate in Neuropsychiatry*
AUGUST SAUTHOFF, B.S., M.D., *Clinical Associate in Neuropsychiatry*

112. PROBLEMS IN NEUROPSYCHIATRY. Credit according to work done. Dr. Lorenz and staff.

200. RESEARCH. Yr; *cr. Staff.

312. THIRD-YEAR NEUROPSYCHIATRY. II; 2 cr. Prerequisites: one semester of Medicine 310 and Surgery 301. Dr. Lorenz and staff.

412. FOURTH-YEAR NEUROPSYCHIATRY. I, II; 3 cr. Prerequisite: Medicine 312.

PATHOLOGY AND MEDICAL BACTERIOLOGY

CHARLES HENRY BUNTING, B.S., M.D., *Professor of Pathology, Chairman*
PAUL FRANKLIN CLARK, Ph.D., *Professor of Medical Bacteriology*
GORTON RITCHIE, B.A., M.D., *Assistant Professor of Pathology*
FRANCES ELIZABETH HOLFORD, Ph.D., *Instructor in Bacteriology*

101. HUMAN PATHOLOGY. Yr; 4 cr. The principles of general human pathology and the essentials of pathological anatomy. The laboratory exercises are devoted mainly to a study of pathological histology and to demonstrations of gross morbid specimens. General pathology, until the Christmas recess; 4 cr. Prerequisites: Anatomy 110, 126. Special pathology, from Christmas recess until end of March; 4 cr. Prerequisite: Satisfactory completion of general pathology. Lab. fee I, $15.00; II, $5.00. Dr. Bunting and staff.

102. MEDICAL BACTERIOLOGY. I; 4 cr. This course, which is especially designed for medical students, considers the bacteria and protozoa that are concerned in the production of disease processes. Weekly lectures in immunology. Prerequisites: Chemistry 1, Zoology 1. Lab. fee $20.00. Dr. Clark and staff.

103. EXPERIMENTAL PATHOLOGY. II; 4 cr. In this course by suitable experiments the work of Course 101 is supplemented and elaborated. It may be taken for thesis credit. Prerequisites: Anatomy 110, 126. Dr. Bunting.

104. IMMUNOLOGY. II; 3-4 cr. May be taken as a thesis course. It includes experimental work with the commonly employed clinical serological tests such as the Wassermann reaction, as well as laboratory experiments with the various antibody and cellular factors in resistance. Dr. Holford.

106. ADVANCED BACTERIOLOGY. I, II; *cr. Dr. Clark.

108. BACTERIOLOGY SEMINAR. Yr; 1 cr. Dr. Clark.

201. ADVANCED PATHOLOGY. II; *cr. Dr. Bunting.

301. CLINICAL PATHOLOGICAL CONFERENCES. Given as a part of Medicine 301. Dr. Bunting and members of medical and surgical staffs.

PHARMACOLOGY AND TOXICOLOGY

ARTHUR LAWRIE TATUM, Ph.D., M.D., *Professor of Pharmacology, Chairman*
MAURICE HARRISON SEEVERS, B.A., Ph.D., *Assistant Professor of Pharmacology*
RORERT PORT HERWICK, M.S., Ph.D., *Assistant Professor of Toxicology*

Elementary and advanced courses in pharmacology and toxicology are offered in this department. For the elementary courses a previous training in physiological chemistry and physiology is required. The advanced courses are open to those who have had adequate elementary training. The laboratory is specially fitted for research in chemotherapy.

101. Toxicology. II; 1 cr. Lectures on the general action of toxic drugs, the diagnosis and treatment of poisoning, the preparation of autopsy material for subsequent chemical analysis in medico-legal cases, and general questions of medical jurisprudence. Prerequisites: Physiology 105, Physiological Chemistry 104. Dr. Herwick.

104. Pharmacology. II; 2 cr. Lectures on the chemistry, the pharmacological and toxicological action, and the therapeutic uses of the chief medicinal drugs. Practice in prescription writing. Prerequisites: Physiology 105, Physiological Chemistry 104. Dr. Tatum, Dr. Seevers.

105. Pharmacology. II; 2 cr. Laboratory course. Experimental studies on the action of drugs. Prerequisites: Physiology 105, Physiological Chemistry 104. Lab. fee $17.00. Staff.

120. Journal Club. Yr; 1 cr. A meeting is held weekly. Advanced students will be expected to report from time to time upon current papers dealing with pharmacology and toxicology.

200. Research. The facilities of the laboratory are available to qualified persons. Lab. fee $5.00.

222. Seminar in Physiology, Pharmacology, and Physiological Chemistry. Yr; 1 cr.

PHYSIOLOGICAL CHEMISTRY

Harold Cornelius Bradley, Ph. D., *Professor of Physiological Chemistry, Chairman*
Edgar John Witzemann, Ph.D., *Assistant Professor of Physiological Chemistry*
Harry Daniel Baernstein, Ph.D., *Instructor in Physiological Chemistry*

104. Physiological Chemistry. I; 4 cr. Lectures, conferences, and laboratory work. Required for first year medical students and open to others as an elective. Prerequisites: Chemistry 1 and 20 or 120, Physics 1, Zoology 1. Lab. fee $15.00; deposit $5.00. Dr. Bradley, Dr. Witzemann.

114. Physiological Chemistry. I; 3 cr. Lectures, conferences, and laboratory work. Required of juniors in physical education and open to others as an elective. Prerequisites: Chemistry 1, Physics 1, Zoology 1. Lab. fee $7.00; deposit $5.00. Mr. Baernstein.

117. Advanced Physiological Chemistry and Research. II; *cr. Lab. fee $2.50 per cr.; deposit $5.00. Dr. Bradley, Dr. Witzemann.

120. Journal Club. Yr; 1 cr. Dr. Bradley.

200. Research. Lab. fee $5.00.

222. Seminar in Physiology, Pharmacology, and Physiological Chemistry. Yr; 1 cr.

PHYSIOLOGY

WALTER JOSEPH MEEK, Ph.D., *Professor of Physiology, Chairman*
JOHN AUGUSTINE ENGLISH EYSTER, B.S., M.D., *Professor of Physiology*
PERCY MILLARD DAWSON, B.A., M.D., *Associate Professor of Physiology* (on leave 1931-32)
FRANCES ANNE HELLEBRANDT, B.S., M.D., *Assistant Professor of Physiology*
ELIZABETH BROGDON, B.A., *Instructor in Physiology*
HANCE FRANCES HANEY, M.A., *Instructor in Physiology*
RAYMOND CLYDE HERRIN, M.S., Ph.D., *Instructor in Physiology*
STEVENS JOHN MARTIN, M.A., Ph.D., *Instructor in Physiology*

105. MEDICAL PHYSIOLOGY. I; 2 cr; II; 7 cr. Lectures, recitations, demonstrations, and laboratory. Required of first-year medical students and open to others as an elective. Prerequisites: Anatomy 110, 121 (comparative or human anatomy), 126; Physiological Chemistry 104. Lab. fee $17.00. Dr. Meek, Dr. Eyster.

115. PHYSIOLOGY. Yr; 5 cr. Lectures, recitations, demonstrations, and laboratory. Required of juniors in physical education for women and open to others as an elective. Prerequisites: Comparative anatomy, physiological chemistry. Lab. fee I, $13.00; II, $11.00. Dr. Hellebrandt, Miss Brogdon.

120. JOURNAL CLUB. Yr; 1 cr. Reports of recent physiological and biochemical literature. Dr. Meek.

200. ADVANCED PHYSIOLOGY AND RESEARCH. Yr; *cr. Lab. fee $5.00. Dr. Eyster, Dr. Meek, Dr. Hellebrandt.

222. SEMINAR IN PHYSIOLOGY, PHARMACOLOGY AND PHYSIOLOGICAL CHEMISTRY. Yr; 1 cr.

SURGICAL DIVISION

GENERAL SURGERY

ERWIN RUDOLPH SCHMIDT, B.A., M.D., *Professor of Surgery, Chairman*
JOSEPH WASSON GALE, M.A., M.D., *Associate Professor of Surgery*
RALPH MILTON WATERS, B.A., M.D., *Associate Professor of Surgery*
WILLIAM JOHN FOCKE, B.S., M.D., *Instructor in Surgery*
DAVID NICHOLAS TREWEEK, M.A., Ph.D., *Instructor in Surgery*

102. SURGICAL CLINICS. II; 1 cr. Prerequisites: Anatomy 121, Pathology 101, I; Physiology 105.

103. ELEMENTS OF SURGERY. II; 1 cr. Prerequisites: Anatomy 121, Pathology 101, I; Bacteriolgy 102, Physiology 105. Dr. Schmidt.

200. ADVANCED WORK AND RESEARCH. Yr; *cr.

301. THIRD-YEAR SURGERY. I, 6 cr; II, 4 cr. Lectures, conferences, ward work, and clinics. Prerequisites: Medicine 110, 111, Surgery 102, 103. Lab. fee $25.00. Dr. Schmidt and staff.

401. FOURTH-YEAR SURGERY. I, II; 4½ cr. Prerequisites: Medicine 301, Surgery 301.

OPHTHALMOLOGY

FREDERICK ALLISON DAVIS, M.D., *Professor of Ophthalmology*
EUGENE NEFF, B.A., M.D., *Associate Professor of Ophthalmology*

200. ADVANCED WORK AND RESEARCH. Yr; *cr. Dr. Davis and staff.

310. THIRD-YEAR OPHTHALMOLOGY. I; 1 cr. Prerequisites: Medicine 110, 111, Surgery 102, 103. Lab. fee $2.50. Dr. Davis and staff.

410. FOURTH-YEAR OPHTHALMOLOGY. I, II; 1½ cr. Prerequisites: Surgery 310, 311.

ORTHOPEDIC AND PLASTIC SURGERY

FREDERICK JULIUS GAENSLEN, B.S., M.D., *Professor of Orthopedic Surgery*
GEORGE VAN INGEN BROWN, M.D., D.D.S., F.A.C.S., *Professor of Oral and Plastic Surgery*
HERMAN SCHUMM, B.S., M.D., F.A.C.S., *Associate Professor of Orthopedic Surgery*
ROBERT EMMETT BURNS, B.S., M.D., *Associate Professor of Orthopedic Surgery*
VOLNEY BUTMAN HYSLOP, M.D., *Instructor in Oral and Plastic Surgery*
CAROL EWART ROACH, B.A., M.D., *Instructor in Medical Orthopedics*
ARTHUR CHANDLER TAYLOR, M.A., M.D., *Instructor in Orthopedic Surgery*
EDWIN F. WESTOVER, D.D.S., *Instructor in Dental Surgery*

102. SURGICAL CLINICS. (See General Surgery).

200. RESEARCH. Yr; *cr.

314. PLASTIC SURGERY. II; 1 cr. Prerequisites: Medicine 301, I; Surgery 301, I.

315. ORTHOPEDICS. II; 1 cr. Prerequisites: Medicine 301, I; Surgery 301, I. Includes five lectures on fractures.

401. FOURTH-YEAR ORTHOPEDICS. (See General Surgery).

RHINOLOGY, LARYNGOLOGY, AND OTOLOGY

WELLWOOD MACK NESBIT, M.D., *Associate Professor of Otolaryngology*

200. ADVANCED WORK AND RESEARCH. Yr; *cr. Dr. Nesbit and staff.

311. THIRD-YEAR RHINOLOGY, LARYNGOLOGY, AND OTOLOGY. I; 1 cr. Prerequisites: Medicine 110, 111, Surgery 102, 103. Lab. fee $2.50. Dr. Nesbit.

411. FOURTH-YEAR RHINOLOGY, LARYNGOLOGY, AND OTOLOGY. I, II; 1½ cr. Prerequisites: Surgery 310, 311.

UROLOGY

IRA ROSCOE SISK, Phar.D., M.D., *Professor of Urology*
JOHN BREWSTER WEAR, B.A. ,M.D., *Assistant Professor of Urology*

200. ADVANCED WORK AND RESEARCH. Yr; * cr.

325. THIRD-YEAR UROLOGY. II; 1 cr. Prerequisites: Medicine 301, I; Surgery 301, I.

425. FOURTH-YEAR UROLOGY. I and II; 1½ cr. Prerequisite: Surgery 325.

OBSTETRICS AND GYNECOLOGY

JOHN WARTON HARRIS, M.A., M.D., *Professor of Obstetrics and Gynecology, Chairman*
CARL SAMUEL HARPER, B.S., M.D., *Clinical Assistant Professor of Obstetrics and Gynecology*
RALPH EMERSON CAMPBELL, B.S., M.D., *Assistant Professor of Obstetrics and Gynecology*
MADELINE THORNTON, B.A., M.D., *Instructor in Obstetrics and Gynecology*

200. ADVANCED WORK AND RESEARCH. Yr; *cr.
330. THIRD-YEAR OBSTETRICS AND GYNECOLOGY. Yr; 3 cr. Prerequisites: Medicine 301, I; Surgery 301, I. Lab. fee $5.00. Dr. Harris and staff.

406. FOURTH-YEAR OBSTETRICS. I, II; 2 cr. Prerequisite: O. and G. 330.

Through the courtesy of the Directors of the Chicago Lying-In Hospital and of Dr. J. B. DeLee and Dr. E. L. Cornell, this course is given in Chicago.

RADIOLOGY AND PHYSICAL THERAPY

ERNEST ALBERT POHLE, M.D., Ph.D., *Professor of Radiology, Chairman*
JAMES CLAUDE ELSOM, M.D., *Professor of Physical Education, Associate Professor of Physical Therapy*
JOE NEWTON SISK, B.S., M.D., *Lecturer in Radiology*
LAWRENCE VICTOR LITTIG, B.S., M.D., *Lecturer in Radiology*
MARTHA E. LEWIS, B.A., *Instructor in Physical Therapy*
LESTER WARNER PAUL, B.S., M.D., *Instructor in Radiology*

200. GRADUATE WORK AND RESEARCH. The facilities of the laboratory are available for carrying out investigations in the field of radiology and physical therapy. Credit toward an M.S. or Ph.D. degree may be obtained by enrolling in the Graduate School and meeting its requirements. Dr. Pohle.

222. SEMINAR IN RADIOLOGY AND PHYSICAL THERAPY. Yr; 1 cr. Dr. Pohle and staff.

316. PHYSICAL THERAPY. II; 1 cr. In this course the fundamentals of mechano-, light-, electro-, and hydro-therapy and their clinical indications are considered. Prerequisites: Medicine 301, I; Surgery 301, I. Dr. Elsom.

320. RADIOGRAPHY AND RADIOTHERAPY. II; 1 cr. Lectures and demonstrations to third-year students. Prerequisites: Medicine 301, I; Surgery 301, I. Lab. fee $5.00. Drs. Pohle, Littig, Paul, and Sisk.

405. APPLIED RADIOLOGY. I, II; 1½ cr. Interpretation of roentgenograms, and clinic in X-ray and radium therapy. Prerequisite: Surgery 320. Drs. Pohle, Littig, Paul, and Sisk.

416. APPLIED PHYSICAL THERAPY. I, II; 1½ cr. Prerequisite: Surgery 316. Dr. Elsom.

SCHOOL OF NURSING

HELEN I. DENNE, DIRECTOR

ORGANIZATION AND AIMS

The School of Nursing of the University of Wisconsin is organized in association with the Medical School of the University and with the State of Wisconsin General Hospital. The coordinating committee of the school is composed of the Dean of the Medical School, the Superintendent of the Hospital, and the Director of the School, who has charge of the immediate administration. There is close affiliation between the school and other departments of the University. In the field of public health nursing the school has the cooperation of the Bureau of Public Health Nursing of the State Board of Health.

The aims of the school are:

1. To give adequate training in the sympathetic care of the sick.
2. To promote academic education as an aid to professional experience.
3. To stimulate advanced training and research in special fields of work within the realm of nursing.

ADMISSION REQUIREMENTS

For matriculation in the School of Nursing a student must furnish evidence that she has satisfied the general requirements for admission to the University, as stated under Part III, Admission, page 33.

Students desiring to enter either the three-year or a five-year combined course are requested to communicate with the Registrar of the University, and for more specific details regarding these courses with the Director of the School of Nursing, University of Wisconsin.

EXPENSE

During the period of pre-professional training, the minimum for which is one semester, the student is subject to the same conditions as other students in the University and must provide for her room, board, and incidental expenses and pay the usual general and laboratory fees. For the required semester of pre-professional work in the three-year course the laboratory fees amount to $25.00. This makes the total laboratory and other fees for residents of Wisconsin $46.50. The non-resident tuition fee is $100.00 per semester. Board and room cost from $10.00 per week upwards for 16 weeks, making a total expense of about $200, in addition to laundry, clothing, and various incidentals. During the period of resident professional instruction no fees are charged, and room, board, and laundry are furnished the students.

A detailed discussion of student expense, including university charges, loan funds and scholarships, self-support, etc., may be found on page 15.

FIVE-YEAR COMBINED COURSES

Two courses are offered of combined academic and resident professional instruction leading to the degree of Bachelor of Science and certificate of Graduate Nurse in five years.

The College of Letters and Science grants the degree of Bachelor of Science (Hygiene) to students who successfully complete six semesters of work, as outlined below, in the College of Letters and Science, and 27 months of work in the School of Nursing.

The College of Agriculture grants the degree of Bachelor of Science (Home Economics) to students who successfully complete six semesters of work, as outlined below, in the Course in Home Economics, and 27 months of work in the School of Nursing.

RESIDENT PROFESSIONAL INSTRUCTION

The resident professional instruction consists of 27 months in residence in the Nurses' Dormitory. During this period the student has instruction in medicine, surgery, and principles of nursing, ward practice in the wards and outpatient departments of the hospital, and practical training in public health nursing. The resident instruction is divided into four half years of academic and professional education and three additional months of special training. In each half year there are one semester of four months of academic and ward work, six weeks (52 hours per week) of ward or field work, and two weeks of vacation. The semester work is given as outlined above under the three-year course, excepting that physical education is not required.

COMBINED COURSE, COLLEGE OF LETTERS AND SCIENCE

This course leads to the degree of Bachelor of Science, (Hygiene). The following specific requirements must be satisfactorily met:

ENGLISH. 10 credits as follows: 6 credits in composition, 3 credits per semester for two semesters, to be taken in the first year of residence; 4 credits in literature, to be taken normally in the sophomore year. Students securing a grade of A in the first semester of composition may, if they so desire, omit the second semester of it.

FOREIGN LANGUAGE. Two years of either French or German in college if students do not meet the foreign-language requirement for the B.A. degree. (See page 64).

HISTORY. 6 credits in a continuous year course; or mathematics, 8 credits.

SCIENCE. Chemistry 1, 10 credits; Physiology 4, 6 credits; Nursing 1, 2 credits.

ECONOMICS, SOCIOLOGY, AND PSYCHOLOGY. 16 credits, including Economics 1a, Sociology 1, 2, and 141, and Psychology 1; or 16 credits of science in addition to Chemistry 1, including biology, 10 credits, and organic chemistry, 4 credits.

ELECTIVES. A sufficient number of electives must be taken to bring the total amount of work in the College of Letters and Science up to 94 credits and 94 grade-points, including major study and thesis.

MAJOR STUDY. By the beginning of the junior year every candidate should be well started in her major study which must be chosen from the majors offered in the College of Letters and Science, including majors in the medical sciences. This major must include a thesis, to be prepared during the final years of the combined course.

CREDITS. A total of 127 credits and 127 grade-points, including 94 required by the College of Letters and Science and 33 earned during the required 27 months of resident professional instruction.

SEQUENCE OF SUBJECTS

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Chem. 1a—General chemistry	5	Chem. 1b—General chemistry	5
History or mathematics	3-4	History or mathematics	3-4
French or German	3-4	French or German	3-4
Physical education	0	Physical education	0
	14-16		14-16

SOPHOMORE YEAR

Engl. 33a—English literature	2	Engl. 33b—English literature	2
French or German	3-4	French or German	3-4
Optional subjects	8-11	Optional subjects	8-11
Biology 1-5 cr.		Biology 1-5 cr.	
Chemistry 20, 21, or 120, 121, 3-4 cr.		Chemistry 120, 121 3-5 cr.	
Economics 1a—4 cr.		Economics 1a—4 cr.	
Psychology 1-3 cr.		Sociology 2-3 cr.	
Sociology 1-3 cr.		Psychology 1-3 cr.	
Physical education	0	Physical education	0
	14-16		14-16

JUNIOR YEAR

Physiol. 4—Physiology, bacteriology, and hygiene	6	Junior year	
Nursing 1	2	Electives	15
Optional subjects	3-6		
Sociology 141—3 cr.			
Free option—3 cr.			
Electives	1-4		
	15		15

COMBINED COURSE, DEPARTMENT OF HOME ECONOMICS

This course leads to the degree of Bachelor of Science, Home Economics. The following specific requirements must be satisfactorily met:

Completion of the required work of the freshman and sophomore years of the Course in Home Economics, as outlined on page 278.

Completion of the following additional courses: Home Economics 7 and 17, 47, 6 and 16, 22, 133; English 33b; Anatomy 120 or Physiology 4; and Nursing 1.

Thesis, 4 credits.

Electives sufficient to bring the total credits of work required by the Department of Home Economics up to 94, including thesis.

Twenty-seven months of resident professional instruction in nursing.

A total of 127 credits and 127 grade-points, including 94 required by the Department of Home Economics and 33 earned during the period of resident professional instruction.

THREE-YEAR COURSE

LEADING TO THE TITLE OF GRADUATE NURSE

Upon the completion of at least one semester of academic college work, including the special subjects outlined below and 32 months of professional training in residence in the School of Nursing, a certificate of Graduate Nurse will be granted.

PRE-HOSPITAL SEMESTER

Candidates for the certificate of Graduate Nurse who have had no college work or whose college work has not included work in chemistry and physiology are required to take the following special pre-hospital academic work before being admitted to residence in the School of Nursing. This work is offered the first semester of each year.

	Credits
English 1a—Freshman composition	3
Chemistry 1a—General chemistry	5
Physiology 4—Physiology, bacteriology, and hygiene	6
Nursing 1—Principles of nursing	2
Physical education	0
	16

RESIDENT PROFESSIONAL INSTRUCTION

This course consists of 32 months in residence in the Nurses' Dormitory. During this period the student has instruction in medicine, surgery, and principles of nursing, ward practice in the wards and out-patient departments of the hospital, and practical training in public health nursing. The resident instruction is divided into five half years of academic and professional education and two additional months of special training. In each half year there are one semester of four months of academic and ward work, six weeks (52 hours per week) of ward or field work, and two weeks of vacation. The semester work is arranged in the following sequence:

FIRST SEMESTER

	Credits
Therapeutics 1—Materia medica	3
Dietetics 1—Selection, preparation, and serving of food for the sick	2
Med. and Surg. 1—Recognition and treatment of disease	3
Nursing 2—Elementary principles of nursing	2
Ward work—6 hours daily	
Physical education	

SECOND SEMESTER

Med. and Surg. 2—Health, disease, and therapy in infancy and childhood	4
Med. and Surg. 5—Communicable diseases; Physical therapy	2
Nursing 3—Care of infants and children	2
Psychology 1—Introductory psychology	3
Ward work—6 hours daily	

THIRD SEMESTER

Med. and Surg. 3—Nervous and mental health, disease, and therapy	3
Med. and Surg. 4—Health, disease, and therapy of the eye, ear, nose, mouth, throat, and skin	2
Sociology 2	3
Nursing 4—Special technique	2
Ward work—6 hours daily	

FOURTH SEMESTER

Med. and Surg. 6—Obstetrics and gynecology	2
Med. and Surg. 7—Medicine and urogenital surgery	2
Nursing 5—Social problems from the standpoint of nursing and dietetics	4
Ward work—6 hours daily	

DEPARTMENTS OF INSTRUCTION

For a description of the courses in botany, zoology, chemistry, physics, psychology, history, economics, sociology, English, and the foreign languages, see departmental announcements in the College of Letters and Science. For home economics see departmental announcements of the College of Agriculture. For the medical sciences, anatomy, physiology, bacteriology, hygiene, pharmacology and toxicology, see departmental announcements of the Medical School.

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters

I—course given during the first semester

II—course given during the second semester

I, II—semester course given each semester

cr—number of credit hours per semester

DIETETICS

HELEN GIESSEL, B.S., *Instructor in Dietetics*
LENORE HEALEY, B.S., *Assistant in Dietetics*

1. SELECTION, PREPARATION, AND SERVING OF FOOD FOR THE SICK. I, II; 2 cr.

2. ADVANCED DIETETICS. I; 1 cr. Prerequisite: Dietetics 1.

MEDICINE AND SURGERY

GEORGE VAN INGEN BROWN, M.D., D.D.S., F.A.C.S., *Professor of Oral and Plastic Surgery*
JOHN WARTON HARRIS, M.D., *Professor of Obstetrics and Gynecology*
WILLIAM DAVISON STOVALL, M.D., *Professor of Hygiene*
ROBERT EMMETT BURNS, B.S., M.D., *Associate Professor of Orthopedic Surgery*
JAMES CLAUDE ELSOM, M.D., *Associate Professor of Physical Therapy*
JOHN WASSON GALE, M.A., M.D., *Associate Professor of Surgery*
JOHN EUGENE GONCE, JR., B.A., M.D., *Associate Professor of Pediatrics*
WILLIAM SHAINLINE MIDDLETON, M.D., *Associate Professor of Medicine*
MABEL GARDEN MASTEN, B.S., M.D., *Assistant Professor of Neuropsychiatry*
EZRA EUGENE NEFF, B.A., M.D., *Associate Professor of Ophthalmology*
WELLWOOD MACK NESBIT, M.D., *Associate Professor of Otolaryngology*
RALPH MILTON WATERS, M.D., *Associate Professor of Surgery in charge of Anaesthesia*
RALPH EMERSON CAMPBELL, B.S., M.D., *Assistant Professor of Obstetrics and Gynecology*
ROSCOE LYLE MCINTOSH, B.S., M.D., *Assistant Professor of Dermatology*
JOHN BREWSTER WEAR, B.A., M.D., *Assistant Professor of Urology*

1. RECOGNITION AND TREATMENT OF DISEASE. II; 3 cr.
2. HEALTH, DISEASE, AND THERAPY IN INFANCY AND CHILDHOOD. I; 6 cr. Includes pediatrics, orthopedics, and operating room technique.
3. NERVOUS AND MENTAL HEALTH, DISEASE, AND THERAPY. II; 3 cr. This course includes the principles of mental hygiene.
4. HEALTH, DISEASE, AND THERAPY OF THE EYE, EAR, NOSE, MOUTH, THROAT, AND SKIN. II; 2 cr.
5. SPECIAL THERAPEUTIC TECHNIQUE. I; 2 cr. Physical therapy and communicable diseases.
6. OBSTETRICS AND GYNECOLOGY. I; 2 cr.
7. MEDICINE AND UROGENITAL SURGERY. I; 2 cr.

NURSING

HELEN I. DENNE, B.A., R.N., *Professor of Nursing*
LILA B. FLETCHER, R.N., *Associate Professor of Nursing*
ALICE EILEEN BATTEN, B.S., R.N., *Instructor in Social Work*
MAXINE M. BAUMGARTNER, B.S., R.N., *Instructor in Nursing*
HELEN BAKKEN, R.N., *Instructor in Nursing of Diseases of Eye, Ear, Nose, Throat*
HELEN LATHROP BUNGE, B.A., R.N., *Instructor in Nursing*
FRANCES CAMPBELL, R.N., *Instructor in Nursing*
GLADYS CAREY, R.N., *Instructor in Nursing of Communicable Diseases*
EVA BEWICK CLIFFORD, R.N., *Instructor in Orthopedic Nursing*
FLORENCE FIEDLER, R.N., *Instructor in Neuropsychiatric Nursing*
SIDONIA HECK, B.S., R.N., *Instructor in Surgical Nursing*
GRACE JEAN KELLOCK, B.S., R.N., *Instructor in Medical Nursing*
ASTRID R. OLSEN, R.N., *Instructor in Nursing*
FLORA SCHRANKEL, R.N., *Instructor in Operating Room Technique*
FRANCES STUART, *Instructor in Occupational Therapy*
FRANCES H. TAYLOR, B.S., R.N., *Instructor in Pediatric Nursing*
HELEN BENNETT WHEELER, B.A.Sc., R.N., *Instructor in Obstetrical Nursing*
MARION L. ZILLEY, B.A., R.N., *Instructor in Nursing*
HELEN ROTHLISBERGER, R.N., *Assistant in Medical Nursing*
ROSE H. STILLMAN, B.A., R.N., *Assistant in Obstetrical Nursing*
THERESA STOLEN, B.S., R.N., *Assistant in Nursing of Communicable Diseases*
HATTIE B. TRAUBA, B.S., R.N., *Assistant in Orthopedic Nursing*
BESSIE WALHUS, R.N., *Assistant in Surgical Nursing.*

1. ELEMENTARY PRINCIPLES OF NURSING. I; 2 cr.
2. ELEMENTARY PRINCIPLES OF NURSING. I, II; 2 cr. Continuation of Nursing 1 which is prerequisite.
3. CARE OF INFANTS AND CHILDREN. I, II; 2 cr. Prerequisites: Nursing 1 and 2.
4. SPECIAL TECHNIQUE. II; 2 cr. Prerequisites: Nursing 1, 2, 3.
5. SOCIAL PROBLEMS FROM THE STANDPOINT OF NURSING I; 4 cr. Prerequisites: Nursing 1, 2, 3.

THERAPEUTICS

ARTHUR LAWRIE TATUM, Ph.D., M.D., *Professor of Pharmacology*
ERNEST KUENZI, B.S., *Pharmacist*

1. MATERIA MEDICA. II; 3 cr. The recognition, use, and danger of drugs used in medicine.

SCHOOL OF EDUCATION

C. J. ANDERSON, DEAN

In April, 1930, the Regents of the University approved the action of the University Faculty establishing a School of Education of college rank, and gave to it jurisdiction over the undergraduate preparation of teachers. The establishment of this coordinate school is the fourth step taken by the University of Wisconsin in the development of the training of teachers. Prior to 1908, the Department of Education offered certain courses for those preparing to teach. In 1908 the Course for the Training of Teachers was established. This was superseded in June, 1919, by a School of Education administered within the College of Letters and Science, and this, in turn has been succeeded by the present School of Education.

The faculty of the School of Education is made up of the faculties of the Departments of Education, Art Education, and Physical Education for Men and for Women, those faculty members offering courses in educational methods, and those members of the faculties of the departments in the Colleges of Letters and Science and of Agriculture who offer courses of junior and senior grade in the following teaching majors: agriculture, botany, chemistry, commerce, economics, English, French, geography, German, history, home economics, Italian, journalism, Latin, library science, mathematics, music, physics, physiology, Spanish, speech, zoology.

The School of Education provides professional preparation for teachers of academic high-school subjects; teachers of art, agriculture, home economics, physical education; play-ground and recreation supervisors; high-school librarians; principals, supervisors, and superintendents.

The preparation noted above rests upon a basis of a sound general education and includes: (1) a teaching major in the academic or special field; (2) professional training including courses dealing with the principles, psychology, and the practice of teaching, closely correlated with actual participation in the Wisconsin High School. Graduate courses in the various fields of education, including opportunity for research, are offered for those who recognize the desirability of study beyond the four years of college work, and who are preparing to become teachers in public schools, teachers' colleges, colleges, and universities, as well as supervisors and administrators.

ADMISSION AND REGISTRATION

1. Students electing a teaching major in Art Education or in Physical Education will register in the School of Education in their freshman year.

2. Students electing a teaching major in an academic field such as English, history, mathematics, etc., and who wish to qualify for the University Teachers' Certificate should transfer from the College of Letters and Science to the School of Education *at the beginning of the junior year.*

3. Students electing a teaching major in agriculture or home economics must register concurrently in the College of Agriculture and in the School of Education at the beginning of the junior year.

4. Students in special courses having a complete two-year or four-year curriculum such as the Course in Chemistry, the Course in Humanities, and the Schools of Commerce, Journalism, and Music, will retain their classifications in the College of Letters and Science but must also register in the School of Education in order to receive the University Teachers' Certificate.

DEGREES

The School of Education grants, upon the successful completion of the various courses, the degree of Bachelor of Science (Education). Such students receive, in addition, the University Teachers' Certificate. Students in the College of Agriculture, preparing for teaching and majoring in agriculture or in home economics, receive, upon the satisfactory completion of their courses, the degree of Bachelor of Science (Agriculture and Education) or B.S. (Home Economics and Education).

Only students qualifying for degrees in the School of Education may receive the University Teachers' Certificate and the recommendation of the School of Education with the exception of those in the special courses noted in 4 above.

INDUSTRIAL SCHOLARSHIPS

For the purpose of encouraging advanced study and special professional preparation for teaching in vocational schools, the Regents have established four scholarships to be awarded to senior or graduate students in the University of Wisconsin. Each scholarship has an annual value of $200. Appointment is for one year and is made upon the joint recommendation of the Chairman of the Department of Art Education and the Dean of the School of Education. Additional information concerning these scholarships may be obtained from the Dean of the School of Education or the chairman of the Department of Art Education.

SUPERVISORY SERVICE BUREAU

A supervisory service bureau has been established for the purpose of assisting graduates of the Univeresity of Wisconsin who are teaching in the State to make the transition from university work to classroom teaching. The functions of the bureau are: (1) to provide information dealing with the problems of the first two years of teaching; (2) to visit, on call, teachers who have been graduated from the University of Wisconsin and who are within their first two years of service; (3) to issue bulletins dealing with the problems of teaching; and (4) to study continuously the training of teachers in service, the difficulties of beginning teachers, their improvability, means of improvement, etc.

BUREAU OF EDUCATIONAL RESEARCH

A bureau of educational research has been established for the purpose of coordinating and facilitating research in education with particular reference to the public schools of the State. The facilities of the bureau are available for use by graduate students majoring in education and in allied departments and by superintendents, principals, and teachers throughout the State. Bulletins and studies, reporting the results of investigations, are issued from time to time. The work of the bureau is in charge of a committee consisting of members of the faculty of the Department of Education.

UNIVERSITY TEACHERS' CERTIFICATE

Graduation from the School of Education and recommendation for the University Teachers' Certificate are based upon the following conditions and requirements:

I. A total of 124 credits and 124 grade-points, i.e., 4 credits in addition to the total number otherwise required for graduation.

II. The satisfactory fulfillment of the requirements of preparation for teaching one of the following:

(a) a major subject,

(b) a major subject and one minor subject, or

(c) a major subject and two minor subjects.

To fulfill the requirements of preparation for teaching the selected major, a student must present credits in amount and kind as prescribed for a teaching major by the department of such major subject. This departmental prescription must in all cases include at least twenty credits, and in addition, credit for the departmental teachers' course. (See departmental teaching majors, pages 351-359.)

To fulfill the requirements of preparation for the teaching of the selected minor subject or subjects, a student must present credits in amount and kind as prescribed by the department of such minor subjects. This departmental prescription must contain fifteen credits, exclusive of the department teachers' course. (See departmental teaching minors, pages 351-359.)

For teachers of special subjects the satisfactory fulfillment of the requirements of the courses in agriculture, home economics, industrial education, art education, or physical education, is necessary.

III. The recommendation of the departments of the major and minor subjects, or the responsible authorities of the special courses, as to fitness for teaching.

IV. The presentation of a certificate of physical health and fitness from the University Medical Examiner.

V. The completion of the following professional requirements:

	Credits
Educ. 31—Principles of secondary education	3
Educ. Psych. 75—Psychology and practice of teaching	5
Departmental teachers' course	3 or 4
Electives in the Department of Education	4 or 3
	15

VI. Graduates of the professional courses in the state teachers' colleges who register in the School of Education as candidates for the University Teachers' Certificate must present a minimum of six credits in advanced university courses in education, together with the departmental teachers' course in their major. Under exceptional circumstances another course may be substituted for the departmental teachers' course.

VII. Graduates of the Long Course in Agriculture, of the Course in Home Economics, and of the School of Music who have complied with the regulations relative to registration and to approval of major and minor subjects, will be entitled to receive certificates upon fulfillment of the special professional requirements indicated below: Agriculture, page 351; Home Economics, page 355; Music, page 357.

STATE TEACHERS' LICENSE

Upon fulfillment of the foregoing requirements a student will be recommended by the Dean of the School to the President of the University, to receive the certified statement prescribed by section 39.75-1 of the Wisconsin Statutes. This certified statement, indicating the subject or subjects for which the teaching requirements have been fulfilled, when presented to the State Superintendent, entitles the holder to receive a license to teach for one year in any public school in Wisconsin. Graduates who have received the University Teachers' Certificate and who present satisfactory evidence of good moral character and two years of successful teaching after graduation are entitled to receive from the State Superintendent an unlimited state certificate.

The fee for state licenses and certificates has been changed by a recent act of the Legislature. Section 39.31, governing this matter, reads as follows: "A fee of two dollars shall be paid to the state superintendent with each application for a license to teach school or for a renewal of such license, or for a state certificate to teach." Licenses are valid for one year; certificates are unlimited as to time.

It may be noted that the requirements for the University Teachers' Certificate differ somewhat from the minimum fixed by the State Superintendent for a license to teach. For a first license the following credits in education are *required:*

	Credits
1. Educational psychology	3
2. Principles of education (or philosophy of education)	3
3. Teachers' course in major subject	2

Fifteen credits in education are required for a life certificate to teach. For the remaining 7 credits the State Superintendent *recommends* selection from the following list; part must be made up for a renewal license, and the remainder for a life certificate:

	Credits
4. Educational practice or practice teaching	2
5. Teachers' course in minor subject	2
6. History of education	3
7. Technique of instruction	2
8. Educational measurements	2

More specific information may be obtained from the office of the State Superintendent of Public Instruction or from the office of the Dean of the School of Education.

Attention is called to the fact that the minimum requirement of the North Central Association is fifteen hours in education.

WISCONSIN HIGH SCHOOL

The Wisconsin High School, a six-year secondary school opened in September 1911, is maintained by the University as an integral part of the School of Education. The primary purposes of this school are (a) the exemplification of sound educational theory and organization, with special reference to secondary education, and (b) the provision of appropriate facilities for observation and directed teaching. The details of organization, program of studies, etc., will be found in the bulletin of the Wisconsin High School.

COURSES FOR TEACHERS OF SPECIAL SUBJECTS

For many years the University of Wisconsin has provided technical and professional training for teachers of special subjects such as agriculture, home economics, physical education, and industrial and applied arts.

The four-year courses in Agriculture and in Home Economics are given in the College of Agriculture. Students who are planning to teach these subjects, and to qualify for the University Teachers' Certificate, *should register in the School of Education at the beginning of the junior year.* Detailed information concerning all the courses offered may be found in the special bulletins of the College of Agriculture; the requirements for the teachers' certificate appear below.

The four-year courses in Industrial Education, Art Education, and Physical Education are given in the School of Education and are outlined on pages 359-370.

DEPARTMENTAL PROFESSIONAL REQUIREMENTS

Only such departments and courses of instruction are here indicated as are immediately related to the professional work of the School of Education.

AGRICULTURE

Students in the College of Agriculture who wish to prepare for the teaching of agriculture in secondary schools must complete, in addition to a major, the general requirements of the Long Course in Agriculture and the fifteen credits in education required for the University Teachers' Certificate as outlined below. The major consists of a minimum of fifteen elective credits in any department of the College of Agriculture. Students are advised to follow the elective list furnished by the Department of Agricultural Education in order to have proper technical courses.

Students who receive the degree of Bachelor of Science (Agriculture and Education) and who have satisfied the following requirements are entitled to receive the University Teachers' Certificate and a license to teach issued by the State Superintendent: (a) registration in the School of Education at the beginning of the junior year, (b) the recommendation of the College of Agriculture, (c) the completion of the following courses:

	Credits
Educ. 31—Principles of secondary education	3
Educ. Psych. 75—Psychology and practice of teaching	5
Agr. Educ. 1—Rural education	2
Agr. Educ. 128 (301)—Program building in vocational agriculture	2
Educ. Methods 50 (302)—Teaching of agriculture	3
	15

Graduates of the professional courses of the state teachers' colleges who are majoring in agriculture and who wish to qualify for the University Teachers' Certificate, should elect 8 credits as follows:

	Credits
Education (advanced)	3–4
Agricultural Education (advanced)	2–3
Departmental teachers' course	3
	8

Candidates may be excused from the departmental teachers' course with the approval of the Chairman of the Department of Agricultural Education.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 50. The Teaching of Agriculture. I, II; 3 cr. Mr. Kivlin.

BOTANY

Students preparing to teach botany, either as a major or a minor subject, are advised to elect courses in both structural and physiological botany, and also those that involve field work.

MAJOR. A minimum of 30 credits from the following courses: Zoology 1; Botany 1, 2, 103, 104, 107, 108, 110, 112, 113, 117, 118, 129, 130, 131, 146, 147, 150, 154, 156, 160.

MINOR. A minimum of 15 credits from the following courses: Botany 1, 2, 103, 104, 107, 108, 110, 112, 113, 129, 130, 131, 146, 160. Attention is called to courses 1 and 2, which together constitute a year's work and which are especially adapted to the needs of those taking a teachers' minor in botany.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 71. The Teaching of Biology. I, II; 3 cr. Miss Weber.

CHEMISTRY

MAJOR. A minimum of 30 credits, including Chemistry 1a and 1b, 6 credits in course 11 (including the lectures throughout the year), courses 120, 121, 130, and 131.

MINOR. A minimum of fifteen credits.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 72. The Teaching of Chemistry. II; 3 cr. Prerequisites: Chemistry 1; first semester of Chemistry 120, or credit or enrollment for five credits in Chemistry 11. Mr. Walton.

COMMERCE

The School of Commerce affords certain facilities for those students who wish to prepare themselves to teach commercial subjects in secondary schools. Such students are advised to consult with the Director of the School of Commerce in the arrangement of elective work.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 75. The Teaching of Bookkeeping. II; 3 cr. Prerequisities: Senior standing and Economics 8b. Practice teaching in bookkeeping is not offered in the Wisconsin High School; however, those who elect this course are required to do participation-teaching in another subject. Miss Hensey.

COMPARATIVE LITERATURE

MAJOR. 30 credits, of which 16 shall be in Comparative Literature, including courses 9 and 165. The other 14 must be in advanced literature courses in two languages, one of which may be English. No courses below the following are accepted: Latin 6, Greek 10 or 7, English 34, French 21, German 20, Spanish 21, Italian 20.

DEPARTMENTAL TEACHERS' COURSE. See Educational Methods 76, The Teaching of English.

ECONOMICS

MAJOR. A minimum of 30 selected credits including the thesis.

MINOR. Economics 1a and 1b (8 credits), Educational Methods 84, plus an elective in economics, to make a total of 15 credits.

DEPARTMENTAL TEACHERS' COURSE. No regular departmental teachers' course in economics is offered but a teachers' course in a related subject, such as history, will be accepted.

EDUCATION

For general information concerning the equipment and the courses offered in education, see page 374. For detailed information relative to the special requirements of courses in education for the University Teachers' Certificate, see page 349.

ENGLISH

MAJOR. English 1; English 29, 30, or 33; English 37, 136, or 137; English 31 or 57; English 123; thesis; one course, and only one, from each of the following groups: (a) 63, 161, or 162; (b) 34, 35, or 40.

MINOR. A minimum including courses 30 or 33, 76, 123, one semester of an advanced composition course (2a, 5, 6, or 8), and one of the following groups: (a) 34 and 35; (b) 37, 136, or 137; (c) both semesters of 40.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 76. The Teaching of English I, II; 3-4 cr. Prerequisites: English 123, senior standing, and satisfactory grade in a qualifying examination covering (1) the elements of grammar, (2) the detection and correction of deviations from standard English, and (3) the English works commonly studied in high schools. This examination is given in the second semester of the junior year. 3 cr. for the minor; 4 cr., including one credit for participation-teaching, for the major. Mr. Pooley.

All students desiring the departmental recommendation to teach English must pass the qualifying examination referred to above.

FRENCH AND ITALIAN

Students who specialize in French or Italian are advised to elect related courses in history, art, other languages and literatures, and philosophy. Those who expect to continue for advanced degrees should note that knowledge of another foreign language is required for the M.A., and that for satisfactory work in Romance philology some knowledge of Latin is indispensable. Both Latin and German as well as another Romance language are required for the Ph.D., and should be acquired as early as possible.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 81. The Teaching of French. I, II; 3 cr. Miss Johnson.

FRENCH

MAJOR. Candidates for the University Teachers' Certificate with a major in French must have a proficiency involving comprehension of classical and modern French authors, reasonable ability to understand and speak French, and some knowledge of the history of French literature and culture. They must offer the regular requirements for the major, including or adding the following specific training:

(a) 4 credits of composition and conversation (16, 124, or 127), with grade of *B*, or equivalent training;

(b) 2 credits of phonetics (190);

(c) 3 credits in educational methods (81);

(d) 6 credits in courses of literature or civilization in the 100-group. (This requirement will go into effect for seniors graduating in 1932.);

(e) 4 credits of thesis or thesis substitute.

MINOR. 18 credits in advance of 1b. Required courses are: 2 credits in composition and conversation, and French 21, or 3 credits in a more advanced course in French literature. Minor students are advised (although not required) to take phonetics, and, if not majoring in a language, to include Educational Methods 81.

French 13 does not count toward the requirement for major or minor.

ITALIAN

MAJOR. (a) 24 credits in advance of 1b, including 4 credits in composition and conversation with an average grade of *B*. (b) Educational Methods 81, 3 credits.

MINOR. 18 credits in advance of 1b, including 2 credits in compisition and conversation.

GENERAL SCIENCE

MINOR. 15 credits in science, 5 of which must be in physics, 5 in chemistry, and 5 in biology, in addition to Educational Methods 97.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 97. The Teaching of Science. I, II; 3-4 cr. Prerequisites: Education 31 and Educ. Psych. 75. Mr. Davis.

GEOGRAPHY

MAJOR. A minimum of 30 credits as prescribed by the Department of Geography, including Educational Methods 82.

MINOR. A minimum of 15 credits made up of 10 credits in course 4, 3 credits in Educational Methods 82, and one other course, either regional or topical.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 82. The Teaching of Geography. II; 3 cr. Prerequisite: Geography 1-2 or 5-6. Mr. Whitaker.

GERMAN

MAJOR. A minimum of 24 credits in advance of course 2b. In addition to the thesis, or thesis substitute, these credits must include courses 10 or 112, 191, 131 (at least for four credits), 150, 151, and Educational Methods 83.

MINOR. A minimum of course 10, at least 8 credits in literature from courses beyond 2b, including 4 credits from courses in Group B (21, 22, 24, 25, 27), and Educational Methods 83, i.e., at least 14 credits beyond course 2b.

Students who are preparing to teach German as their major or minor subject and who have done a considerable amount of work elsewhere, or who have had successful teaching experience, may be excused, by action of the department, from some of the required work. Such excuse will generally be granted only on the basis of an examination, and in no case will students be recommended by the department unless they have taken at least 4 credits in German at Wisconsin.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 83. The Teaching of German. I; 3 cr. For seniors and graduates. Special permission is necessary for graduate credit. Mr. Griebsch.

HISTORY

MAJOR. Not less than 32 nor more than 40 credits in history to include: 6 credits in one of the freshman courses, History 1, 5, or 10; 6 credits in History 4; 4 credits in History 2; at least a semester course, either elementary or advanced, in each of the fields of ancient and medieval history, counting History 5a as medieval history; Educational Methods 84; at least 16 credits in advanced courses at Wisconsin, of which, for upper-group students, 4 shall be devoted to a thesis. Outside the department, Economics 1a and Political Science 1 are required, and Geography 4 is recommended.

MINOR. Educational Methods 84 and a minimum of 16 credits in history, including at least 4 credits in advanced courses at Wisconsin.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 84. Teaching of History and the Social Studies. I, II; 2-4 cr. Mr. Phillips.

HOME ECONOMICS

MAJOR. In the general education major, the food major, the textile major, the related art major, or the vocational education major, the minimum requirements in home economics subjects taken during the junior and senior years are 25 credits, four of which represent the thesis or its equivalent. The special courses vary with the major, but not more than 40 strictly home economics credits may be counted toward the 124 credits required for graduation. For details see special bulletin of the Course in Home Economics. The following courses are required for the teachers' certificate:

	Credits
Educ. 31—Principles of secondary education	3
Educ. Psych. 75—Psychology and practice of teaching	5
Educ. Methods 52—Teaching of home economics	4
Electives in the Department of Education	3
	15

MINOR. A minor may be taken in foods, textiles, related art, or housing problems, including 10 to 20 credits in strictly related courses.

(1) A teaching minor in foods includes Educational Methods 52 and Home Economics 1a, 1b, and other related courses, such as 3 and 47, to make 15 to 20 credits in strictly home economics subjects.

(2) A teaching minor in textiles includes Home Economics 5, 10, 11, 20, 50, 97, Educational Methods 52, 53, and other courses in home economics to complete 20 credits.

(3) A teaching minor in related art includes Home Economics 2, 12, 20, 8, 18, 94, 95, 116, 121, 194, and related home economics subjects to complete 20 credits.

(4) The housing minor is offered to students majoring in sociology in order that those intending to do special settlement or social welfare work will have a broader foundation knowledge of the fundamental problems in housing. Home Economics 1a, 1b, 7, 17, and other related courses may be elected in the minor.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 52 . The Teaching of Home Economics. I, II; 4 cr. Miss Henderson, Miss Jones.

JOURNALISM

MAJOR. A minimum of thirty credits, including the usual studies of the School of Journalism and, in addition, the departmental teachers' course, Educational Methods 88. Students combining a minor in English with this major are not required to take advanced courses in English composition, English 2, 5, or 6.

MINOR. A minimum of 15 credits, including at least the first semester of courses 2 and 3, as well as Educational Methods 88.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 88. The Teaching of Journalism. SS; 2 cr. Miss Patterson.

LATIN

MAJOR. A minimum of 31 credits, consisting normally of Latin 6, 7, 101, 102; 10 credits in reading courses of the 100-group; and Educational Methods 90. Those who write a thesis are required to take only 6 credits in reading courses of the 100-group.

MINOR. A minimum of 19 credits, consisting normally of Latin 6, 7, 101, and Educational Methods 90.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 90. The Teaching of Latin. I, II; 3 cr. Miss Guyles.

LIBRARY SCIENCE

The Library School offers the following course for those who are qualifying for positions as high-school librarians:

LIBRARY SCIENCE FOR TEACHERS. Yr; 2 cr. The object of the course is to qualify those taking it to assume, in connection with their teaching, the supervision of high-school libraries, and to give instruction to high-school students in the use of books and libraries and in the means and methods of developing good habits and right tastes in reading. This course does not qualify for full-time

school library positions, but is for teacher-librarians as required by the Wisconsin Statutes. Open to seniors and graduate students, and to juniors by special permission. Miss Hazeltine, Miss King.

MATHEMATICS

MAJOR. (a) A minimum of 21 credits which shall consist of courses 5 and 6 (or 54 and 55), 112 or 113, and other courses numbered 100 or above with the exception of course 136. (b) Educational Methods 93; (c) a knowledge of solid geometry acquired in the secondary school or elsewhere; (d) Educational Methods 95 (not required) is recommended as a desirable course for the junior year.

MINOR. A minimum of 15 credits, including course 5a or 54, and excluding courses 7, 24, 136, and 137. It is understood that at least 6 of these credits shall be earned in residence at the University of Wisconsin with a grade not lower than *B*. In addition, Educational Methods 93 is required. A knowledge of solid geometry, acquired in college or elsewhere, is expected.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 93. The Teaching of Mathematics. 1; 3 cr. Mr. Hart.

MUSIC

The School of Music offers a four-year course leading to the degree of Bachelor of Music; see special bulletin for detailed requirements. The following credits are required for the University Teachers' Certificate:

	Credits
Educ. Psych. 75—Psychology and practice of teaching	5
Educ. 31—Principles of secondary education	3
Music 45—Introductory methods in public school music	4
Elective in the Department of Education	3
	15

PHYSICAL EDUCATION

(See pages 365-370.)

PHYSICS

MAJOR. A minimum of 20 credits in approved courses in addition to 4 credits for the thesis and Educational Methods 96.

MINOR. A minimum of 15 credits in approved courses.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 96. The Teaching of Physics. II; 3 cr. Mr. Steve.

PHYSIOGRAPHY

(See Geography, page 354.)

PHYSIOLOGY

MAJOR. A minimum of 23 credits as follows: 3 credits in physiological chemistry; 6 credits in anatomy or zoology as approved by the Department of Physiology; 11 credits in physiology, including thesis; 3 credits in any department of the Medical School, as approved by the Department of Physiology.

In order to fulfill these requirements, Physics 1 or 31, Chemistry 1, and Zoology 1 should be completed before the beginning of the junior year.

MINOR. A minimum of 11 credits in the following courses: Physiology 1, 4 cr; Pathology 5, 2 cr; either Agricultural Bacteriology 1 or 4, 5 cr. General chemistry is strongly advised as a prerequisite to physiology and bacteriology.

SPANISH AND PORTUGUESE

MAJOR. 27 credits in advance of 1b, including thesis (or 4-6 credits in literature courses numbered above 100 for students not required to write a thesis). The required courses are: 3 credits in Educational Methods 81, 2 credits in phonetics, 4 credits in conversation and composition with a grade of *B*, and 6 credits in Spanish literature, of which at least 3 must be chosen from courses numbered above 100. Majors who have had up to the senior year no grades below *B* in Spanish, and in exceptional cases only, majors who have had one or two lower grades (not below *C*) in the elementary stage of the study of the language, will submit a thesis. Majors not falling in the above described groups may apply to the chairman of the department for permission to write a thesis. Before graduation students must take a comprehensive examination in the major field, covering conversation, phonetics, composition, grammar, literature, civilization, and teaching methods. The department has prepared a reading list of the most important standard works, for which students will be held responsible, at the time of the examination whether or not they have studied them in regular courses. For further information about this examination, application may be made to the departmental office.

MINOR. 18 credits in advance of 1b. The required courses are: 2 credits in conversation and composition and 3 credits in literature. Minor students are advised (but not required) to elect Spanish 190, and also Educational Methods 81, if not majoring in another foreign language.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 81. The Teaching of Spanish. I, II; 3 credits.

PORTUGUESE. Special arrangements will be made for students interested in majoring or minoring in this language. Miss Johnson.

SPEECH

MAJOR. A minimum of 34 credits including Educational Methods 98.

MINOR. A minimum of 15 credits in approved courses, including Educational Methods 98.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 98. The Teaching of Speech. I; 2-3 cr. Miss Borchers.

ZOOLOGY

MAJOR. A minimum of 30 credits, including ordinarily Botany 1, Zoology 1, 9, 102, 104, 105, and, in the case of upper-group students, a thesis. Changes in this list of recommended courses are occasionally made in consultation with the adviser in the zoology department.

MINOR. A minimum of 15 credits from the following courses: Zoology 1, 2, 9, 102, 104, and 105. Attention is called to Courses 1 and 2, which together constitute a year's work and are especially adapted to the needs of those taking a minor in Zoology.

DEPARTMENTAL TEACHERS' COURSE. Educational Methods 71. The Teaching of Biology. I, II; 3 cr. Miss Weber.

COURSE IN INDUSTRIAL EDUCATION

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (INDUSTRIAL EDUCATION)

J. F. FRIESE, ASSISTANT PROFESSOR OF INDUSTRIAL EDUCATION, *In charge*

This curriculum is being progressively discontinued, commencing with 1929-30 and terminating in 1931-32; only students with senior standing will be admitted in 1931-32. (This change has no present bearing on the individual subjects offered by the Department of Industrial Education during the summer session. Graduate subjects in the field of industrial arts are given increased emphasis as undergraduate offerings are reduced.)

The requirements for graduation are 124 credits and 124 grade-points, including 6 credits in mechanical or freehand drawing and from 47 to 62 additional credits in departmental courses.

On page 383 will be found a complete list of courses affered in industrial education. Also see Department of Education, page 380, for complete listing of courses in vocational guidance.

FRESHMAN, SOPHOMORE, AND JUNIOR YEARS DISCONTINUED

SENIOR YEAR

Educ. Methods 64—Teaching of industrial arts	3	Ind. Educ. 100—Thesis	2
Ind. Educ. 100—Thesis	2	Departmental electives	4-6
Departmental electives	5-8	Electives in Education	3-4
Free electives	5-2	Free electives	6-3
	15-16		15-16

COURSE IN ART EDUCATION

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (ART EDUCATION)

W. H. VARNUM, CHAIRMAN, PROFESSOR OF ART EDUCATION

The Department of Art Education offers a four year curriculum including the freshman, sophomore, junior, and senior years. For graduates there is a joint major in Art Education and Education, leading to the second degree.

PURPOSE AND PLAN. The studies included in the Course in Art Education are of two types: (1) those designed to familiarize the student with basic and advanced art practice and appreciation, art curriculum building and teaching practice, leading to the development of teachers and supervisors of art (drawing, painting, design, commercial and professional art, and the art crafts) in public and private schools, teachers' colleges, and universities; (2) art courses primarily selected by students not enrolled in the Art Education course, but who desire an appreciative or professional knowledge of art theory and practice through studio participation.

The chart accompanying this course presents a graphic view of the entire departmental plan. The chart is divided into five vertical columns representing requirements and electives. The columns relate to (A) English requirements, (B) natural sciences, (C) history or foreign languages, (D) art education, (E) education, (F) electives. Below the double horizontal line are the various options open to the student under each heading and the number of options to be selected. Black areas within each column represent the minimum course requirements, while the shaded areas extend the black columns to the maximum. Elections from each column are obligatory.

GENERAL REQUIREMENTS. Although transfers to the Course in Art Education may be made at the opening of any semester, it is desirable to enroll in the freshman year. A total of 124 credits and 124 grade-points is required for graduation. Of this number 53 to 68 credits (inclusive of 6 credits in Art Education 1 and Art Education 50-51) must be taken in departmental courses or their related options as indicated in Column D.

DETAILED REQUIREMENTS. ENGLISH: COLUMN A. Ten or twelve credits of English are required under options 1, 2, or 3, of which one option is to be selected.

Option 1—Freshmen English and sophomore survey of English literature in historical sequence.

Option 2—Freshmen English and sophomore introduction to English literature from the appreciative rather than the historical viewpoint.

Option 3—Freshmen English and sophomore composition.

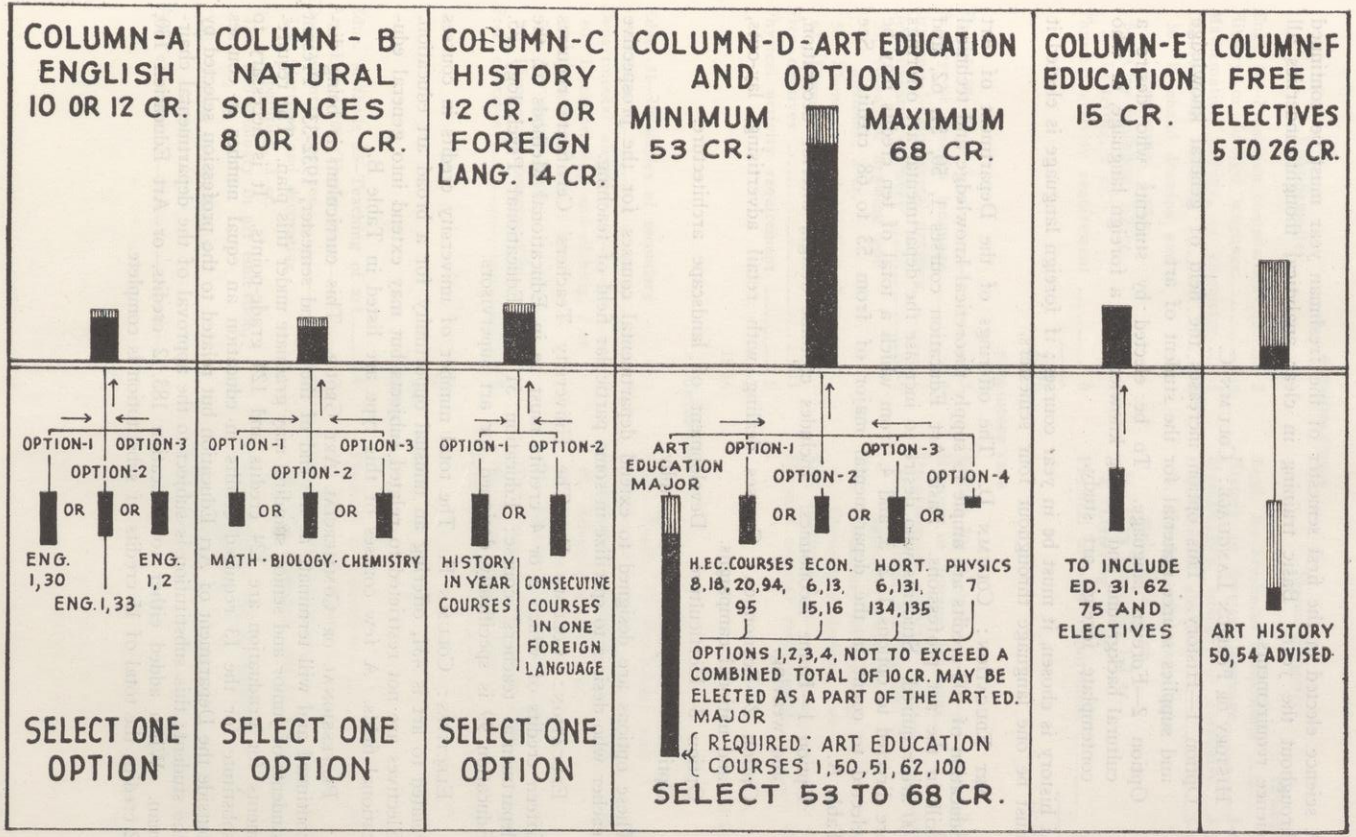
The sophomore English course elected in the first semester must be continued in the second semester.

NATURAL SCIENCES: COLUMN B. Eight to ten credits are obligatory under any one of the three options: eight in mathematics or ten in either biology or chemistry.

Option 1—Mathematics. Desirable for students who are interested in later graduate courses in educational statistics.

Option 2—Biology. For increasing the art student's field of source material.

Option 3—Chemistry. Applying directly to the art-crafts courses and graduate work in color analysis.



COURSE IN ART EDUCATION

A science elected in the first semester of the freshman year must be continued throughout the year. Basic training in clear analytical thought underlies all science requirements.

HISTORY OR FOREIGN LANGUAGE: COLUMN C.

Option 1—History. This option increases the field of general knowledge and supplies source material for the student of art.

Option 2—Foreign language. To be elected by students who desire a cultural background and reading knowledge of a foreign language, or who contemplate foreign art study.

If history is chosen, it must be in year courses; if foreign language is elected it must be one language throughout four semesters.

ART EDUCATION: COLUMN D. The offerings of the Department of Art Education of 108 credits are ample to supply theoretical knowledge and technical skill in the art professions. Basic Art Education courses 1, 50, 51, 62, and 100 are required. Students who desire to increase the departmental art offerings are directed to options 1, 2, 3, and 4, from which a total of ten credits may be selected to count in the departmental major of from 53 to 68 credits. See Table A.

Option 1—Home Economics. Includes costume design, interior decoration, and weaving.

Option 2—Economics. Courses dealing with retail advertising, lay-outs, and national campaigns.

Option 3—Horticulture. Development of landscape architecture.

Option 4—Physics. Photography.

These options are designed to extend departmental courses for the prospective teacher who desires to specilize in some particular field of teaching.

EDUCATION: COLUMN E. The University Teachers' Certificate requires fifteen credits of which 3 or 4 credits must be in Educational Methods 62, the departmental teachers' course; Education 31 and Educational Psychology 75. Education 99 is specifically designed for art supervisors.

ELECTIVES: COLUMN F. The total number of university credits in courses related to art is 431, offering an unusual opportunity for a broad art education. Electives are not restricted to related subjects but may extend into general educational fields. A few courses of this type are listed in Table B.

PROFESSIONAL OR COMMERCIAL ART GROUP. This curriculum is being discontinued and will terminate at the end of the second semester, 1932-33. Present students of junior and senior standing may graduate under this plan. The requirements for graduation are 124 credits and 124 grade-points. It is necessary to substitute for the 13 required credits in education an equal number in courses outside the Department of Art Education but related to the profession selected by the student; this substitution is subject to the approval of the departmental chairman. When added either to Education 183, 2 credits, or Art Education 130, 2 credits, the total of 15 credits of substitution is complete.

FRESHMAN YEAR

First Semester	Credits
Engl. 1a—Freshman composition	3
History or foreign language	3-4
Mathematics, biology, or chemistry	4-5
Departmental electives	5-4
50. Freehand drawing and perspective, 3 cr.	
54. Clay modeling, 1-2 cr.	
7. Lettering, 2 cr.	
Physical activity requirement	0
	15-16

Second Semester	Credits
Engl. 1b—Freshman composition	3
History or foreign language	3-4
Mathematics, biology, or chemistry	4-5
Departmental electives	5-4
51. Freehand drawing; light and shade, 3 cr.	
54. Clay modeling, 1-2 cr.	
8. Lettering, 2 cr.	
Physical activity requirement	0
	15-16

SOPHOMORE YEAR

English 30, 33, or 2	2-3
History or foreign language	3
Drawing 1—Mechanical drawing	3
Departmental electives	3-6
55. Advanced drawing and anatomy, 2 cr.	
56. Elementary oil painting, 3 cr.	
62. Elementary design, 3 cr.	
Free electives	4-1
Physical activity requirement	0
	15-16

English 30, 33, or 2	2-3
History or foreign language	3
Departmental electives	3-6
55. Advanced drawing and anatomy, 2 cr.	
56. Elementary oil painting, 3 cr.	
62. Elementary design, 3 cr.	
Free electives	4
Physical activity requirement	0
	15-16

JUNIOR YEAR

Educ. 31—Principles of secondary education	3
Departmental electives	7-9
60. Block printing and etching, 2 cr.	
63. Advertising art, 3 cr.	
70. Art metal, 2 cr.	
71. Elementary pottery, 2 cr.	
Free electives	6-4
	16

Educ. Psych. 75—Psychology and practice of teaching	5
Departmental electives	7-9
63. Advertising art, 3 cr.	
70. Art metal, 2 cr.	
71. Elementary pottery, 2 cr.	
131. Pictorial composition, 2 cr.	
140. Stage design, 2 cr.	
Free electives	4-2
	16

SENIOR YEAR

Educ. Methods 62—Teaching of art	3-4
Art. Educ. 100—Thesis	2
Departmental electives	6-9
132. Portrait and decorative painting, 3 cr.	
134. Pro-seminary in art education, 2 cr.	
180. Topical art problems, 2 or 3 cr.	
Free electives	6-2
	16

Electives in Education	4-3
Art Educ. 100—Thesis	2
Departmental electives	5-7
130. Pro-seminary, Art in industry, 2 cr.	
132. Portrait and decorative painting, 3 cr.	
180. Topical art problems, 2 cr.	
Free electives	6-3
	16

ELECTIVES: TABLE A

The following courses may be included as departmental electives (Column D) by students in the Art Education Course.

City Plan. 101—City planning and zoning ---------- 2
Econ. 6—Business letter writing -------- 2
Econ. 13—Marketing methods ---------- 2
Econ. 15—Principles of advertising---- 2
Econ. 16—Advertising campaigns------- 2
Hort. 6—Principles of landscape design- 3
Journ. 4—Typography ---------- 1
Physics 7—Photography ---------- 2
Home Econ. 8—House decoration-------- 2
Home Econ. 18—House decoration lab--- 2
Home Econ. 20—Elem. costume design-- 2
Home Econ. 94—Adv. applied design---- 3
Home Econ. 95—Weaving----------1-2

ELECTIVES: TABLE B

The following are a few of the general electives (Column F) recommended for the consideration of students in this course.

Anatomy 120—Human anatomy--------- 6
Art Hist. 50—Ancient and medieval art epochs ----------2-3
Art Hist. 54—Modern painting and its antecedents ----------2-3
Econ. 1a-1b—General economics --------- 8
Sociol. 1-2—Introductory sociology ------ 6
Psych. 1—Introductory psychology ---- 3
Psych. 50—Applied psychology --------- 2
Educ. 99—Theory and practice of supervision ---------- 3
Speech 1—Fundamentals of speech------- 3
Speech 7—Public speaking ---------- 2
Comp. Lit. 68—Contemporary novel----- 2
Educ. 181—Vocational guidance and counseling techniques ----------2-3

PHYSICAL EDUCATION

Professional courses for teachers of physical education and for directors of play and recreation were organized at the beginning of the year 1911-12. The course as it was first instituted was adapted to the needs of both men and women in one curriculum, but as the scope of the field developed, incorporating more and more of the informal side of physical education, particularly games and athletics—the more natural forms of exercise—there has come more specialization within the field itself. Notwithstanding the fact that the formal side of physical education has not been overlooked, and that the former course made ample provision for the qualification of men and women to accept responsible positions as physical educators, the demand now in the educational field requires men to be especially fitted to coach, direct, and supervise all forms of games and athletics, as well as to teach the formal and corrective phases of physical education. With these distinctions in mind as to the requisites for men and women in this particular vocation, the faculty of the University has approved separate and distinct courses for men and women, as outlined below, both leading to the degree of Bachelor of Science in Physical Education.

Provision is also made for students who desire to do their minor work in physical education in preparation for combining leadership in physical education activities with academic subjects in the high school, for students who desire a familiarity with the problems of physical education as a part of their equipment as principals or superintendents in public schools, or for positions as directors of social centers, and for students desiring academic courses in physical education as a part of a liberal education.

COURSE IN PHYSICAL EDUCATION AND ATHLETIC COACHING FOR MEN

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (PHYSICAL EDUCATION)

G. S. LOWMAN, CHAIRMAN, PROFESSOR OF PHYSICAL EDUCATION

A total of 124 credits and 124 grade-points is required for graduation from this course. Students who present three high-school units in one foreign language, or a total of four units in two languages, are exempt from further study of foreign language. Students who present less than this amount of foreign language are required to earn eight credits in one language, and also to carry a year of sophomore composition. See entrance requirements, page 33.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Foreign language, mathematics or history	4-5	Foreign language, mathematics or history	4-5
Chem. 1a—General chemistry	5	Chem. 1b—General chemistry	5
Phys. Ed. 6—Theory and practice	3	Phys. Ed. 7—Theory and practice	3
Physical activity requirement	0	Physical activity requirement	0
	15-16		15-16

SOPHOMORE YEAR

Zool. 1—Animal biology	5	Zool. 2—General zoology	5
Anat. 39—Human anatomy	4	Physiology 3—Animal physiology	4
Educ. 31—Principles of secondary education	3	Phys. Ed. 16—First aid to injured	1
Phys. Ed. 8—Theory and practice	3	Phys. Ed. 9—Theory and practice	3
Physical activity requirement	0	Academic elective	2-3
	15	Physical activity requirement	0
			15-16

JUNIOR YEAR

Phys. Ed. 58—Human mechanics	2	Phys. Ed. 107—Effects of physical activities on the body	2
Phys. Ed. 59—Nature, function, and organization of play	3	Pathology 5—Disease prevention	2
Educ. Psych. 75—Psychology and practice of teaching	5	Phys. Ed. 118—Physical examinations and therapeutics	3
Physiol. Chem. 114—Physiological chem.	3	Phys. Ed. 11—Theory and practice	3
Phys. Ed. 10—Theory and practice	3	Electives in Education	6
	16		16

SENIOR YEAR

Phys. Ed. 119—Physical examinations and therapeutics	3	Phys. Ed. 168—Organization and administration	2
Phys. Ed. 164—School health problems	2	Educ. Methods 70—Teaching of physical education	3-4
Phys. Ed. 100—Thesis	2	Educ. 99—Theory and practice of supervision	3
Phys. Ed. 12—Theory and practice	3	Phys. Ed. 100—Thesis	2
Academic electives	6	Phys. Ed. 13—Theory and practice	3
		Academic electives	2-3
	16		14-16

DEPARTMENTAL ELECTIVES

Phys. Ed. 80—Community recreation	2	Phys. Ed. 166—Physical therapy	2-3

COURSE IN PHYSICAL EDUCATION FOR WOMEN

LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (PHYSICAL EDUCATION)

BLANCHE M. TRILLING, CHAIRMAN, PROFESSOR OF PHYSICAL EDUCATION

No one will be accepted as a student in this course for less than three years of study, except by transfer from an accredited course in physical education. A student is on probation with the department for her first year. At the end of that time, or later, if she does not meet the departmental standard of scholarship, general aptitude, health, and ability, the department reserves the right to ask the student to withdraw from the department.

A total of 124 credits and 124 grade-points is required for graduation from this course. Students who present less than four high-school units of foreign language are required to earn 14 credits in one language, and those who present four or more units are required to earn 8 credits in one language. See entrance requirements, page 33.

GRADUATE WORK. In addition to the undergraduate curriculum outlined below, opportunity is offered for graduate work leading to an M.A. or an M.S. in Physical Education. For further information see Graduate Bulletin.

FRESHMAN YEAR

First Semester	Credits	Second Semester	Credits
Engl. 1a—Freshman composition	3	Engl. 1b—Freshman composition	3
Foreign language	4	Foreign language	4
Chem. 1a—General chemistry	5	Chem. 1b—Qualitative analysis	5
History	3	History	3
Phys. Ed. 20—Practice in gymnastics and sports	0	Phys. Ed. 43—Folk dancing	1
		Phys. Ed. 20—Practice in gymnastics and sports	0
	15		16

SOPHOMORE YEAR

	Credits		Credits
Physics 65—General physics	3	Physics 65—General physics	3
Zool. 3—Elementary zoology	3	Anatomy 120—Human anatomy	6
Foreign language or elective	3-5	Foreign language or elective	3-5
Phys. Ed. 42—Plays and games	2	Phys. Ed. 31—Principles of coaching	2
Phys. Ed. 49—Folk dancing	1	Phys. Ed. 20—Practice in dancing, gymnastics, and sports	0
Elective	2		
Phys. Ed. 20—Practice in dancing gymnastics, and sports	0		
	14-16		14-16

JUNIOR YEAR

Phys. Ed. 56—Kinesiology	3	Physiology 115—Physiology	5
Physiology 115—Physiology	5	Pathology 5—Disease prevention	2
Physiol. Chem. 114—Physiological chemistry	3	Phys. Ed. 176—Therapeutic gymnastics	2
Phys. Ed. 32—Principles of coaching	2	Phys. Ed. 41—Selection and practice of activities for schools	2
Phys. Ed. 175—Therapeutic gymnastics	2	Phys. Ed. 33—Principles of coaching	2
Phys. Ed. 20—Practice in dancing, gymnastics, and sports	0	Educ. 31—Principles of secondary education	3
		Phys. Ed. 20—Practice	0
	15		16

SENIOR YEAR

Educ. Methods 69—Teaching of physical education	4
Elective in Education	3
Phys. Ed. 100—Thesis	2
Electives	5-7
Phys. Ed. 20—Practice in dancing, gymnastics, and sports	0
	14-16

Medicine 118—Physical examination	3
Phys. Ed. 168—Organization and administration	2
Educ. Psych. 75—Psychology and practice of teaching	5
Phys. Ed. 100—Thesis	2
Electives	2-4
Phys. Ed. 20—Practice	0
	14-16

Practice teaching included in Educ. Methods 69 and Educ. Psych. 75.

CERTIFICATE IN PHYSICAL THERAPY

After the completion of the junior year, students who desire to qualify for a certificate in physical therapy may arrange to obtain the requisite training by taking Physical Education 166 and 263, in lieu of other electives, and by doing practical work in the Wisconsin General Hospital and the Orthopedic Hospital for Children. This work will normally involve four months of specialized practice after graduation from the Physical Education Course. It is strongly urged that a course in sociology be elected in addition to the above.

This plan has been approved by the American Physiotherapy Association and the American Medical Association, and the university certificate is accepted by them. Students receiving the certificate are accepted as physical therapy aides in schools and hospitals for the disabled.

DANCE MAJOR

Because of the heavy activity program carried without academic credit, it is strongly urged that four years and two summers or five years be given to the course. This would enable the student to elect other related subjects and to start studying for a master's degree. In the case of students transferring from other institutions, three years of residence work is usually required to meet the technical standards of this department.

The following is a suggested outline showing the possibility of completing this course in four years and one summer.

FRESHMAN YEAR

First Semester

	Credits
Engl. 1a—Freshman composition	3
Foreign language	4-3
Science (botany preferred)	5
History or mathematics	3-4
Phys. Ed. 20—Practice in dancing, gymnastics, sports	0
	15

Second Semester

	Credits
Engl. 1b—Freshman composition	3
Foreign language	4-3
Science (zoology preferred)	5
History or mathematics	3-4
Phys. Ed. 43—Elementary folk dancing	1
Phys. Ed. 20—Practice in dancing, gymnastics, sports	0
	16

SOPHOMORE YEAR

First Semester	Credits
Psych. 1—Introductory psychology	3
Physiology 1—Human physiology	4
Engl. 33a or 30a—Literature	2-3
Speech 7—Public speaking	2
Speech 6—Voice training	2
Phys. Ed. 49—Folk dancing	1
Phys. Ed. 60—Rhythmic form and analysis	1
Phys. Ed. 20—Practice	0
	15-16

Second Semester	Credits
Philos. 11—Elementary logic	3
Engl. 33b or 30b—Literature	2-3
Art. Hist. 54—Modern painting	3
Educ. 31—Principles of secondary education	3
Speech 18—Oral interpretation of literature	3
Phys. Ed. 31—Principles of coaching	1
Phys. Ed. 33—Principles of coaching	1
Phys. Ed. 20—Practice	0
	16-17

SUMMER SESSION

Anatomy 120—Human Anatomy 6

JUNIOR YEAR

Art Hist. 50—Ancient and medieval art	3
Speech 16—Dramatic expression	2
Music 72—Music education	2
Phys. Ed. 56—Kinesiology	3
Phys. Ed. 175—Therapeutic gymnastics	2
Phys. Ed. 41—Selection and practice of activities for schools	2
Phys. Ed. 20—Practice	0
	14

Educ. Psych. 75—Psychology and practice of teaching	5
Music 67—Community festivals and pageant movements*	2
Music 72—Music education	2
Phys. Ed. 160—Advanced rhythmic form and analysis	2
Phys. Ed. 176—Therapeutic gymnastics	2
Philos. 21—Introduction to philosophy	3
Phys. Ed. 20—Practice	0
	16

*Offered only in alternate years; Art Education 140 should be substituted and Music 67 be taken in the senior year.

SENIOR YEAR

Elective in Education	3
Elective—Comp. Lit. 165	3
Educ. Methods 69—Teaching of physical education	4
Phys. Ed. 146—Theory of the dance	3
Phys. Ed. 100—Thesis	2
Phys. Ed. 20—Practice	0
	15

Philos. 25—Relation of man to nature	3
Art History	3
Art. Educ. 140—Stage design	2
Phys. Ed. 165—Dance composition	2
Phys. Ed. 100—Thesis	2
Phys. Ed. 20—Practice	0
Elective	3-4
	15-16

Electives are golf, horseback riding, bowling, indoor and outdoor baseball, tennis, archery, basketball, hockey, and gymnastics.

MINORS IN PHYSICAL EDUCATION

The minor in physical education enables students to specialize in the subject even though they do not adopt it as a major. Provision is thus made for students to equip themselves to teach physical education in connection with academic subjects in the high schools.

Any *one* of the minors enumerated below may be elected by candidates for the University Teachers' Certificate under the following provisions: (1) to receive credit for courses in physical education included in any given minor the entire minor must be completed; (2) the total number of credits required for graduation with the certificate is, for students taking a minor in physical education, 128, of which not more than 12 may be in physical education; (3) this total may be attained either by work done during an additional period of residence, or by carrying 17 credits each semester for as many semesters as may be necessary, provided, however, that such a program must include at least one course in physical education; (4) practical work, which is required but which gives no academic credit, will be arranged at the discretion of the department according to the student's needs.

FOR MEN

1. ATHLETIC COACHING; 12 credits. This minor is offered to qualify men to meet the demands of high schools and colleges for men to coach and supervise athletics in connection with the teaching of some academic subject. Practical work which is required, but given no academic credit, is to be arranged at the discretion of the department according to the student's needs.

	Credits
Educ. Methods 70—Teaching of physical education	3
Phys. Ed. 17—Athletic training and first aid	2
Phys. Ed. 168—Organization and administration of physical education and athletics	2
Phys. Ed. 29—Technique of football	1
Phys. Ed. 23—Technique of basketball	1
Phys. Ed. 24—Technique of track	1
Phys. Ed. 21—Technique of gymnastics	1
Choice of two other special techniques	2

(The technique courses above are offered under their regular numbers during the summer session; during the regular academic year they are offered under the theory and practice courses, Physical Education 6-13, inclusive.)

2. GYMNASTICS OR FORMAL PHYSICAL EDUCATION; 12 credits. This minor is intended to meet the needs of those students who wish to combine the teaching of physical education with their major subject. Practical work which is required, but given no academic credit, is to be arranged at the discretion of the department according to the student's needs.

	Credits
Educ. Methods 70—Teaching of physical education	3
Phys. Ed. 58—Human mechanics	2
Phys. Ed. 61—Physical education in elementary and secondary schools	2
Phys. Ed. 71—Scouting and other adolescent organizations	2
Phys. Ed. 22—Technique of plays and games	1
Phys. Ed. 21—Teaching of gymnastics	1
Choice of two other special techniques	2

FOR MEN AND WOMEN

COMMUNITY RECREATION; 12 credits. This minor is offered to meet the demand for play and recreational leaders especially equipped for the organization, administration, and supervision of play and recreational activities in various communities and industrial concerns. The department will advise with the student in the choice of techniques, according to the field of work the student purposes entering.

	Credits
Phys. Ed. 16—First aid to the injured	1
Phys. Ed. 59—Nature, function, and organization of play	3
Phys. Ed. 80—Community recreation	2
Phys. Ed. 71—Scouting and other adolescent organizations	2
or	
Phys. Ed. 81—Camp leadership	(2)
Phys. Ed. 42—Plays and games	2
Choice of three other special techniques	3

The following additional courses are suggested for those electing the Recreation Minor:

	Credits
Sociology 140—General sociology	3
Sociology 46—Social anthropology	3
Economics 1a, 1b—General economics	8
Art Education 61—Elementary school art and industrial arts	6
Music 67—Community festival and pageant movements	2
Music 78—Community music	2
Home Economics	2

FOR WOMEN

PHYSICAL EDUCATION—GYMNASTICS; 12 credits. This minor is intended to meet the needs of those students who wish to combine the teaching of physical education with their major subject in secondary and elementary schools.

	Credits
Phys. Ed. 56—Kinesiology (Anatomy 120 a prerequisite)	3
Educ. Methods 69—Teaching of physical education	4
Phys. Ed. 41—Selection and practice of activities for elementary and secondary schools	2
Physiology 1—Elements of physiology	(4)

The three additional credits in physical education may be elected from the following group of courses:

	Credits
Phys. Ed. 16—First aid to the injured	1
Phys. Ed. 81—Camp leadership	2
Phys. Ed. 31, 32, 33, 42, 43, 49—Special techniques	1–2 each

DEPARTMENTS OF INSTRUCTION

Abbreviations used in the announcement of courses:

Yr—a continuous course extending through two semesters
I—course given during the first semester
II—course given during the second semester
I, II—semester course given each semester
cr—number of credit hours per semester
*—to be arranged

Courses numbered under 100 may be credited only by undergraduates; those in the 100-group may be credited by both undergraduates and graduates; those in the 200-group are ordinarily open only to graduates.

ART EDUCATION

WILLIAM HARRISON VARNUM, B.P., *Professor of Art Education, Chairman*
JOHN FRANK FRIESE, M.S., *Assistant Professor of Industrial Education*
ROLAND STEWART STEBBINS, *Assistant Professor of Art Education*
DELLA FORD WILSON, M.A., *Assistant Professor of Art Education*
FRANK STILLMAN MOULTON, A.I.A., *Lecturer in Art Education*
WAYNE LEMERE CLAXTON, B.S., *Instructor in Art Education*
HOWARD BAILEY DOKE, *Instructor in Drawing and Descriptive Geometry*
HELEN WANN ANNEN, B.A., B.F.A., *Instructor in Art Education*
FRANK ZOZZORA, B.A., *Instructor in Art Education*

In this Department all unstarred courses are offered as general electives for properly qualified students.

Students who desire to supplement, by studio participation, courses offered in other departments, should enroll in the following courses: Speech 19 and Art Education 140, Stage design; Art History 101 and Art Education 60, Block printing and etching; Art History 50 or 54 and Art Education 50 (Section 3—Tools, materials, and technic of the artist).

1. ELEMENTS OF MECHANICAL DRAWING. I, II; 3 cr. Constructive and instrumental drawing. Lab. fee $1.00. 2 sections—10-12 MWF, 8-10 TTS. Mr. Doke.

7. FREEHAND LETTERING. I, II; 1 or 2 cr. Construction and composition of Classic Roman capitals, lower-case letters, English Gothic, black letter, and modern script. Special emphasis given to the choice of lettering styles in advertising design. Lab. fee $0.75. 8-10 TT. Mr. Doke.

8. ADVANCED FREEHAND LETTERING. I, II; 2 cr. Prerequisite: Art Education 7. 10-12 TT. Lab. fee $0.75. Mr. Doke.

9. ADVANCED FREEHAND LETTERING. II; 2 cr. Prerequisite: Art Education 8. 10-12 TT. Lab. fee $0.75. Mr. Doke.

18. ARCHITECTURAL DRAWING. II; 3 cr. Prerequisite: Art Education 1. 10-12 MWF.

50. FREEHAND DRAWING AND PERSPECTIVE. I; 3 cr. Introduction to pictorial expression. Open to freshmen. Lab. fee $1.25. 3 sections—8-10 MWF, 1:30-3:30 MWF, 10-12 TTS. Mr. Zozzora.

51. Freehand Drawing; Light and Shade. II; 3 cr. Prerequisite: Art Education 50. Lab. fee $3.00. 3 sections—8-10 MWF, 1:30-3:30 MWF, 10-12 TTS. Mr. Zozzora.

52. Elementary Watercolor Rendering. II; 3 cr. Prerequisite: Art Education 50. Lab. fee $1.75. 10-12 TTS. Mrs. Annen.

54. Elementary Modeling. Yr; 1 or 2 cr. Introduction to plastic expression. Lab. fee per semester: 1 cr., $4.00; 2 cr., $6.00. 1:30-3:30 TT. Miss Wilson.

55. Advanced Drawing and Anatomy. Yr; 2 cr. Prerequisite: Art Education 51 or consent of instructor. Lab. fee $4.00 per semester. 1:30-3:30 TT. Mr. Stebbins.

56. Elementary Oil Painting. Yr; 3 cr. Prerequisites: Art Education 50 and 51. Lab. fee $2.00 per semester. 2 sections—8-10 MWF, 10-12 TTS. Mr. Stebbins.

57. Mechanical Perspective and Architectural Rendering. II; 3 cr. Prerequisites: Art Education 1, 18, and 50. Lab. fee $2.00. Not offered in 1931-32. Miss Wilson and special lecturers.

60. Block Printing and Etching. I; 2 cr. Prerequisites: Art Education 51, 62; also open to students registered or with credit in Art History 101 and 102. Lab. fee $4.50. 1:30 TT. Offered 1931-32 and in alternate years. Mr. Varnum.

61. Elementary School Art and Industrial Arts. (Formerly 304). Yr; 3 cr. Prerequisite: Junior standing. Lab. fee $6.00. 8-10 TTS. Miss Wilson.

62. Elementary Creative Design. Yr; 3 cr. Prerequisites: Art Education 1, 50. Lab. fee $1.00 per semester. 2 sections—10-12 MWF, 1:30-3:30 MWF. Mrs. Annen.

63. Advertising Art. Yr; 3 or 4 cr. Prerequisites: Art Education 7, 50, and 62. Lab. fee $1.50 per semester. 8-10 MWF. Mr. Varnum.

68. Advanced Modeling. II; 3 cr. Prerequisites: Art Education 54 and 62. Lab. fee $6.00. Offered 1932-33 and in alternate years.

70. Art Metal. Yr; 2 cr. Copper, silver, gold, pewter. Lab. fee $6.00 per semester. 8-10 TT.

71. Elementary Pottery. Yr; 2 cr. Prerequisite: Art Education 62. Lab. fee $6.00 per semester. Not offered in 1931-32. Miss Wilson.

73. Wrought Art Metal. I; 2 cr. Not open to freshmen. Lab. fee $6.00. 3:30-5:30 TuF. Mr. Schumann.

91. Analysis and Direction of Art and Industrial Vocations. I; 2 or 3 cr. Prerequisite: Junior standing. Mr. Friese.

100. Senior Thesis. Yr; 2 cr. Staff.

130. Pro-Seminary, Art in Industry. II; 2 cr. Prerequisite: Senior standing. 3:30-5:50 Tu. Mr. Varnum.

131. Pictorial Composition. I; 2 cr. Prerequisites: Art Education 62 and 63. 10 TT. Mrs. Annen.

132. Portrait and Decorative Painting. Yr; 3 cr. Prerequisite: Art Education 56. Lab. fee $5.00 per semester. 10-12 MWF. Mr. Stebbins.

134. Pro-Seminary in Art Education. I; 2 cr. Open to graduate students and seniors with adequate preparation. 3:30-5:30 Tu. Mr. Varnum.

140. Stage Design. II; 2 cr. Application of principles of design to scenic art. Prerequisite: Art Education 62. Also open to students registered or with credit in Speech 19, or with graduate standing in speech. 1:30 MW. Mr. Varnum.

160. History and Development of Art Education. II; 2 cr. Prerequisite: senior standing. Not offered in 1931-32. Miss Wilson.

164. Art Curriculum Construction. (Formerly 307.) I; 2 cr. Prerequisite: Junior standing. Not offered in 1931-32. Miss Wilson.

180. Topical Art Problems. II; 2 or 3 cr. Prerequisite: Senior standing. 10 TTS. Staff.

200. Graduate Research. Yr; 2-5 cr. A detailed study of a definite problem in the field of art education. Mr. Varnum.

210 Seminary, Art Education. Yr; 2 cr. Prerequisite: Graduate standing or teaching experience: 3:30-5:30 F. Mr. Varnum.

TEACHERS' COURSE

The Teaching of Art. See Educational Methods, page 380.

EDUCATION

C. J. Anderson, Ph.M., *Professor of Education, Chairman*
Arvil Sylvester Barr, Ph.D., *Professor of Education*
Wayland Johnson Chase, M.A., *Professor of Education*
Frank Leslie Clapp, Ph.D., *Professor of Education*
Alanson Harrison Edgerton, Ph.D., *Professor of Guidance*
John Guy Fowlkes, Ph.D., *Professor of Education*
Curtis Merriman, Ph.D., *Professor of Education*
Michael Vincent O'Shea, B.L., *Professor of Education*
Thomas Lloyd Jones, B.S., *Associate Professor of Education*
Heber Hinds Ryan, M.A., *Associate Professor of Education*
Matthew H. Willing, Ph.D., *Associate Professor of Education*
John Frank Friese, M.S., *Assistant Professor of Industrial Education*
Clarence Edwin Ragsdale, Ph.D., *Assistant Professor of Education*
Theodore L. Torgerson, Ph.D., *Assistant Professor of Education*
Roy Aaron Hinderman, M.S., *Lecturer in Industrial Education*
Harry Coulter Thayer, M.A., *Lecture in Industrial Education*

Students below the junior class are not admitted to courses in the Department of Education except Courses 11 *and* 31 *(open to sophomores) without the written permission of the instructor in charge. This permission will be granted only to mature students and to students properly prepared who are under the necessity of leaving the University, before graduation, to enter teaching.*

Courses 11, 31, 41, 75, and 99 are regarded as elementary and as introductory to the advanced courses given in the department. These courses are not open for election by graduates of professional courses of normal schools and teachers' colleges without special action by the department. Courses in the 200-group are open to qualified seniors who obtain the consent of the instructor.

MAJOR. Candidates for a bachelor's degree who elect education as a major must meet the following specific requirements:

1. Twenty-four credits in education, including, courses 31, 75, and a minimum of two advanced courses in one of the following divisions of the department of Education:

I. Educational Organization and Administration.
II. Educational Supervision.
III. Educational Curricula and Objectives.
IV. Instructional Procedures.
V. Measurements, Statistics, and Scientific Techniques.
VI. Guidance and Welfare.
VII. Educational Psychology.
VIII. History of Education.
IX. Philosophy of Education.
X. Educational Sociology.
XI. Special Fields.

Courses in Educational Methods cannot be counted toward a major in education. A minimum of 15 credits in education must be completed in residence at Wisconsin. Not more than 6 credits in education may be elected before attainment of junior standing.

2. Upper-group students are required to write a thesis, and lower-group students shall, at the option of the department, be required either to write a thesis or to substitute therefor 4 credits in advanced courses.

3. They must meet the university requirements for a teaching major, with the exception of a thesis, in one academic department other than education, or for teaching minors in two academic departments other than education. (These requirements should be fulfilled in departments whose subjects are taught in elementary or secondary schools.) A student must earn as many grade-points as credits in these departments. Students who transfer from other institutions must complete a minimum of two advanced courses in their major or one advanced course in each of their minor subjects at the University of Wisconsin, and must earn as many grade-points as credits in the courses pursued in majors or minors at this University.

See pages 347-351 for Bureau of Educational Research Supervisory Service Bureau, teachers' certificates and licenses, etc.

The numbering of courses in the School of Education has been revised. For the convenience of students and advisers the numbers formerly in use are inserted in parentheses after the title of the course.

ELEMENTARY COURSES

11. MENTAL DEVELOPMENT AND EDUCATION. I, II; 2 or 3 cr. The development of mind in the normal individual from birth to maturity, with special emphasis on the adolescent period and on training for adjustment to American life. 9 MW and quiz. Mr. O'Shea.

31. PRINCIPLES OF SECONDARY EDUCATION. I, II; 3 cr. Historical development of American secondary schools, present magnitude, European comparisons, modern objectives, curriculum reorganization, professionalization of teachers. Should be elected as the first course in the Department of Education. Required of candidates for the University Teachers' Certificate. 9, 10, 11, and 1:30 MWF. Mr. Willing, Mr. Clapp.

41. EDUCATIONAL PSYCHOLOGY. II; 3 cr. An elementary survey of the field of psychology with emphasis upon everyday school problems. Importance of instincts in motivation; types of learning; methods of teaching according to learning types; attention, how to study; economy in learning; elementary concepts in educational statistics. Students should have some acquaintance with the field of elementary general psychology. *Not open to students registered in the School of Education.* 2:30 MWF. Mr. Ragsdale.

75. PSYCHOLOGY AND PRACTICE OF TEACHING. I, II; 5 cr. Includes educational practice for *one credit* and laboratory work in educational psychology. Prerequisite: Education 31. Required of candidates for the University Teachers' Certificate. Lectures: 9 and 11 MWF. Mr. Merriman, Mr. Ryan, and staff teachers of the Wisconsin High School.

99. THEORY AND PRACTICE OF SUPERVISION. (39) II; 3 cr., one of which is in the Department of Education. Includes practice in supervision, group conferences under direction of departmental instructors, and lectures. Lectures 8 F. Mr. Barr, Mr. Gordon, Mr. Lowman, Miss Wilson.

INTRODUCTORY COURSE FOR GRADUATE STUDENTS

239. PROBLEMS AND METHODS OF RESEARCH. Yr; 3 cr. Content of the course: (1) current problems in education; (2) statistics; (3) measurements; (4) methods of research. Designed to give the graduate student a systematic and comprehensive survey of the basic problems, methods, and tools to be used in the study of education, to the end (a) that he may be able to see special educational problems in proper relation to other educational problems and to the field of education as a whole, (b) that he may become acquainted with the methods of attacking and solving educational problems, and (c) that he may bring to other graduate courses an adequate preparation. 1:30-3:30 TT. Mr. Anderson, Mr. Barr, Mr. Merriman, and Mr. Torgerson.

I. EDUCATIONAL ORGANIZATION AND ADMINISTRATION

176. THE ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION. I or II; 2 cr. Not offered in 1931-32. Mr. Fowlkes.

261. PRINCIPLES OF EDUCATIONAL ADMINISTRATION. (104) I; 3 cr. National, state, and county school organization and administration. 8 MWF. Mr. Fowlkes.

262. Principles of Educational Administration. (104) II; 3 cr. Local school organization and administration, including the administration of school systems as a whole and individual building administration. 8 MWF. Mr. Fowlkes.

271. Business Elements of Educational Administration and School Finance. I; 3 cr. 9 MWF. Mr. Fowlkes.

272. School Buildings and School-Building Programs. II; 2 cr. 10 MW. Mr. Fowlkes.

278. Seminary, School Administration. Yr; 2 cr. 4:30-6 W. Mr. Fowlkes.

II. EDUCATIONAL SUPERVISION

192. Supervision of Secondary School Subjects. (136, 236) I; 2-3 cr. Offered 1932-33 and in alternate years. Mr. Willing.

193. Introduction to Educational Supervision. (139, 239) I; 3-5 cr. Prerequisite: Teaching experience. 4:30-5-45 TT. Mr. Barr.

196. Advanced Problems in the Supervision of Industrial Education. (Industrial Education 140). I; 2 cr. 9 TT. Mr. Friese.

291. Seminary, Supervision of Instruction. II; 2 cr. Prerequisite: Education 193 (139). 10 TT. Mr. Barr.

294. Research in Supervision. Yr; 3 cr. Mr. Barr.

III. EDUCATIONAL CURRICULA AND OBJECTIVES

140. Elementary School Curriculum. (111, 211) I; 3 cr. Principles which should determine the selection and arrangement of instructional material. A critical study of curricula now in use. Laboratory work in the formulation of courses of study in various subjects. Working plans for constructing a course of study for a school system. Offered 1930-31 and in alternate years. Mr. Clapp.

141. Secondary School Curricula. (130, 230) II; 2-3 cr. A brief survey of the development of secondary school curricula to 1900, followed by an intensive study of curricular change and reconstruction in American secondary schools since 1900, and concluding with a formulation of contemporary criteria. Mr. Willing.

142. Experimental Schools and the "New" Education. I; 2-3 cr. An account of the rise of modern experimental, "progressive", or "new" schools. Examination of the philosophies and programs of these schools in the United States and in foreign countries. Evaluation of their contribution to educational theory, science, and practice. Mr. Willing.

146. Industrial Curricula for Secondary Schools. (Industrial Education 166) II: 2-3 cr. Course making in a specific subject for a given grade level, and industrial curriculums in general and vocational education. Experimental laboratory work for third credit. Mr. Friese.

243. Curriculum Construction. (229) II; 2-3 cr. A study of the principles and techniques of curriculum research and curriculum-making appropriate respectively to specialists, national committees, state and local school systems, experimental schools, teacher committees, and individual supervisors and teachers. Mr. Willing.

244. Curriculum Research in Secondary Education. (232) Yr; Hours, credit, and content arranged through conference with instructor. Mr. Willing.

245. Professional Preparation of Teachers. (235) II; 3 cr. Prerequisite: Teaching experience. 11-12:15 TT. Mr. Anderson.

IV. INSTRUCTIONAL PROCEDURES

131. Investigations in the Teaching of Mathematics. (164) I; 2 cr. Not offered in 1931-32. 11 MW. Mr. Fowkles.

132. Investigations in the Teaching of the Social Studies. (166) I; 2 cr. 3:30 TT. Mr. Barr.

136. The Foundations of Method. (190, 290) II; 3 cr. Prerequisite: Teaching experience. 4:30-5:45 TT. Mr. Barr.

235. Seminary, the Experimental Study of Teaching. (290) I; 2 cr. A summary of investigations relating to the scientific study of classroom instruction. 10 TT. Mr. Barr.

V. MEASUREMENTS, STATISTICS, AND SCIENTIFIC TECHNIQUES.

123. Tests and Measurements in Music. (142) I; 2 or 3 cr. Lectures 8 MW; 1 hour lab. Mr. Torgerson.

127. Mental Tests. (146) I; 3 cr. Group testing. Lectures 1:30 MW; 1 hour lab. Mr. Torgerson.

128. Mental Tests. (146) II; 3 cr. Individual testing (Binet). Lectures 1:30 MW; 1 hour lab. Mr. Torgerson.

137. Educational Tests. (138) I; 3 cr. Classroom uses of tests. Lectures 4:30 MW; 1 hour lab. Mr. Torgerson.

138. Educational Tests. II; 3 cr. Supervisory uses of tests. Lectures 4:30 MW; 1 hour lab. Mr. Torgerson.

220. Seminary in Education. Yr; 1 or 2 cr. Discussions and research in contemporary American education. Prerequisite: Teaching experience or a major in education. 7-9 Tu. Mr. O'Shea.

221. Seminary in Elementary Education. (263) Yr; 2 cr. 7-9 p.m. M Mr. Clapp.

225. Test Construction. (244) I; 2 cr. Informal objective tests. Prerequisite: Education 147 or 239. 7-9 p.m. W. Mr. Torgerson.

226. Test Construction. (244) II; 2 cr. Aptitude tests. Prerequisite: Education 147 or 239. 9 MW. Mr. Torgerson.

VI. GUIDANCE AND WELFARE

180. Principles of Educational and Vocational Guidance. (113) I; 2-3 cr. 11 MW. Mr. Edgerton, Mr. Hinderman.

181. Vocational Guidance and Counseling Techniques. (116) II; 2-3 cr. 10 MW. Mr. Edgerton, Mr. Hinderman.

182. Vocational Guidance and Placement Techniques. (150) II; 2-3 cr. Mr. Edgerton, Mr. Hinderman.

183. Job and Occupational Analysis. (154) I; 2 cr. 11 MW. Mr. Friese.

284. Seminary in Educational and Vocational Guidance. (216) Yr; 2 cr. 3:45-5:45 Tu. Mr. Edgerton.

286. Seminary in Vocational Analysis and Individual Adjustment. (252) Yr; 2 cr. 3:45-5:45 M. Mr. Edgerton.

VII. EDUCATIONAL PSYCHOLOGY

Note: *Courses in this group are to be elected and recorded as "Educational Psychology" rather than as "Education."*

105. Psychology of the Elementary School Subjects. (161) I; 3 cr. The functions of learning in the various subjects; the mental processes involved in mastering subject matter. The conformity of textbooks and of teaching procedure to the principles discussed; a review of the investigative literature in the field. Offered 1931-32 and in alternate years. 1:30 MWF. Mr. Clapp.

107. Experimental Education: Motor Learning. (182, 145) I; 5 cr. A critical study of the experimental and theoretical literature dealing with learning of physical and manual skills. Considers the problems of physical education, athletics, music, manual and vocational activities. Prerequisite: Consent of instructor. Lab. fee $2.50. 11 MWF; lab. Mr. Ragsdale.

108. Experimental Education: Verbal and Abstract Learning. (183) I; 3 cr. Laboratory and discussion. Prerequisite: Consent of instructor. 11-12:15 TT. Mr. Barr.

109. Modern Systems of Psychology and Education. (184) I; 3 cr. A critical comparison of the more important viewpoints in present-day psychology, such as behaviorism, psycho-analysis, gestalt psychology, functionalism, together with the study of their effect upon present educational movements, i. e., individualized instruction, nursery schools, adult education, use of intelligence tests, etc. Prerequisite: Education 75 or consent of instructor. 10 MWF. Mr. Ragsdale.

112. Social Development and Education. I, II; 2 or 3 cr. The social traits and training of the individual with particular reference to the requirements for social efficiency in American life. 8 MWF. Mr. O'Shea.

121. Physical Development. II; 2 cr. Physical development from birth to maturity, showing the bearing of the physical changes during childhood upon the principles of education. 1:30 MW. Mr. Ragsdale.

123. Psychology and Training of the Pre-School Child. I, II; 2 cr. A study of the development and education of children from infancy to the fifth year. 2:30-4:30 Th. Mr. O'Shea.

143. The Psychology of Individual Differences and the Measurement of Intelligence. II; 3 cr. 10 MWF. Mr. Henmon.

144. The Psychology of Learning. 1; 3 cr. 10 MWF. Mr. Henmon.

245. Research in Motor Learning. II; 5 cr. Prerequisite: Education 182 or 107. Mr. Ragsdale.

248. Research in Educational Psychology. Yr; 1 or 2 cr. Mr. Merriman, Mr. Ragsdale.

VIII. HISTORY OF EDUCATION

101. History of Modern European Education. II; 2-3 cr. 8 MWF. Mr. Chase.

102. History of Ancient and Medieval Education. I; 2-3 cr. 8 MWF. Mr. Chase.

103. History of American Education. I, II; 2-3 cr. 10 MWF. Mr. Chase.

202. Proseminary, Medieval Education. I; 2-3 cr. 3:30-5:30 Th. Offered 1931-32 and in alternate years. Open also to seniors. Mr. Chase.

203. Proseminary, History of American Education. II; 2-3 cr. 3:30-5:30 Th. Open also to seniors. Mr. Chase.

204. Proseminary, European School Systems. I; 2-3 cr. 3:30-5:30 Th. Offered 1932-33 and in alternate years. Mr. Chase.

IX. PHILOSOPHY OF EDUCATION

114. Social Aspects of Education. (125) II; 3 cr. Not offered in 1931-32.

117. Philosophy of Education. II; 2 cr. The political philosophy that determines the character of national systems of education. The social philosophy which justifies different plans of school organization and various types of schools. The philosophy underlying the various methods of teaching and of organizing subject matter. 1:30 MW. Mr. Clapp.

216. Social Philosophy of Education. (226) Yr; 2 cr. Not offered in 1931-32.

X. EDUCATIONAL SOCIOLOGY

115. The School as a Social Institution. (128) I; 2-3 cr. An introductory course in educational sociology to initiate critical study of actual and proposed form of social control, direction, and operation in public democratic education. Reference is made especially to the secondary school. Mr. Willing.

XI. SPECIAL FIELDS

1. VOCATIONAL AND INDUSTRIAL ARTS.

151. DEVELOPMENT OF INDUSTRIAL ART. II; 2 cr. Mr. Friese.

152. PRINCIPLES OF VOCATIONAL AND PRACTICAL ARTS EDUCATION. I; 3 cr. 9 MW. Mr. Friese.

153. ADMINISTRATION OF VOCATIONAL EDUCATION. II; 2 cr. 11 MW. Mr. Friese.

157. ADVANCED PROBLEMS IN PART-TIME EDUCATION. II; 2 cr. Mr. Thayer.

158. EXPERIMENTAL AND REASEARCH PROBLEMS IN INDUSTRIAL EDUCATION. I; 2-3 cr. 4-5:45 W. Experimental laboratory work for third credit. Mr. Friese.

259. SEMINARY IN INDUSTRIAL EDUCATION. (Industrial Education 225) Yr; 2 cr. 4-5:45 Th. Mr. Friese.

For courses in industrial arts and vocational and industrial education, see announcement of the Department of Industrial Education, page 383.

EDUCATIONAL METHODS

HEBER HINDS RYAN, M.A., *Associate Professor of Education, Chairman; Principal of the Wisconsin High School.*
GUY SUMNER LOWMAN, B.Di., B.P.E., *Professor of Physical Education*
GLADYS BARTON BASSETT, M.A., *Associate Professor of Physical Education*
KATHERINE L. CRONIN, M.A., *Associate Professor of Physical Education*
RUTH GLASSOW, M.A., *Associate Professor of Physical Education*
WALTER WILSON HART,, B.A., *Associate Professor in the Teaching of Mathematics*
IRA CLEVELAND DAVIS, M.A., *Assistant Professor in the Teaching of Science*
JOHN FRANK FRIESE, M.S., *Assistant Professor of Industrial Education*
CALLA A. GUYLES, Ph.B., *Assistant Professor in the Teaching of Latin*
RUTH ADELE HENDERSON, M.A., *Assistant Professor in the Teaching of Home Economics*
LAURA BUTLER JOHNSON, M.A., *Assistant Professor in the Teaching of French*
BURR WENDELL PHILLIPS, M.A., *Assistant Professor in the Teaching of History*
ROBERT CECIL POOLEY, M.A., *Acting Assistant Professor in the Teaching of English*
LYNDA MARGUERITE WEBER, B.A., *Assistant Professor in the Teaching of Biology*
DELLA FORD WILSON, M.A., *Assistant Professor of Art Education*
MAURICE LESLIE HARTUNG, M.A., *Instructor in the Teaching of Mathematics*
KATHERINE JONES, M.A., *Instructor in Home Economics*

Courses in this department are open to and *may be credited only by students who are registered in the School of Education* with a major or minor in the department concerned; not more than six credits in these courses may be counted toward a degree. *Education 75 and senior standing are prerequisites for these courses.*

(The numbering of courses in the School of Education has been revised. For the convenience of students and advisers the numbers formerly in use are inserted in parenthesis after the title of the course.)

50. THE TEACHING OF AGRICULTURE. (302) I, II; 3 cr. Mr. Kivlin.

52. THE TEACHING OF HOME ECONOMICS. (352) I, II; 4 cr. Miss Henderson, Miss Jones.

53. THE TEACHING OF CLOTHING METHODS. (353) I, II; 2 cr. Prerequisites: Home Econ. 5, 11, 50. Miss Manning and staff.

62. THE TEACHING OF ART. (306) I; 3-4 cr. 10 TT. Miss Wilson.

64. THE TEACHING OF INDUSTRIAL ARTS. (363) II; 3 cr. 9 MW. Mr. Friese.

69. THE TEACHING OF PHYSICAL EDUCATION. (388) I; 4 cr. Prerequisites: Physical Education 20, 41. 11 MWF. Miss Cronin, Miss Bassett, Miss Glassow.

70. THE TEACHING OF PHYSICAL EDUCATION. (388) II; 3-4 cr. Prerequisites: Physical Education 58 and 59. Mr. Lowman.

71. THE TEACHING OF BIOLOGY. (310) I, II; 3 cr. Miss Weber.

72. THE TEACHING OF CHEMISTRY. (311) II; 3 cr. Prerequisites: Chemistry 1; first semester of Chemistry 120, or credit or enrollment for five credits in Chemistry 11. Mr. Walton.

75. THE TEACHING OF BOOKKEEPING. (314) II; 3 cr. Prerequisite: Economics 8b. Practice teaching in bookkeeping is not offered in the Wisconsin High School; however, those who elect this course are required to do participation-teaching in another subject. Miss Hensey.

76. THE TEACHING OF ENGLISH. (340) I, II; 3-4 cr. Prerequisites: English 123, senior standing, and satisfactory grade in a qualifying examination covering (1) the elements of grammar, (2) the detection and correction of deviations from standard English, and (3) the English works commonly studied in high schools. This examination is given in the second semester of the junior year. 3 cr. for the minor; 4 cr., including one credit for participation-teaching, for the major. Mr. Pooley.

81. THE TEACHING OF FRENCH AND SPANISH. (344) I, II; 3 cr. 11 TT. Miss Johnson.

82. THE TEACHING OF GEOGRAPHY. (346) II; 3 cr. Prerequisites: Geography 1-2 or 5-6. Mr. Whitaker.

83. THE TEACHING OF GERMAN. (347) I; 3 cr. For seniors and graduates. Special permission is necessary for graduate credit. Mr. Griebsch.

84. THE TEACHING OF HISTORY AND THE SOCIAL STUDIES. (349) I, II; 2-4 cr. Mr. Phillips.

88. THE TEACHING OF JOURNALISM. (370) SS; 2 cr. Practice teaching in journalism is not offered in the Wisconsin High School; candidates for the University Teachers' Certificate, majoring in journalism, are required to do participation-teaching in another subject. Miss Patterson.

90. THE TEACHING OF LATIN. (374) I, II; 3 cr. Miss Guyles.

93. THE TEACHING OF MATHEMATICS. (377) I; 3 cr. Mr. Hart.

95. The Content of Secondary Mathematics. (378, 91) II; 2 cr. Mr. Hartung.

96. The Teaching of Physics. (393) II; 3 cr. Mr. Steve.

97. The Teaching of Science. (319) I, II; 3-4 cr. Mr. Davis.

98. The Teaching of Speech. (396) I; 2-3 cr. For students wishing to teach in high school or college. A study of the objectives and methods in speech education. Gives graduate credit. (The teaching of speech in the grades will be given in the second semester.) 2:30-4:30 M. Miss Borchers.

158. Advanced Course in Home Economics Education. (358, 190) I; 2 cr. Miss Henderson.

178. Advanced Course in the Teaching of English Literature. (191) II; 2-3 cr. A consideration of the problems of literary criticism and of the results of scientific studies as these apply to the teaching of reading and literature in the schools and the junior college. Not offered 1931-32.

179. Advanced Course in the Teaching of the English Language. (192) I; 2-3 cr. A consideration of the bearings of rhetorical theory, modern linguistic study, and psychology upon the teaching of composition in the schools and the junior college. Not offered 1931-32.

185. Advanced Course in the Teaching of History and the Social Studies. (350, 190) II; 2 cr. Prerequisite: Consent of instructor. 3:30-5:30 Tu. Mr. Phillips.

INDUSTRIAL EDUCATION

ALANSON HARRISON EDGERTON, Ph.D., *Professor of Guidance, Chairman*
JOHN FRANK FRIESE, M.S., *Assistant Professor of Industrial Education, In Charge*
JAMES MORGAN DORRANS, *Assistant Professor of Mechanical Practice*
HARRY C. THAYER, M.A., *Lecturer in Industrial Education*

For courses in vocational guidance see Department of Education, page 378.

8. ADVANCED SHOP PROBLEMS. Yr; 1-4 cr. Construction problems in pattern making and foundry, machine shop, forge, and bench metalwork. Lab. fee $3.00 per credit. Hours to be arranged. Mr. Dorrans and staff.

100. SENIOR THESIS. Yr; 2 cr. Mr. Friese.

146. INDUSTRIAL CURRICULA FOR SECONDARY SCHOOLS. (Formerly 166) II; 2-3 cr. Prerequisite: Junior standing. 9 TT. Experimental laboratory work for third credit. Mr. Friese.

151. DEVELOPMENT OF INDUSTRIAL ARTS. II; 2 cr. Mr. Friese.

152. PRINCIPLES OF VOCATIONAL AND PRACTICAL ARTS EDUCATION. I; 3 cr. Prerequisite: Junior standing. 9 MW. Mr. Friese.

153. ADMINISTRATION OF VOCATIONAL EDUCATION. II; 2 cr. Prerequisite: Junior standing. 11 MW. Mr. Friese.

157. ADVANCED PROBLEMS IN PART-TIME EDUCATION. II; 2 cr. Prerequisite: Junior standing. 7-9 p.m. M. Mr. Thayer.

158. EXPERIMENTAL AND RESEARCH PROBLEMS IN INDUSTRIAL EDUCATION. I; 2-3 cr. Prerequisite: Junior standing. 4-5:45 W. Experimental laboratory work for third credit. Mr. Friese.

181. VOCATIONAL GUIDANCE AND COUNSELING TECHNIQUES. (Formerly 116.) II; 2-3 cr. Prerequisite: Junior standing. 10 MWF and 2:30 Tu. Mr. Edgerton, Mr. Hinderman.

183. JOB AND OCCUPATIONAL ANALYSIS. (Formerly 154.) I; 2 cr. Prerequisite: Junior standing. 11 MW. Mr. Friese.

196. ADVANCED COURSE IN THE SUPERVISION OF INDUSTRIAL EDUCATION. (Formerly 368.) I; 2 cr. Prerequisite: Junior standing. 9 TT. Mr. Friese.

259. SEMINARY IN INDUSTRIAL EDUCATION. (Formerly 225) Yr; 2 cr. Prerequisite: Graduate standing or teaching experience. 4-5:45 Th. Mr. Friese.

TEACHERS' COURSE

Teaching of Industrial Arts. See Educational Methods 64.

PHYSICAL EDUCATION—MEN

GUY SUMNER LOWMAN, B.Di., B.P.E., *Professor of Physical Education, Chairman*
GEORGE E. LITTLE, B.S., *Director and Professor of Physical Education*
JAMES CLAUDE ELSOM, M.D., *Professor of Physical Education*
THOMAS EDWARD JONES, B.A., B.P.E., *Professor of Physical Education*
GLENN F. THISTLETHWAITE, B.S., *Professor of Physical Education*
ARPAD LOUIS MASLEY, G.G., *Associate Professor of Physical Education*
ROBERT NOHR, JR., G.G., *Associate Professor of Physical Education*
JOSEPH CHRISTIAN STEINAUER, *Associate Professor of Physical Education*
GUY MERRILL SUNDT, B.S., *Associate Professor of Physical Education*
IRWIN CHARLES UTERITZ, B.A., *Associate Professor of Physical Education*
FRANK NICKERSON, *Assistant Professor of Physical Education*
GEORGE BALSER NELSON, Ph.B., *Instructor in Physical Education*
RUSSELL RIPPE, Ph.B., *Instructor in Physical Education*
RUBE EDWIN WAGNER, B.S., *Instructor in Physical Education*

6. THEORY AND PRACTICE. I; 3 cr. History and principles of physical education and introductory physical training. Lab. fee $3.00. Staff.

7. THEORY AND PRACTICE. II; 3 cr. Tactics, calisthenics, and elementary apparatus; class instruction in minor sports and swimming. Lab. fee $3.00. Staff.

8. THEORY AND PRACTICE. I; 3 cr. Graded games, calisthenics, and nomenclature; footballl practice; basketball practice; minor sports. Lab. fee $3.00. Staff.

9. THEORY AND PRACTICE. II; 3 cr. Basketball theory; football theory; calisthenics, hand apparatus, and apparatus with methods of progression; track and field theory and practice; baseball practice. Lab. fee $3.00. Staff.

10. THEORY AND PRACTICE. I; 3 cr. Critic discussions; physical education for elementary and secondary schools, theory and practice; football practice; basketball practice; games of higher organization. Lab. fee $3.00. Staff.

11. THEORY AND PRACTICE. II; 3 cr. Physical education programs; baseball theory and practice; track and field practice; scoutcraft and camping. Lab. fee $3.00. Staff.

12. THEORY AND PRACTICE. I; 3 cr. Athletic conditioning and training; advanced basketball and football theory; practice teaching. Lab. fee $3.00. Staff.

13. THEORY AND PRACTICE. II; 3 cr. Advanced physical education programs; natural gymnastics, stunts, tumbling, and tests; advanced field and track theory; advanced baseball theory; life-saving and advanced swimming, practice teaching. Lab. fee $3.00. Staff.

NOTE: In exceptional cases, or in irregular schedules, Physical Education 6 to 13 inclusive may be offered for 2 or 4 credits, not to exceed a total of 24 credits for these theory and practice courses.

16. FIRST AID TO THE INJURED. II; 1 cr. Discussion of accidents that may occur in the home, the gymnasium, the athletic field, etc. Methods of emergency treatment with actual practice. Latest methods of transportation of injured. Red Cross diploma in first aid is granted. 8 MW. Mr. Masley.

17. Athletic Training and First Aid. I; 2 cr. Open only to physical education minors. Mr. Fallon.

58. Human Mechanics. I; 2 cr. For men majoring or minoring in physical education. Prerequisite: Human anatomy. Mr. Nohr.

59. Nature Function, and Organization of Play. I; 3 cr. Prerequisite: Psychology 1 or 3 credits in education. 10 MWF. Mr. Lowman.

71. Scouting and other Adolescent Organizations. II; 2 cr. Prerequisite: Physical Education 59 or three credits in education or sociology. Mr. Elsom.

80. Community Recreation. II; 2 cr. Prerequisite: Physical Education 59 or three credits in education or sociology. 1:30 MW. Mr. Elsom.

107. Effects of Physcial Activities on the Body. II; 2 cr. Prerequisites: Physical Education 58, Physiology 3. Mr. Nohr.

118. Physical Examinations and Therapeutics. II; 3 cr. Prerequisites: Anatomy 39, Physiology 3. Mr. Elsom.

119. Physical Examinations and Therapeutics. I; 3 cr. Prerequisite: Physical Education 118. Mr. Elsom.

159. Social Aspects of Play and Recreation. I; 2 cr. Prerequisite: Physical Education 59. Mr. Lowman.

162. Tests and Measurements in Physical Education. I; 2 cr. Prerequisites: Physical Education 12, 13, 58, and 168 or Educ. Methods 70. Mr. Nohr.

164. School Health Problems. I; 2 cr. Prerequisites: Anatomy 39 or 120, Physiology 3 or 115, Physical Education 5 and 163 (i. e., either 118-119 or 175-176). Mr. Elsom.

165. Physical Education for Elementary and Secondary Schools. I; 2 cr. Prerequisites: Physical Education 6 and 7. Mr. Nohr.

166. Electro-, Actino-, and Hydro-Therapy. II; 2-3 cr. The theory and physics of the agents used in physical therapeutics. Intended for students of physical education, nurses, and physio-therapy aides. Prerequisites: Physics, anatomy, and physiology. Mr. Elsom.

168. Organization and Administration of Physical Education. II; 2 cr. Prerequisites: Physical Education 10, 11, 12, and 59. Mr. Lowman, Mr. Little.

169. Aims and Ideals in Competition and Athletic Coaching. I; 2 cr. Prerequisite: Physical Education 168. Mr. Little.

263. Advanced Therapeutic Gymnastics. I; 2 cr. Especially qualified students may arrange for research in corrective gymnastics and physical therapy. Prerequisite: Physical Education 163 or 166. Mr. Elsom.

291. Problems in Organization, Teaching, and Adaptation. II; 2 cr. Prerequisite: Physical Education 168 or Educ. Methods 70. Mr. Lowman.

TEACHERS' COURSE

Teaching of Physical Education. See Educational Methods 70, page 381.

PHYSICAL EDUCATION—WOMEN

BLANCH MATHILDE TRILLING, B.A., *Professor of Physical Education, Chairman*
GLADYS BARTON BASSETT, M.A., *Associate Professor of Physical Education*
KATHERINE L. CRONIN, M.A., *Associate Professor of Physical Education*
HELEN DOBSON DENNISTON, M.D., *Associate Professor of Physical Education*
RUTH GLASSOW, M.A., *Associate Professor of Physical Education*
MARGARET NEWELL H'DOUBLER, M.A., *Associate Professor of Physical Education*
HELEN I. DRIVER, B.A., *Instructor in Physical Education*
LOUISE F. GRAY, M.S., *Instructor in Physical Education*
MARY HARRINGTON, B.A., *Instructor in Physical Education*
KATHARINE MAPLE, M.S., *Instructor in Physical Education*
MARGARET MEYER, M.S., *Instructor in Physical Education*
ELNA MYGDAL, M.S., *Instructor in Physical Education*
CYNTHIA M. WESSON, M.A., *Instructor in Physical Education*

Starred (*) courses are open only to students majoring or minoring in physical education. Other courses are open to students in the School of Education (up to four credits) by consent of instructor.

*20. PRACTICE IN DANCING, GYMNASTICS, AND SPORTS. Yr; 0 cr. For students majoring or minoring in physical education. Includes instruction in nomenclature, elementary organization of materials, methods of leading sections and squads, and assisting in college classes. Staff.

31. PRINCIPLES OF COACHING. II; 2 cr. 9 MWF. Staff.

32. PRINCIPLES OF COACHING. I; 2 cr. 8 MW. Staff.

33. PRINCIPLES OF COACHING. II; 2 cr. 11 MW. Staff.

*41. THE SELECTION AND PRACTICE OF ACTIVITIES FOR ELEMENTARY AND SECONDARY SCHOOLS. II; 2 cr. Prerequisites: Physical Education 20, 42, 43 and 56. 2:30 MWF. Miss Cronin, Miss Glassow.

42. THEORY AND TECHNIQUE OF PLAYS AND GAMES. I; 2 cr. 10 MWF. Miss Cronin.

43. TECHNIQUE OF FOLK DANCING. II; 1 cr. 8 MW. Miss Bassett.

49. TECHNIQUE OF CLOGGING AND FOLK DANCING. I; 1 cr. Prerequisite: Consent of instructor. 1:30 MW. Miss Mygdal.

*56. KINESIOLOGY. I; 3 cr. Prerequisite: Anatomy 120. 1:30 MWF. Miss Glassow.

60. RHYTHMIC FORM AND ANALYSIS. I; 1 cr. Prerequisite: Major in Physical Education. 1:30 TT. Miss H'Doubler, Miss Mygdal.

81. CAMP LEADERSHIP. II; 2 cr. Prerequisite: Sophomore standing. Fee $2.00. 3:30 TT. Miss Gray.

146. THEORY AND PHILOSOPHY OF THE DANCE. I; 3 cr. Prerequisite: Senior standing and consent of instructor. 10 TT. Miss H'Doubler.

160. ADVANCED RHYTHMIC FORM AND ANALYSIS. II; 2 cr. Prerequisite: Physical Education 60. 1:30 TT. Miss Mygdal.

162. Tests and Measurements in Physical Education. II; 2 cr. Prerequisite: Consent of instructor. 1:30 TT. Miss Glassow.

*165. Dance Composition. II; 2 cr. Prerequisites: Physical Education 160 and 146. 10 TT. Miss H'Doubler.

*175. Therapeutic Gymnastics. I; 2 cr. Prerequisites: Antomy 120, Physical Education 56. 1:30 TT, 2:30 F. Mrs. Denniston.

*176. Therapeutic Gymnastics. II; 2 cr. Prerequisite: Physical Education 175. 8 MW, 11 F. Mrs. Denniston.

*168. Organization and Administration of Physical Education. II; 2 cr. Prerequisite: Senior standing in physical education course. 11 MWF. Miss Trilling.

262. Research in Tests and Measurements. Yr; 2 cr. Prerequisite: Physical Education 162. Miss Glassow.

*263. Advanced Therapeutic Gymnastics. I; 2-3 cr. Prerequisite: Physical Education 163 (i. e., 175-176). 2:30 TT. Mrs. Denniston, Miss Lewis.

*265. Seminary in Dance Drama. II; 2 cr. Prerequisite: Physical Education 165. Miss H'Doubler.

*280. Topical Work. Yr; * cr. Staff.

*292. Seminary in Administration. Yr; 2 cr. Prerequisites: Physical Education 168, Educ. Methods 69. Miss Trilling.

TEACHERS' COURSE

The Teaching of Physical Education. See Educational Methods 69, page 381.

Other courses in physical education open to women are listed under Physical Education for Men: they include 16, 59, 71, 80, 159, 164, 166.

For courses in motor learning and physical development, see Educational Psychology, page 378; for courses in anatomy, physiology, etc., see Medical School, page 331; for courses in music, see page 170.

PART VI—THE GRADUATE SCHOOL

C. S. Slichter, Dean

ADMISSION

Admission to the Graduate School is based upon the undergraduate record. In order to avoid delays incident to the opening of the session, an applicant for admission should send to the Graduate Office several weeks in advance of his coming, a complete, official transcript of his undergraduate record and also of any graduate work he may have done. An official transcript from each school attended is necessary. Each record should be listed chronologically by semesters showing hours per week, weeks per semester, and grades received; and one record should include a notation of the high-school record.

If the student's record shows the equivalent of the requirements for a bachelor's degree at the University of Wisconsin, he may be given full admission to the Graduate School. Any credit-hour deficiency must be made up before an advanced degree is conferred.

Admission to the Graduate School does not of itself imply admission to candidacy for an advanced degree. Admission to candidacy is determined only after a student has shown that he is qualified to pursue graduate study successfully.

Members of the faculties of other institutions or of the staffs of research organizations, who have been granted higher degrees, are invited to avail themselves of the facilities offered by this University to do special investigation.

Transcripts of students who register for graduate work become a permanent part of the university files and are not returned.

Graduates of the University of Wisconsin are admitted to the Graduate School if their records show an average of 1.25 grade-points per credit. Wisconsin graduates may obtain Permits to Register in the Graduate School by writing directly to the Graduate Office.

Seniors in the University of Wisconsin who are within six credits of graduation may be admitted to the Graduate School by obtaining a certified statement to that effect from the office of the Registrar.

Under certain conditions, a student in the College of Letters and Science who has completed his first four semesters at the University of Wisconsin with an average point-credit ratio of at least 2.5, may be permitted to pursue special studies with a view to being admitted to the Graduate School at the close of his seventh semester as a candidate for the master's degree in one additional semester. The detailed regulations are contained in the general announcement of the College of Letters and Science, page 63.

FEES AND EXPENSES

For detailed statement see section on Student Expense, beginning page 15.

Graduate students who have completed all the work for the doctor's degree except the oral examination, pay a fee of $10 only. There is an examination fee of $10 payable by all candidates for the master's degree.

SUMMER SESSION WORK

The regular summer session of the University is six weeks in length. There is also, however, a session of nine weeks open only to graduate students. The classes and seminars in the nine-week session are held on the first four days of the week, leaving Friday and Saturday free for uninterrupted work in laboratory or library. Two courses pursued for nine weeks constitute full credit for the work of one-half semester. One six-week course and one nine-week course may also be offered for full credit, provided extra work is arranged for the last three weeks of the nine-week course. This permits any six-week graduate course to be associated with any nine-week course for full half-semester residence credit. No nine-week course, however, may be taken for six weeks only.

See page 429 for statement of fees and expenses in the summer session.

RESEARCH FUND

The State Legislature has provided the sum of $75,000 for the promotion of research in the University. The President of the University has appointed a University Research Committee to receive information concerning projects of research for which special aid is needed and for which adequate funds are not now available from any other source.

CLUBS AND SOCIETIES

To promote interest in problems of scholarship and investigation and for training in the presentation of results, numerous voluntary clubs and societies have been established by instructors and students in the Graduate School. Among these are Sigma Xi, Classical Club, Language and Literature Club, Historical Conference, Romance Language Club, Education Club, German Journal Club, Chemical Club, Biological Club, Mathematical Club, Mining Club, University of Wisconsin Branch of the American Institute of Electrical Engineers, Wisconsin Section of the American Chemical Society, University of Wisconsin Section of the American Electro-Chemical Society.

The Graduate Club, while sharing in these purposes, is primarily a social organization for the promotion of acquaintance and good fellowship among graduate students and members of the faculty.

The University Club, a local organization of college alumni, maintains a well-equipped clubhouse near the university grounds and the privileges of this house, including its lodging and restaurant facilities, are open to men graduate students, who may become associate members of the club.

The College Women's Club maintains, at 12 East Gilman Street, a clubhouse where facilities are available to all women graduate students.

The men's and women's gymnasiums are open to graduate students upon payment of a locker and laundry fee of $2 per semester.

UNIVERSITY PUBLICATIONS

See page 7.

FELLOWSHIPS AND SCHOLARSHIPS

UNIVERSITY FELLOWSHIPS

For the purpose of promoting higher scholarship and research the Regents of the University have established forty-six university fellowships of the annual value of $750 each. These are allotted to the several departments of instruction as follows:

To the College of Letters and Science, twenty-seven, as follows: One each to botany, comparative literature, French, geology, German, Greek, Latin, mathematics, philosophy, physics, political science, psychology, Spanish, zoology; four each to economics and history; two to sociology; and three to chemistry. To the College of Agriculture, twelve, as follows: One each to agricultural bacteriology, agricultural chemistry, agricultural economics, plant pathology, genetics, and home economics; and six which are open to all departments in the College of Agriculture. To the College of Engineering, three, as follows: One each to chemical engineering, electrical engineering, structural engineering. To the School of Education, one.

In addition to the foregoing there are three fellowships open to all graduate students in the University, regardless of major field, and certain endowed fellowships specially described upon following pages.

The following are regulations respecting fellowships and scholarships:

1. With the exception of honorary fellows and honorary scholars, all university fellows and scholars are required to pay the general fee but are exempt from payment of the non-resident tuition fee.

2. Any fellowship to which the present regulations apply may be held by any graduate of a college of recognized standing or by anyone whose education is equivalent to that represented by a college degree. Those about to take such a degree are eligible candidates, the regulations applying to the time of entrance upon the duties of the fellowships. Men and women are equally eligible. Preference in appointment will usually be shown to candidates who possess a competent reading knowledge of French and German.

3. Fellowships will be granted only upon application, which should be made upon a special blank form furnished by the Dean of the Graduate School; such application, with accompanying evidence of merit, attainment, and ability, as shown by official transcripts of previous records and letters of recommendation, to be in the hands of the Dean of the Graduate School before February 15 of the academic year preceding that during which the fellowship is to be held.

4. All fellowships will be filled each year. Fellows may be reappointed for one additional year only.

5. Application must be accompanied by evidence of scholarship, ability, and general worthiness, such as theses (whether prepared for this or other purposes), published writings, testimonials from instructors, outline of educational course pursued, special distinctions gained, and the like. Applications for reappointment should contain a full account of the work of the preceding year. Applications to receive attention must contain a definite statement of the special studies which the applicant intends to pursue.

6. Each fellow shall pursue his studies under the direction of an assigned professor or professors. Assignment of university services to the fellow shall be made by the head of the department to which the fellow has been assigned, and the work assigned may be equivalent to one hour of teaching daily.

7. Vacancies in fellowships, due to resignation or other cause, may be filled as they occur, at the option of the Faculty.

HONORARY FELLOWSHIPS

The Regents have established honorary fellowships, equal in number to the university fellowships; election is by the Graduate Committee upon recommendation of a graduate division or of a department. These awards may not be applied for, but are granted only upon recommendation of a department or division; they are restricted to persons who have already held academic honors, such as fellowships or teaching or research appointments. No compensation is attached to these positions except the remission of non-resident tuition and a part of the general fee, and no teaching service is required; but to be eligible to an honorary fellowship one must be a graduate of at least one year's standing. Honorary fellows are required to pay the infirmary and Union fees (see page 15).

THE LYMAN COPELAND DRAPER FELLOWSHIP IN WESTERN HISTORY

This fellowship, established in the University of Wisconsin by the Wisconsin Historical Society, is worth $500 a year, paid by the Historical Society. The incumbent gives service, as a calendarer of Draper manuscripts, to the amount of fifteen hours per school week.

SCHOOL OF EDUCATION FELLOWSHIPS

Two resident fellowships with an annual value of $600 each are provided in the School of Education. These fellowships are assigned by the School of Education to graduate students who are interested primarily in the problems of teaching secondary school subjects. The purpose of these fellowships is to encourage advanced work toward higher degrees by students who expect to take charge of special teachers' courses in normal schools, colleges, and universities. They are, however, open to experienced teachers preparing for work in secondary schools. The work assigned to the holders of these fellowships will be under the joint supervision of the Director of the School of Education and the department in which the fellowship is assigned.

THE HARRIET REMINGTON LAIRD FELLOWSHIP

By the will of the late John M. Olin the sum of $10,000 was bequeathed to the Regents of the University in trust, in memory of Harriet Remington Laird, sister of Mrs. Olin. The net income from this fund "shall, either yearly or biennially, as said Regents may determine, be used as a fellowship fund to be awarded to some woman graduate student selected by the Faculty of the University, such selection to be approved by said Regents." This appointment usually amounts to slightly over $600 annually.

THE ADAMS FELLOWSHIPS

By will, the late Charles Kendall Adams, formerly president of the University of Wisconsin, conveyed the larger part of his estate to the Regents of the University for the gradual establishment of fellowships in modern history, Greek, and English. There are now five of these fellowships. Each of these,—the two Mary M. Adams Graduate Fellowships in English Language and Literature, the Charles Kendall Adams and the Mary M. Adams Graduate Fellowships in Greek, and the President Adams Graduate Fellowship in Modern History,—pays annually about $600.

THE ALBERT MARKHAM MEMORIAL GRADUATE TRAVELING FELLOWSHIP

In accordance with the terms of a bequest from the estate of the late Albert Markham, founder and principal of Markham Academy, Milwaukee, the Albert Markham Memorial Graduate Traveling Fellowship is offered annually in the departments of language and literature of the University of Wisconsin to holders of a Ph.D. degree, and is administered by a committee representing those departments. The annual income is approximately $800 but temporarily this may be increased to $1,000. The major work of the appointee must lie in one of the departments of language and literature. The fellow assigned is expected to devote the year to foreign travel and study in foreign universities, but by special permission may study at some other American university.

ANNIE GORHAM FELLOWSHIP

By will of the late Annie Gorham Marston, the sum of $10,000 was bequeathed to the Regents of the University of Wisconsin to be perpetually held in trust and the income therefrom to be used for the purpose of establishing and maintaining a fellowship in the University of Wisconsin for students doing graduate work. This fellowship is known as the Annie Gorham Fellowship and pays about $420 annually.

GRADUATE RESEARCH FELLOWSHIP IN ENGINEERING

For the purpose of promoting engineering research and the development of qualified research men, the Univesity of Wisconsin has established three research fellowships in the College of Engineering. These fellowships are granted under the following conditions:

Each fellow will be appointed for a period of two years, subject to satisfactory service. The salary will be $900 for the first year and $1100 for the second year. The fellow will be required to devote not less than half his time to assigned research work in the College of Engineering, but will in any case be given opportunity to complete his work for the M.S. degree within the two-year period. Candidates must be graduates of engineering colleges of recognized standing and should preferably have had one or two years' graduate study or teaching or engineering experience. The period of service required will be the usual academic year, including the short vacations.

SPECIAL FELLOWSHIPS IN ENGINEERING

The gas section, the electrical section, and the electric railway section of the Wisconsin Utilities Association each maintains a fellowship valued annually at $500, open to graduate students. Appointment to the gas fellowship is made by the Chemical Engineering Department, and to the electrical and electric railway fellowships by the Electrical Engineering Department.

In the Department of Mining and Metallurgy, cooperative fellowships are offered under grants from the Engineering Foundation, Wisconsin Steel Foundry Research Foundation, and the Wisconsin Gray Iron Research Foundation. These fellowships carry stipends of $1,200 per year and in each case the fellow carries on research work on some special problem relating to the particular industry.

SPECIAL FELLOWSHIPS AND SCHOLARSHIPS IN GERMAN

A number of special fellowships and scholarships are available in the Department of German. From funds furnished by the National Teachers' Seminary in Milwaukee there is available the Milwaukee Seminary Traveling Fellowship for a year's study in Germany, the amount of which, according to individual needs, may be as high as $1,000. This fellowship is open to candidates for the degree of M.A. who have done distinguished work in the graduate and teacher-training courses of the department and who wish to prepare themselves further for the teaching of German.

The Julius Zehnter fellowship in German yields the annual income from an endownment fund of $10,000 or, at present, about $550.

In special cases stipends not to exceed $250 a year, and known as German House scholarships, may be granted from the National Teachers' Seminary Fund to enable deserving graduate students to room or board at the German House.

Through the generosity of Mr. Henry Gund of La Crosse, there has been established the Henry Gund Scholarship in German literature of the annual value of approximately $300.

Under the auspices of the Seminary Endowment Association of New York City, there have been established four resident fellowships of $600 each: the Ferdinand W. Lafrentz Fellowship, the Paul M. Warburg Fellowship, the Paul Guenther Fellowship, and the Seminary Endowment Association Fellowship. Applications for these four fellowships are to be addressed to Mr. G. J. Lenz, Seminary Endowment Association, 345 E. 15th Street, New York City.

WORKING FELLOWSHIPS

In certain departments of the state government provision is made for part-time service to be rendered by graduate students whose university studies are in related branches of economics or political science. These positions are filled through the State Bureau of Personnel to which application may be made for further information.

HOLLISTER FELLOWSHIP IN PHARMACY

Mr. and Mrs. Albert H. Hollister, late of Madison, by separate wills conveyed to the Regents of the University legacies, now amounting to $10,328, for the establishment and maintenance of a fellowship in pharmacy. The annual income of this sum is allotted to a graduate student upon the recommendation of the Department of Pharmacy.

OTHER FELLOWSHIPS AVAILABLE IN THE GRADUATE SCHOOL

The Fritzsche Brothers Fellowship in Pharmacy of the value of $500 is offered by the Fritzsche Brothers of New York. The holder of this fellowship is to do research work in plant chemistry with special reference to the Monardas and related problems.

The Newport Chemical Company provides a fellowship in pharmacy of the value of $1,000, the time of the appointee to be devoted to research work along the line of synthetic new remedies.

The Du Pont fellowship in chemistry of $750 is offered by E. I. du Pont de Nemours and Company of Wilmington, Delware.

The Menomonie River Sugar Company provides an industrial fellowship of the value of $700 a year.

The Wisconsin Utilities Association and the National Committee on the Relation of Electricity to Agriculture provide a fellowship in Agricultural Engineering. The value of the fellowship for the year 1930-31 was $2700.

The National Fertilizer Association of Chicago and Baltimore provides a fund of $2,000 a year for three years for an industrial fellowship in Soils.

UNIVERSITY SCHOLARSHIPS

The Regents of the University maintain twenty-two graduate scholarships of the value of $250 each. Two of these are designated for economics, one each for political science, sociology, European history, and American history, and two for agriculture. Appointments to these scholarships are made in the same manner as appointments to fellowships (see the rules printed above). By special provision authority is conferred upon the faculties of Beloit, Carroll, Lawrence, Milton, Milwaukee-Downer, and Ripon to nominate annually to the faculty of the University of Wisconsin one member of their respective senior classes as a suitable candidate for a university scholarship. Such candidates when duly appointed by the Regents of the University are in all respects upon the same footing as other university scholars. In addition to these, there are eight scholarships open to students in all departments of the College of Letters and Science; appointments are made by the Graduate Committee upon recommendation of the various departments.

WISCONSIN SCHOLARSHIPS

There have recently been established in the Graduate School a number of so-called Wisconsin scholarships, available only to graduates of the University of Wisconsin. The scholarships are to be held only for a period of three semesters and pay a stipend of $450 each for the period.

HONORARY SCHOLARSHIPS

The Regents of the University have established honorary scholarships, not to exceed in number the number of paid university graduate scholarships. These scholarships are awarded after careful examination into the worthiness of candidates, but only upon recommendation of a department, not upon individual application. Only those persons are eligible who have received the baccalaureate degree at least one year previous to their nomination. No compensation is attached to these appointments, but the holder of an honorary scholarship is exempt from payment of the non-resident tuition fee and a part of the general fee. Honorary scholars are required to pay the infirmary and Union fees (see page 15).

WISCONSIN LEGISLATIVE SCHOLARSHIPS

There are available in the Graduate School to non-residents of this state, a number of so-called legislative scholarships, which exempt the recipient from payment of the non-resident tuition fee. The assignment of these scholarships is in the hands of a sub-committee of the Graduate Committee of the University. A candidate for one of these scholarships should apply to the Dean of the Graduate School for an application form and should submit to that office transcripts of his undergraduate record and of any graduate work already completed.

THE MARTHA L. EDWARDS MEMORIAL SCHOLARSHIP FUND IN HISTORY

The trustees, upon the recommendation of the Department of History, award small scholarships to women graduate students in history for the purpose of advancing their doctoral investigations. This fund was established in memory of the late Dr. Martha L. Edwards by members of her family and the Madison Branch of the American Association of University Women.

TRIPP SCHOLARSHIP

By will of the late J. Stephens Tripp of Sauk County there has been established a scholarship open to any University student, graduate or undergraduate, whose home is in Sauk County, Wisconsin. The awards are made in April or May for the following year, and the annual stipend is approximately $600.

OTHER SCHOLARSHIPS AVAILABLE IN THE GRADUATE SCHOOL

Two scholarships for young French women are offered, consisting of $500 each with remission of tuition fees. These young women are to reside in the French House.

The Wisconsin chapter of Omicron Nu offers a yearly scholarship open to either graduate or undergraduate students in home economics. It returns from $200 to $250 a year.

The Anna Morris Ely Scholarship in economics carries an annual stipend of $250.

RESEARCH ASSISTANTSHIPS IN THE FOREST PRODUCTS LABORATORY

In accordance with the regulations of the United States Civil Service Commission, a limited number of students who show unusual ability in research may be appointed as student research assistants by the Forest Service and Bureau of Plant Industry. The entire time of the student is given to lecture or classwork in the University and to research in the Forest Products Laboratory. The salary varies from $200 to $480 a year and laboratory fees are remitted for work in the Forest Products Laboratory. The number of students thus appointed depends largely upon the funds available. Applications for these assistantships, accompanied by testimonials, should be sent to the Director of the Forest Products Laboratory, Madison, Wisconsin, before March 1 of the academic year preceding that during which such appointments are to be held.

SECOND DEGREES

NON-PROFESSIONAL DEGREES

The University of Wisconsin confers the following non-professional second degrees: Master of Arts, Master of Science, Master of Philosophy.

These degrees are conferred in accordance with the conditions set forth below upon graduates of the University of Wisconsin and upon graduates of other institutions of learning whose preliminary training has been substantially equivalent to that represented by the baccalaureate degrees of the University of Wisconsin. The University will determine this substantial equivalence of training by such methods as seem best adapted to each case, and may impose upon any candidate

such additional requirements as seem needful and just, its judgment in this respect being influenced by the actual attainments of the candidate in larger measure than by the institution at which he has previously studied, and its purpose being to adjust the differences in the training furnished by different institutions.

The degree, Master of Arts, is conferred upon candidates whose undergraduate work corresponds to that now leading to the degree, Bachelor of Arts, as conferred by the University of Wisconsin, and whose graduate studies are non-professional in character. The degree, Master of Science, is conferred upon candidates whose undergraduate work corresponds to that now leading to the degree, Bachelor of Science, as conferred by the University of Wisconsin, and may also be conferred upon bachelor of arts who are adequately trained in mathematical, chemical, physical, or biological science. The degree, Master of Philosophy, is conferred upon candidates whose academic training corresponds to that leading to the degree, Bachelor of Philosophy, as conferred by the University of Wisconsin

Candidacy for the above degrees is based upon resident study at the University. In no case, will a master's degree be conferred in course without the equivalent of two semesters of graduate study, at least one of which, or its equivalent in summer sessions, must be spent at the University of Wisconsin.

The following regulations for the attainment of second degrees apply to all candidates in residence:

1. During a period of at least one academic year the candidate must pursue a course of graduate study characterized by definiteness of purpose and approved by the University as appropriate to that purpose and suitable in amount. Such course includes normally from nine to twelve unit-hours of graduate work for each semester, of which at least one-half must lie in a single department. The undergraduate preparation of the candidate must be sufficient to satisfy the instructor that the advanced work may be profitably undertaken. Undergraduate courses of suitable character may be elected in addition to the normal amount of graduate work, provided that the recommendation of the professor in charge of the student's major and the approval of the Dean of the Graduate School be obtained in advance.

2. Students who, during their candidacy for a second degree, are engaged in teaching, or other remunerative employment, will be required to devote to their studies such period longer than one year as may be designated by the Graduate Committee.

3. The candidate must pass an oral examination upon the preliminary training and graduate work offered in support of his candidacy. Subject to the approval of the President of the University, the time and place of this examination will be determined and the examining committee appointed by the Dean of the Graduate School.

4. For students seeking to specialize in a definite line of study the preparation of a thesis may be required and, subject to the approval of the professor in charge, such thesis work may be elected by others. A thesis offered in partial fulfillment of the requirement for a master's degree must be typewritten and bound according to specifications furnished by the Librarian of the University, and before it is accepted must be approved by the Major Professor under whose guidance it has been done. It shall be deposited in the University Library by the second Friday before Commencement, and its title, as approved in advance by the Major Professor, will appear in the Commencement Register.

MASTER OF SCIENCE IN ENGINEERING

The degree of Master of Science in Engineering (the diploma to contain a specific designation of the course taken as, for example, Master of Science, Civil Engineering) will be conferred upon candidates whose undergraduate work corresponds to that leading to the degree Bachelor of Science in Engineering, as conferred by the University of Wisconsin, under the following conditions:

1. The candidate shall satisfy all of the general regulations pertaining to second degrees described in the preceding section.

2. The candidate must maintain a *superior grade* in his graduate work.

3. The candidate is required to submit a thesis giving evidence of analytical investigative work. The study may be of an economic, historical, statistical, theoretical, or experimental type. The thesis must be typewritten, approved, and filed as specified under 4 above.

4. A graduate from the College of Engineering of this University or a graduate from another school with equivalent preparation who continues his studies in the same branch of engineering in which he obtained the bachelor's degree, can complete the requirements for the master's degree in engineering in one year.

5. A graduate whose training has not been equivalent to that offered in the College of Engineering of this University will be required to spend more than one year in graduate study in residence before he will be granted his master's degree. If the student is required to do more than one semester's work to make up the undergraduate requirements of the College of Engineering of this University, he will not be allowed to register in the Graduate School, but must enroll in the College of Engineering.

6. The Advanced Standing Committee in the College of Engineering, subject to the approval of the Graduate Committee, shall determine whether the student is sufficiently prepared to do graduate work or whether he should enroll in the College of Engineering.

THE PROFESSIONAL ENGINEERING DEGREES

The degrees of Civil Engineer, Mechanical Engineer, Electrical Engineer, Chemical Engineer, Metallurgical Engineer, and Engineer of Mines will be granted to graduates from the College of Engineering of the University of Wisconsin, who have spent five years in professional and educational work, (during one of which they must have been in responsible charge), who have proved their ability to plan or to design as well as to direct engineering work or original investigation along engineering or scientific lines, and who present an acceptable thesis. Graduates who hold the degree of M.S. in Engineering from the University of Wisconsin are credited with two years' professional work.

The thesis shall give evidence of professional attainment. It shall be in such form and of such an original contributive or analytical character as to make it suitable for publication in the proceedings of the appropriate national engineering society. The thesis may be an engineering study of an economic, design, or research nature. It may not be a mere description of usual engineering work or a digest of engineering literature. A copy of the thesis must be in the hands of the dean not later than May 1, if the candidate is to receive his degree at the following commencement.

The professional degree will be granted in the course in which the candidate has received his B.S. or M.S. degree, unless the candidate requests otherwise, and submits with his request, satisfactory evidence of his scientific attainments in the field in which the professional degree is requested.

SECOND DEGREE IN PUBLIC HEALTH

The degree of Master of Public Health will be conferred upon graduates of approved medical colleges who satisfactorily complete one year of graduate work in sciences related to public health. For a detailed statement regarding this degree application may be made to the Dean of the Medical School.

SECOND DEGREE FOR STUDENTS IN PROFESSIONAL COLLEGES

Graduates of approved institutions who are regularly enrolled in the professional colleges of this University may supplement their professional studies by work taken in the Graduate School. Upon the completion of an approved course of study they will be admitted to examination for the master's degree, to be conferred at the time of their graduation.

DOCTOR OF PHILOSOPHY

I. The Degree. Doctor of Philosophy is a research degree. It is not a degree conferred solely as a result of study, no matter how faithful, extending over any prescribed period; it does not rest merely upon any computation of time or any enumeration of courses. Questions of residence and plans of study, listed below as the minimum, are secondary. The granting of the degree is based essentially upon evidence of general proficiency and of distinctive attainments in a special field, and particularly upon the recognized power of independent investigation as shown by the production of a thesis embodying original research or creative scholarship and presented with a fair degree of literary skill.

II. Residence. Candidacy for the degree is based upon resident graduate study normally extending over a period of not less than three academic years, at least one of which must be spent at this University. But it is to be understood that the mere completion of three years of resident study does not of itself confer a right to take the final examination. The matter of time is determined by the character of a student's undergraduate record and by the quality of the work done in the Graduate School.

One whose undergraduate work is insufficient in amount or too narrowly specialized must count on spending additional time in preliminary studies essential as a basis for the advanced work the student purposes undertaking.

Candidates who are engaged in teaching or other remunerated employment will be required to devote to their candidacy such period in excess of the minimum requirement of three years as may be designated by the Graduate Committee. It is suggested as a very desirable consideration that every candidate for the degree should arrange to devote at least one year exclusively to graduate study.

Residence as a graduate student in another institution of approved standing will be accepted at the University, but residence elsewhere will not reduce the minimum of one year of residence in this University. In evaluating the time spent and work done elsewhere each case will be determined on its merits.

Work done *in absentia* in past years and credited for the degree of Master of Arts will not shorten the residence requirement for the degree of Doctor of Philosophy in case a student becomes a candidate for that degree. No *absentia* or correspondence work is now credited toward an advanced degree.

In order to give the work of a graduate student greater breadth, a student may be granted absence from the University to do special investigation in the field or to take advantage of opportunities for research in a special subject not to be found in the University. Such leave of absence is granted only in special cases and under definite limitations.

III. Languages. A reading knowledge of both French and German is required of all candidates. Certificates of ability to read French and German must be secured from the departments in this University and must be filed with the Dean of the Graduate School before the candidate is admitted to the preliminary examination. For detailed information and regulations touching the issuance of these certificates, students may apply to the Dean of the Graduate School.

The use of any other foreign language essential to the work of the major subject is in addition to French and German. No other language may be substituted for either French or German, and certificates of such reading knowledge from other institutions are not accepted at the University of Wisconsin. It is expected that a candidate should have a reading knowledge of at least one language, French or German, upon entrance to the Graduate School, and that he should prove his ability to read one of the two, if not both, by the end of the first year of graduate study.

IV. Plans of Study. The degree of Doctor of Philosophy is never granted for miscellaneous studies. The course as a whole must be rationally unified, and all constituent parts must contribute to some general object of study and research. The course must be selected from groups embracing one principal subject, called the Major, and one or two subsidiary and cognate branches, called the Minor.

Major Study. A candidate is required to select a field of study which may be co-extensive with the work of a single department, or with one of the "subjects" under which certain departmental plans of courses are arranged, or which may be constructed from two closely interrelated subjects. Only in the exceptional case will a Major be allowed to extend beyond a single department and then only with the prior approval of the Dean.

Minor Studies. In order to obviate overspecialization, a candidate is required to pursue one, and may pursue two, minor studies lying outside the major subject but cognate with it. The relation of the subsidiary subjects to the principal and the number of them depends largely on the character of the course as a whole and the general attainments of the candidate. In general the Minor shall aggregate from a fourth to a third of the time devoted to graduate study.

Major Professor. One of the instructors in the department of the Major is selected by the student as his Major Professor. The candidate will consult the Major Professor in the selection and arrangement of a program of work embracing both the major and minor fields. The Major Professor will have immediate supervision of the thesis. The candidate should consult with the Major Professor at suitable intervals. It is one of the unique advantages of graduate life that a student comes into freedom of association with older scholars who will seek to make his work profitable by counsel and assistance and who will aid the student in acquiring for himself the discipline and method of independent scholarship.

Departments and Divisions. The work of the Graduate School as a whole is organized not only according to departments, but also according to divisions, each of which includes allied departments. The requirements fixed by a department or a division cannot be stated in terms at once specific and uniform. Information about the special requirements of departments or divisions is to be found in their separate announcements.

V. Admission to Candidacy. A student is not permitted to take the final examination for the degree until he has been formally admitted to candidacy by passing a preliminary qualifying test. The preliminary examination must be taken not less than one academic year in advance of the date when the degree is expected to be conferred. Exceptions to this rule may be made in individual cases upon recommendation of a division to the Graduate Committee; and for the students who come to Wisconsin for their last year of graduate work, arrangements will be made whereby the preliminary examination can be taken in the early part of the academic year.

The candidate shall file with the Dean a formal application to be admitted to candidacy for the doctor's degree. A blank form suitable for this purpose is furnished by the Graduate Office and this formal application should embrace the following statements: (a) Departmental recommendations of candidacy based upon a formal written examination, or an oral examination before a duly appointed committee, or such other substantial test as the departments may elect. The nature of the test shall be stated in the recommendations. (b) The scope of the proposed minors with the approval of the professor who assumes charge of each minor.. (c) The title of the proposed thesis (subject to future verbal change) approved by the Major Professor. (d) Certification that the French and German requirements have been met.

This application shall be submitted to the Graduate Committee, which may reject it for cause, or may approve it and admit the student to candidacy. With reference to time requirements imposed by the University, the Graduate Committee may specify the earliest permissible date for the final oral examination.

VI. Final Examination. The degree Doctor of Philosophy is not granted for faithful study for a prescribed time or in fulfillment of a definite program, but on the ground of long study and distinct attainment in a special branch of knowledge manifested by a final examination and by the presentation of a thesis which gives evidence of original treatment of a fitting subject and forms a contribution to knowledge.

Oral Examination. Every candidate for the doctor's degree is subject to an oral examination upon the thesis and the general field of the major and minor studies, but the preliminary examination may be construed as final in certain aspects of the major and minor subjects if the professors in charge of the candidate's work are satisfied with his preparation. Such delimitation of the subjects to be offered in the final oral examination must be made a matter of record with the Dean of the Graduate School.

The Dean of the Graduate School will appoint for each candidate an examining committee, usually composed of five persons, with the Major Professor as chairman, and will designate a time and place for the examination. The candidate's completed thesis shall be presented to this committee, or in lieu thereof, the Major Professor shall state to the committee its purpose and scope and shall certify to the committee that the work upon the thesis is substantially completed. This examination shall be open to all members of the Graduate Faculty.

VII. Thesis. At any time after admission to candidacy, and at least thirty days prior to the final examination, the candidate must submit to the Dean of the Graduate School, for approval of its mechanical form and execution, two typewritten copies of his completed thesis—one original and one duplicate copy. The Dean will furnish an official title page for the thesis and appoint a committee of three consisting of the Major Professor and two members of the Graduate Faculty, to pass upon its substantial merit. Their report, if favorable, shall be

endorsed upon the official title page. When so endorsed, the thesis shall be brought to the Graduate Office for recording and then filed in the University Library. The thesis can be withdrawn from the Library only upon written authorization of the Dean of the Graduate School. In case of divided opinion among the examiners, the case shall be referred to the Graduate Committee with right of appeal to the Graduate Faculty.

ABSTRACT. After the approval of the thesis, the candidate shall file with the Dean of the Graduate School either an abstract of the thesis, or a selected part thereof, certified by the Major Professor to be adequate for publication in lieu of the complete thesis.

SECURITY FOR PUBLICATION. After filing such abstract or selected part the candidate shall place with the University Bursar the sum of fifty dollars as a guaranty of prompt publication of his thesis. The sum so placed shall be held in trust by the Bursar for a period of not less than one year and shall be refunded to the candidate if during such period he shall deliver to the University Librarian the printed copies of his thesis as prescribed below. At the expiration of the period thus described, the Dean of the Graduate School may declare such fifty dollars to be forfeited to the fund for the publication of thesis abstracts and it shall be transferred to that fund by the Bursar.

The successful candidate is urged to put his thesis into print as promptly as possible and to deposit one hundred copies thereof in the University Library. In the case of doctors' theses published in (a) such scholarly periodicals or society or university publications as shall be approved by the Dean of the Graduate School, or (b) in bound volumes issued and sold by well-known publishing houses approved by the Dean, the candidate may deposit in the University Library six copies of the thesis so published in lieu of the one hundred copies above described. By approval of the Major Professor and the Dean of the Graduate School, publication and filing of an approved part of the thesis may be accepted in satisfaction of this requirement.

PART VII—EXTENSION DIVISION

(EXTRA-MURAL COLLEGE)

CHESTER DEFOREST SNELL, B.H., B.S., DEAN
RICHARD EVERETT ELLINGWOOD, M.S., ASSISTANT DEAN

Of the three main functions of a commonwealth university—(1) resident instruction, (2) research, and (3) the dissemination of the useful and assimilable knowledge which has been accumulated through productive scholarship, to all classes of citizens and in forms adapted to their requirements—the third is fulfilled in an organized way by the Extension Division.

This Division constitutes the extra-mural college of the University, and is therefore one of the seven coordinate divisions of the University with a dean and a faculty. The work of the Division is divided into three departments as follows: Extension Teaching, Debating and Public Discussion, Public Service.

The object of this University in carrying on extension work is to provide the highest type of intellectual stimulus and continuing education feasible for the citizens of the commonwealth who are unable to attend established educational institutions, and to give every one in the state the opportunity to obtain the highest education possible at the smallest practicable expense—to bring the University and the home into close relationship.

DEPARTMENT OF EXTENSION TEACHING

WILLIAM HENRY LIGHTY, PH.B., DIRECTOR

ARTHUR BEATTY, Ph.D., *Professor of English*
BENJAMIN GEORGE ELLIOTT, M.S., M.E., *Professor of Mechanical Engineering*
CYRIL METHODIUS JANSKY, B.A., B.S., *Professor of Electrical Engineering*
HARRY E. PULVER, C.E., *Professor of Civil Engineering*
EDWARD BUNKER SCHLATTER, Ph.D., *Professor of Romance Languages*
LELIA BASCOM, M.A., *Associate Professor of English*
HENRY ROWLAND ENGLISH, M.A., *Associate Professor of Business Administration*
ADOLPHINE BIANCA ERNST, Ph.D., *Associate Professor of German*
FORD HERBERT MACGREGOR, M.A., *Associate Professor of Political Science*
ANN MARIA PITMAN, Ph.D., *Associate Professor of Classics*
CLINTON DE WAYNE CASE, B.S., *Assistant Professor of Mechanical Engineering*
ROY JEFFERSON COLBERT, M.A., *Assistant Professor of Economics*
FRANK DOUGALL CRANE, Ph.D., *Assistant Professor of English*
CHARLES LYMAN DEAN, M.E., *Assistant Professor of Mechanical Engineering*
HELMUTH REINHOLD DOERING, B.A., M.B.A., *Assistant Professor of Business Administration*
BESSIE EVA EDSALL, Ph.M., *Assistant Professor of History*
RUSSELL WINSLOW FOWLER, M.S., *Assistant Professor of Drawing*
IDA MARIE GANGSTAD, B.A., *Assistant Professor of Library Methods*
ARTHUR WOOD HALLAM, B.A., *Assistant Professor of Business Administration*
HARRIETTE GRACE HOLT, M.A., *Assistant Professor of Mathematics*
MRS. EDITH EVANS HOYT, M.A., *Assistant Professor of Education*
THOMAS LEROY MARTIN, M.B.A., C.P.A., *Assistant Professor of Accounting*

MABEL FLORENCE ARBUTHNOT, M.A., *Instructor in Classics*
ALBERT ERNEST CROFT, M.A., *Instructor in Economics and Sociology*
LEONARD FOLSOM HILLIS, B.S., *Instructor in Civil and Structural Engineering*
MRS. BERNICE DONNELLY KUNEY, M.A., *Instructor in English*
JOHN LESTER MILLER, B.A., Ph.M., *Instructor in Economics*
MRS. EMILY SHAFER, B.A., *Instructor in English*
MRS. AMY HOYT SMITH, M.A., *Recorder*
KATHERINE MARIE TUFTS, M.A., *Instructor in Spanish*
MRS. HELEN GILL VILJOEN, Ph.D., *Instructor in English*

CORRESPONDENCE STUDY

For the needs of those who are unable to adjust themselves to the formal system of education, special forms of consecutive home-study courses have been developed by the Department of Extension Teaching. This department offers individual instruction adapted to the special needs of students who cannot come into residence study at the University. The instruction given may be undertaken in the leisure hours of each student at his own home.

PLAN AND SCOPE

The University of Wisconsin provides, through the Department of Extension Teaching, non-resident or home-study instruction by correspondence, as follows:

1. Certain regular university studies which may, under approved conditions, be taken for credit toward a degree.

2. Advanced courses designed to help persons—graduates and others—in professional or practical life to keep in touch with the advancement in science and in other fields of knowledge.

3. High-school and preparatory studies for those to whom the conventional institutions are not available or practicable.

4. Elementary and grammar school studies for those who require such instruction for practical purposes.

5. Vocational courses prepared with reference to the needs and requirements of given occupations.

6. Guided study outlines for program material to aid various organizations in their associated or club or group study and discussion work.

GENERAL BENEFITS

Persons who are benefited by correspondence study may be divided into two main classes: (1) those who have the taste, ability, and inclination to continue their education, whether general or vocational, (2) wage-earners who cannot leave their employment in order to acquire training directed toward greater proficiency and skill.

The first class may be roughly divided into (1) those who wish to keep abreast of the advances in knowledge related to their profession or business, or who wish to study purely for purposes of general culture and the enjoyment of the intellectual pleasures that accompany the sense of mastery of knowledge and the getting of understanding, (2) those who wish to earn units of credit toward a university degree, and (3) those who require preparation for entrance to the University.

The second class includes (1) those whom the necessity of earning a livelihood has taken from school before acquiring a satisfactory elementary education; (2) those who have had the benefit of more or less liberal educational opportunities but have received no training especially adapted to fit them for their chosen vocations; and (3) those who desire to change vocations and prepare themselves for employment more nearly adapted to their tastes and abilities.

All courses offered through correspondence study, whether taken for university credit, or not, are on a uniform basis in reference to the amount of work covered. Courses which are satisfactorily completed have, therefore, a definite value, and all students who successfully complete such courses will be awarded statements or certificates indicative of the character of the work done.

METHOD

PROCEDURE. The student who wishes to undertake correspondence study should first select such course or courses as he may desire to take. He should then fill out the application blank with information called for, and return it, with the required fee, to the office of the Extension Division. The necessary textbooks, outfits, etc., may also be purchased through the Extension Division if the student so desires. Ordering texts through the Extension Division at the time of registration saves time and facilitates a prompt start. Students are encouraged to register for but one course at a time. Not more than two courses may be registered for at one time unless the student can give evidence that he has at least several hours each day to devote to study.

THE INSTRUCTION. Upon receipt of the application and fee, the first two assignments will be sent with instructions for study, methods of preparation, and directions for returning recitation sheets and reports. Each recitation report will be returned to the student with such corrections, explanations, and suggestions as may be needed. Lists of books, assignments for reading, and all necessary assistance will be furnished throughout the course, so that no student will be left without adequate aid and guidance. Questions on the subject in hand are at all times encouraged.

BY WHOM PREPARED. These courses are prepared by the members of the university faculty, and each represents a definite amount of work equivalent to similar work done in residence at the University, or in schools of known standards.

THE UNIT COURSE. The unit course is divided, where practicable, into forty weekly assignments. Such a course represents at least an amount of work equal to that done in residence at the University in a study of five recitation hours a week for one semester or half year. It is assumed that this work may be done by the average student in forty weeks on a minimum leisure for study of one hour a day, six days in the week. It is, however, the student's privilege to pursue his studies as rapidly as may be consistent with good work and the rules of the University.

THE LESSON ASSIGNMENT. The unit course is divided into assignments. In some courses this may call for but a single report, but in others the assignment may be divided into two or more lessons. In all cases the assignment represents an average week's work, and not an evening's work as at school.

PERMANENCE. The department endeavors to make its work thorough and permanent, and the various courses have been arranged, wherever that is desirable, in coordination with the regular residence work, the short courses, and the summer session.

EXAMINATIONS. Examinations are optional with the student, but are required where credits or certificates are sought. These examinations must be taken at the University, or under supervised conditions approved by the University.

REGULATIONS. 1. Students may begin correspondence-study courses at any time during the year.

2. For admission to a correspondence-study course no preliminary examination is required. The student is required to fill out an application blank, giving such information as may be helpful to the instructor in adapting the instruction to his personal needs.

3. Students who undertake correspondence-study work for university credit must state this fact in advance and comply with all the requirements of the University.

4. For the benefit of the department it is desired that the applicant state fully the purpose he has in view in taking the work and also in detail such educational advantages, training, or experience as he may have had. The department endeavors to meet the needs of the individual student by advice and suggestion, as well as by formal instruction, but whenever it finds that the course elected is not for the best interest of the student, it reserves the right to reject the application, or to advise a change to another course.

5. The time in which a correspondence-study course is to be completed varies with the length of the course. One year is allowed for a course of twenty-four assignments or less, fifteen months for a course of from twenty-five to thirty-two assignments, and eighteen months for a course of from thirty-three to forty assignments. A reinstatement fee is charged when courses are not completed within the time limit allowed.

6. All fees are payable in advance, and no fee is refunded because a student fails to start or pursue the course for which he has once registered. If an application for instruction is rejected, the fee remitted will be returned.

7. The fee for university credit courses is five dollars per credit for students who are legal residents of the state of Wisconsin. For students not legal residents of the state of Wisconsin, the fee is eight dollars per credit. For courses not involving university credit, corresponding fees prevail. The expense connected with the instruction of each course is listed in the bulletins where these courses are announced. These fees are deliberately put upon the lowest operating basis.

LABORATORY WORK

Provision is made in connection with many correspondence courses, both in the advanced grade and in the vocational studies, by which laboratory practice forms a part of the instruction. In some courses laboratory outfits are sent to the student from the University to be set up in his own home. In other cases special arrangements are made for short periods of laboratory practice at Madison. In some studies local branch laboratories are established where local students may receive special instruction as the correspondence course proceeds.

UNIVERSITY CREDIT

1. Persons who have had the required preparation for admission to the University will, upon the satisfactory completion of a correspondence-study course designed for credit, have their grades permanently filed in the Recorder's office until the student has satisfactorily completed one year of study in residence. When all the requirements are satisfied, the correspondence-study records may be transferred to the Registrar's office and applied toward graduation.

2. The maximum credit granted for work done by correspondence study, however, may not exceed one-half the number of credit hours required for graduation.

3. At the completion of each correspondence-study course for university credit, the student shall pass an examination held under the direction of the instructor giving such course, or supervised by some one designated by the University for that purpose.

4. Work taken for credit may not be done by any student while in attendance at any institution of learning. In the event a correspondence student has not fully completed a course upon which he has been working, at the time of registration for residence study, a suspension of instruction in that course may be granted. When the suspension of instruction is granted, all advance assignments in the hands of the student must be returned to the Recorder's office.

5. In special cases credit may be allowed for correspondence-study courses of preparatory grade to satisfy partial entrance requirements to the University.

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
BOTANY						
1	Description and classification of flowering plants	16 or 32	2 or 4	$10 or $20	$16 or $32	130
11	General botany	40	5	25	40	1
5	Plant histology	24	3	15	24	110
7	Drug and food products	24	3	15	24	111
8	Trees and shrubs	16 or 24	2 or 3	10 or 15	16 or 24	131
21	Elementary botany	32		20	32	
BUSINESS						
128	Bookkeeping and introd. account. I	12		10	15	
129	Bookkeeping and introd. account. II	12		10	15	
138	Accounting principles and practice I	12		10	15	
139	Accounting principles and practice II	12		10	15	
136	Cost accounting I	12		10	15	
140	Cost accounting II	12		10	15	
135A	Advanced accounting problems I	12		15	20	
135B	Advanced accounting problems II	12		15	20	
134	Municipal accounting	7		6	10	
132A	Federal income tax	16		15	20	
137	Auditing	16		16	20	
115	Contracts, law of	10		10	15	
118	Sales, law of	10		10	15	
122	Commercial paper, law of	10		10	15	
124	Private corporations, law of	7		5	8	
5	Show-card writing	10		10	15	
159A	Retail selling	16		10	12.50	
159B	Retail store management	12		10	15	
191A	Retail advertising	16		15	20	
102	Business correspondence I	8		7.50	10	
103	Business correspondence II	8		7.50	10	
186	Practical banking	11		10	15	
CHEMISTRY						
1	General chemistry	40	5	25	40	1a
2	Qualitative chemical analysis	40	5	25	40	1b
117	Advanced general chemistry	32	4	20	32	117
DRAWING						
203	Shop sketching	16		10	16	
204A	Shop drawing	20		15	20	
204B	Advanced machine drawing	20		15	20	
243A	Principles of architectural drawing	16		10	16	
243B	Advanced architectural drawing	10		10	16	
1	Elements of drawing	24	3	15	24	1
2	Elements of drawing	24	3	15	24	2
3	Descriptive geometry	24	3	15	24	3
4	Freehand lettering	16	2	10	16	7
5	Show-card writing	10		10	15	
4A	Engineering lettering	6		5	8	
ECONOMICS						
1	Principles of economics	32	4	20	32	1a
2	Labor problems	24	3	15	24	122
3	Railway transportation	24	3	15	24	135
10	Elements of money and banking	24	3	15	24	5
11	Current economic problems	32	4	20	32	1b
50	Practical economics	16		10	16	

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
EDUCATION						
1A	Mental development	16	2	10	16	11
1B	Mental development	24	3	15	24	11
3	Educational psychology	24	3	15	24	41
60	History of modern education	24	3	15	24	101
20A	The teaching of language in the intermediate and grammar grades and in the rural schools	16	2	10	16	
20B	The teaching of literature and reading in the elementary and rural schools	16	2	10	16	
31A	Principles of education	24	3	15	24	31
31B	Principles of education	24	3	15	24	31
51A	Social development and education	16	2	10	16	112
51B	Social development and education	24	3	15	24	112
61A	Psychology of individual differences	24	3	15	24	143
61B	Psychology of learning and the original nature of man	24	3	15	24	144
71	History of American education	24	3	15	24	103
81	Supervision of instruction	16	2	10	16	193
65	Educational tests and measurements	16	2	10	16	138 in pt.
4A	Vocational education for the industries	16	2	10	16	152
4B	Direction and supervision of vocational education	16	2	10	16	153
5A	Vocational and educational guidance	16	2	10	16	180
5B	Vocational and educational counseling	16	2	10	16	181
ENGINEERING—CIVIL AND STRUCTURAL						
404	Civil and structural engineering drawing	12		8	12	
	Elements of structural theory:					
450	Part A—Stress and deformation and principles of statics	6		3	6	
451	Part B—Loads and reactions and shears and moments	8		4	8	
452	Part C—Single and cantilever beams; continuous and restrained beams	8		4	8	
453	Part D—Stresses in truss members and columns	6		3	6	
454	Part E—Bending and direct stress and unsymmetrical bending	6		3	6	
410	Roof trusses	12		7.50	12	
411	Plate girders	12		7.50	12	
412A	Bridge stresses—uniform loads	16		10	16	
412B	Concentrated loads	16		10	16	
413	Design of railway bridge trusses	16		10	16	
418A	Reinforced concrete construction	16		10	16	
418B	Reinforced concrete construction	24		15	24	
418C	Reinforced concrete construction	24		15	24	
421	Steel building construction	16		10	16	
430	Practical course in concrete	12		8	12	
431	Structural steel drafting and elementary design					
	Part A—Structural steel drafting	6		4	6	
	Part B—Fundamentals of design	10		7	10	
	Part C—Steel designing and detailing	8		7	10	

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
472	Materials of construction	12		8	12	
441A	Elementary surveying	10		7	10	
441B	Advanced surveying	10		7	10	
442	Highway surveying	12		8	12	
481	Practical hydraulics	14		10	14	
482	Practical hydraulics	10		7	10	
483	Advanced hydraulics	8		5	8	
445	Railway curves	12		10	16	
501	Roads and pavements	16		10	16	
1	Railway engineering—railway curves	12	2†	10	16	Ry. 1
2	Hydraulics	24	3	15	24	Hyd. 2
115	Hydraulics	8	1	5	8	Hyd. 115
2	Stresses in simple structures	32	4	20	32	Str. 2
3	Design of roof stresses and plate girders	24	3	15	24	Str. 3
4	Design of railway bridge trusses	16	2	10	16	Str. 4
105	Principles of reinforced concrete	24	3	15	24	Str. 105
106	Concrete arches	16	2	10	16	Str. 106
111	Reinforced concrete construction	16	2	10	16	Str. 111
1T	Surveying	8	1	5	8	T. E. 1
2T	Surveying	8	1	5	8	T. E. 2
3T	Land surveying	12	1½	7.50	12	T. E. 3
104T	Advanced surveying	12	1½	7.50	12	T. E. 104
108T	General surveying	16	2	10	16	T. E. 108
ENGINEERING—ELECTRICAL						
301	Mathematics, Part I	26		15	20	
	Mathematics, Part II	14		10	12	
310	Elementary magnetism and electricity	20		12	20	
311	Theory and operation of direct-current machinery	20		12	20	
312	Theory of alternating currents	20		12	20	
313	Alternating-current machinery	20		12	20	
314	Electric lamps and illumination	20		12	20	
315	Practical alternating currents	20		12	20	
316	Central electric stations	20		12	20	
317	Electric power transmission	24	3	15	24	137 in pt.
318	Telephony—Subscriber's apparatus	10		6	10	
319	Commercial electrical measuring instruments	24		15	24	
319A	Watthour meters	12		8	12	
322	Storage batteries	14		10	14	
323	Electric central station distribution systems	20		15	20	
324	Electric wiring	20		12	20	
327	Essentials of electricity	20		12	15	
328	Practical radio	20		10	16	
330	Electrical engineering mathematics	30	3	20	30	††
340	Fundamentals of electrical engineering	24	3	15	24	1
341	Principles of direct-current machines	32	4	20	32	2
343	Principles of alternating currents	32	4	20	32	3
344	Principles of alternating-current machinery	32	4	20	32	4
346	Transient electrical phenomena	16	2	10	16	232

†After completion of field work requirements.
††Equivalent arranged by instructor.

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
ENGINEERING—MECHANICAL						
75	The operation and application of the slide rule	5		5	8	
201A	Shop arithmetic	20		11	21	
201B	Advanced shop mathematics	20		10	20	
206	Elements of mechanics	20		15	20	
207	Strength of materials	24		15	24	
208	Mechanism	12		10	15	
1	Machine design	32	4	20	32	M. D. 1
209	Elementary machine design	16		15	20	
214	Elementary steam engineering	16		10	20	
215	Heat	16		10	16	
230	Elements of heat power engineering, Part A	32	4	20	32	S. and G. 1
	Part B	32	4	20	32	S. and G. 2
216	Steam boilers	24		15	24	
217	Steam engines	20		15	20	
218	Aeronautics	24		15	24	
218C	Meteorology and air navigation	20		15	20	
219D	The gasoline automobile	24		15	24	
220F	Headlight testing and adjustment	6		5	8	
222	Refrigeration	20	3	15	20	S. and G. 112
223	Heating and ventilating	24	3	15	24	S. and G. 108
225	Compressed air	20	3	15	24	
230A	Heat power engineering	32	4	20	32	
230B	Heat power engineering	32	4	20	32	
241	Carpenters' and builders' arithmetic	16		10	15	
242	The properties and uses of wood	12		10	15	
242A	Kiln drying of lumber	10		10	15	
272	Cupola practice	7		5	10	
274	Foundry metallurgy	9		10	15	
ENGLISH AND COMPARATIVE LITERATURE						
1	Elementary English	24		12	24	
	Part A	12		6	12	
	Part B	12		6	12	
61	English grammar	24		12	15	
2	Intermediate English composition	40		24	30	
	Part A	20		12	15	
	Part B	20		12	15	
64	Practical English review	10		5	10	
65	First-year high-school English	40		25	30	
66	Second-year high-school English	40		25	30	
67	Third-year high-school English	40		25	30	
5	English composition	24	3	15	24	1a
6	English composition	24	3	15	24	1b
8	Composition of technical papers	16	2	10	16	
8A	Composition of technical papers	8		5	8	
7A	Advanced composition	16	2	10	16	2a
7B	Advanced composition	16	2	10	16	2b
16A	The short story	24	3	15	24	149
16B	The short story	24	3	15	24	149
51	General survey of English literature	24	3	15	24	30a
52	General survey of English literature	24	3	15	24	30b
33A	Introduction to English literature	16	2	10	16	33a
33B	Introduction to English literature	16	2	10	16	33b
34	The Romantic movement	24	3	15	24	34

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
ENGLISH AND COMPARATIVE LITERATURE (Cont.)						
17A	Shakespeare	24	3	15	24	137(I)†
17B	Shakespeare	24	3	15	24	137(II)††
18	The poetry of Tennyson	16	2	10	16	141
19	The poetry of Browning	16	2	10	16	145
25	The English novel in the nineteenth century	24	3	15	24	39 in part
40A	Survey of American literature	16	2	10	16	40
40B	Survey of American literature	16	2	10	16	41
4A	The teaching of composition	16	2	10	16	
4B	Teaching of reading and literature	16	2	10	16	
20A	The teaching of language in the intermediate and grammar grades and in the rural schools	16	2	10	16	
20B	The teaching of literature and reading in the elementary and rural schools	16	2	10	16	
85A	Modern drama	16	2	10	16	Comp. Lit. 67
85B	Modern drama	16	2	10	16	Comp. Lit. 67
113	Ancient classical drama in English	16 or 24	2 or 3	10 or 15	16 or 24	
118	Classical mythology in literature	16	2	10	16	
68A	Modern novel	16	2	10	16	Comp. Lit. 68
68B	Modern novel	16	2	10	16	Comp. Lit. 68
FRENCH						
1	Elementary French	32	4	20	32	1a
2	Elementary French	32	4	20	32	1b
3	Intermediate French	24	3	15	24	10a
4	Intermediate French	24	3	15	24	10b
6A	Elementary composition	16	2	10	16	15
6B	Intermediate composition	16	2	10	16	16
7A	Advanced composition	16	2	10	16	127 or 124
8	Modern French dramatists	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	123
9	Modern French novelists	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	136
10	General survey of French literature	24	3	15	24	131
20	Advanced reading	16	2 or 3	10 or 15	16 or 24	20 a or b
21	Elementary survey	24	3	15	24	21a
22	Elementary survey	24	3	15	24	21b
GEOLOGY AND GEOGRAPHY						
3	Physiography	24 or 40	3 or 5	15 or 25	24 or 40	3 cr.—5 5 cr.—1
4	General geology	24	3	15	24	Geol. 2
16	Geography of Europe	24	3	15	24	101
GERMAN						
1	Elementary German	32	4	20	32	1a
2	Elementary German	32	4	20	32	1b
3	Intermediate German	32	4	20	32	2a
4	Intermediate German	32	4	20	32	2b
6	Scientific German	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	19
7	Commercial German	16 or 24	2 or 3	10 or 15	16 or 24	
8	Critical German prose	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	16
12	German grammar review and composition	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	10

†37(I) for juniors.

††37 (II) for juniors.

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
GERMAN (Cont.)						
19	Elementary teachers' course	8		5	8	
20	Advanced teachers' course	16 or 32	2 or 4	10 or 20	16 or 32	83
25	Modern German dramatists	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	15
26	Modern German novelists	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	17
22	Schiller	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	20
21	Goethe	16, 24, 32	2, 3, 4	10, 15, 20	16, 24, 32	25
29	Goethe's Faust	24 or 48	3 or 6	15 or 30	24 or 48	130
30	History of German literature	48	6	30	48	131
	Part A	24	3	15	24	
	Part B	24	3	15	24	
31	History of the German language	16	2	10	16	150
GREEK						
1	Elementary Greek	40	5	25	30	1
1A	Elementary Greek—Pharr's Homeric Greek	32	4	20	25	1
7	Xenophon's Anabasis	24	3	15	20	7(I)
7A	Reading course in Herodotus	24	3	15	20	7(II)
3	Homer: The Iliad	24	3	15	20	10
6	Advanced prose composition	16 to 30	2 or 4	10 or 20	16 or 32	110
5	Elementary composition	16	2	10	16	
106	Aeschylus: The Agamemnon	16	2	10	16	106
113	Ancient classical drama in English	16 or 24	2 or 3	10 or 15	16 or 24	
118	Classical mythology in literature	16	2	10	16	
HEALTH						
6	Prevention of disease and home care of the sick	8		4	8	
7	The prospective mother	8		4	8	
8	The child in health	8		4	8	
9	The child in disease	8		4	8	
HEBREW						
1	Elementary Hebrew	32	4	20	32	1
HISTORY						
1A	United States history	20		10	15	
1B	United States history	20		10	15	
87	Modern European history	16		10	15	
88	Modern European history	16		10	15	
2	American history (1760-1830)	24	3	15	24	4a
3	American history (1830-1877)	24	3	15	24	4b
6	English history	24	3	15	24	5a
7	English history	24	3	15	24	5b
8	Modern European history	24	3	15	24	2(I)
9	Modern European history	24	3	15	24	2(II)
10	History of the nineteenth century (1815-1870)	24	3	15	24	139
20	Oriental and Greek history	24	3	15	24	10(I)
21	Roman history	24	3	15	24	10(II)
12	Medieval history	24	3	15	24	1(I)
13	Medieval history	24	3	15	24	1(II)
349E	The teaching of history	16	2	10	16	84

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
HOME ECONOMICS						
1	Food problems in home making	8		5	8	
17	Selection and care of clothing	8		5	8	
6	Prevention of disease and home care of the sick	8		4	8	
7	The prospective mother	8		4	8	
8	The child in health	8		4	8	
9	The child in disease	8		4	8	
10	Clothing economics	16	2	10	16	10
15	Home furnishing and decoration	6		5	6	
19	Household management	8		5	8	
21	Art and design	24	3	15	24	2
25	The school lunch	8		5	8	
110	Household administration	16	2	10	16	110
INDUSTRIAL EDUCATION						
2	Teaching and supervision of industrial arts					
	Part A—Elementary school	16	2	10	16	64 in part
	Part B—Junior high school	16	2	10	16	64 in part
3	Administration of industrial arts education	16	2	10	16	
4A	Vocational education for the industries	16	2	10	16	152
4B	Direction and supervision of vocational education	16	2	10	16	153
5A	Educational and vocational guidance	16	2	10	16	180
5B	Vocational and educational counseling	16	2	10	16	181
ITALIAN						
1	Elementary Italian	32	4	20	32	1a
2	Elementary Italian	32	4	20	32	1b
3	Intermediate Italian	24	3	15	24	10a or 10b
LATIN						
1	Elementary Latin	40	5	25	30	1
2	Caesar	40	5	25	30	2
2A	Caesar	16	2	10	12.50	2 in part
3	Cicero: Orations	32	4	20	25	3
4	Virgil: Aeneid	40	5	25	30	4
4A	Virgil: Metre of the Aeneid	5		2.50	5	
5	Elementary composition	40	5	25	30	
6	Advanced composition	16 or 32	2 or 4	10 or 20	16 or 32	107
7	Livy, books I and XXI	24	3	15	24	6b in part
10	Cicero: De Senectute	16	2	10	16	6a in part
12	Terence: Andria and Phormio	16	2	10	16	6 in part
14	Horace: Odes	24	3	15	24	7 in part
15	Horace: Satires and Epistles	24	3	15	24	7 in part
16	Catullus	16	2	10	16	7 in part
17	Ovid: Metamorphoses	16	2	10	16	8 in part
18	Propertius: Elegies	8	1	5	8	8 in part
19	Tibullus: Elegies	8	1	5	8	8 in part
20	Cicero: Letters and orations	24	3	15	24	108
113	Ancient classical drama in English	16 or 24	2 or 3	10 or 15	16 or 24	
118	Classical mythology in literature	16	2	10	16	

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
LANDSCAPE DESIGN						
51	Landscaping home grounds	8		10	20	
LIBRARY METHODS						
1	Library methods for teacher-librarians	32		16	32	
2	Cataloging	16		10	16	
3	Elementary school library methods	16		10	16	
MATHEMATICS						
1	Elementary algebra: Part A	20		10	15	
	Part B	20		10	15	
3	Plane geometry	40		20	30	
4	Solid geometry	20	3	15	20	8
5	Plane trigonometry	32	4	20	32	2
40	Advanced high-school algebra	20		10	15	
6	College algebra	32	4	20	32	1
7	Analytic geometry: Part A	24	3	15	24	3
	Part B	8	1	5	8	4
8	Elementary calculus: Part A	24	3	15	24	5a
	Part B	24	3	15	24	5b
51	Agricultural mathematics	32	4	20	32	71
55	Commercial arithmetic	10		5	10	
56	Mathematical theory of investment	32	4	20	32	7
57	Mathematics of life insurance	16	2	10	16	24
58	The theory of finite differences	8	1	5	8	
63	Theory of equations	24	3	15	24	125
64	Projective geometry	24	3	15	24	115
65	Advanced calculus	24	3	15	24	111
66	Differential equations	32	4	20	32	112
67	Theoretical mechanics	24	3	15	24	113
68	Higher algebra	24	3	15	24	263
117	Vector analysis	8	1	5	8	117S
40	Algebra for engineers	20		10	15	50
41	Elementary analysis	40	5	25	40	51
42	Elementary analysis	40	5	25	40	52
43	Elementary analysis	40	5	25	40	
44	Differential calculus	32	4	20	32	54
45	Calculus	32	4	20	32	55
46	Calculus	32	4	20	32	
11	Practical arithmetic	8		4	8	
12	Mensuration and practical geometry	8		4	8	
9	Determinants and analytic geometry of three dimensions	24	3	15	24	6
13	Practical algebra	12		6	10	
14	Practical trigonometry	6		3	6	
15	Practical calculus	10		5	10	
31	Agricultural arithmetic	8		4	8	
62	Elementary algebra review	10		5	10	
MECHANICS						
1	Statics	24	3	15	24	1
2	Dynamics	16	2	10	16	2
3	Mechanics of materials	40	5	25	40	3
METEOROLOGY						
2	Climatology	24	3	15	24	106

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
MUSIC						
1	Theory of music, introductory	8		5	8	
5A	Harmony, elementary	24	3	15	24	1(I)
5B	Harmony, elementary	24	3	15	24	1(II)
61A	Harmony, advanced	24	3	15	24	11(I)
61B	Harmony, advanced	24	3	15	24	11(II)
31	Public school music	16	2	10	16	41S
75	History of music	32	4	20	32	31
97	Community music and drama	16	2	10	16	78
PHARMACY						
1	Pharmacy: Part A	24	3	15	24	1(I)
	Part B	24	3	15	24	1(II)
20A	Elementary prescription practice	16	2	10	16	20(I)
20B	Prescription practice, solid preparations	16	2	10	16	20(II)
121A	Advanced prescription practice	8	1	5	8	121
121B	Advanced prescription practice	8	1	5	8	
30	Pharmaceutical technology	16	2	10	16	30
PHILOSOPHY						
10	Ethics	24	3	15	24	41
11	Elementary logic	24	3	15	24	11
5	Applied logic (in preparation)	12		10	15	
PHYSICS						
1	Elementary physics	40		20	30	
87	Physics review	12		6	12	
5	University physics	24	3	15	24	1a
6	University physics	24	3	15	24	1b
51E	Engineering physics	24	3	15	24	51
52E	Engineering physics	24	3	15	24	52
57	Physical optics	16	2	10	16	117
POLITICAL SCIENCE						
4A	American diplomacy	16	2	10	16	123
137	International law and organization	24	3	15	24	137
7	American government and politics, National	24	3	15	24	7a
PSYCHOLOGY						
1	General psychology	24	3	15	24	1
3	Educational psychology	24	3	15	24	Educ. 41
61A	Psychology of individual differences	24	3	15	24	143
61B	Psychology of learning and the original nature of man	24	3	15	24	144
PUBLICITY						
	Writing publicity for clubs	8		5	8	

Course Number	Title of Course	No. of Assignments	Credits	Tuition in Wisconsin	Tuition outside Wisconsin	Course No. of Residence Equivalent
PULP AND PAPER MANUFACTURE						
245	Preparation and treatment of wood pulp	32		25	32	
245A	Manufacture of mechanical pulp	20		20	25	
245B	Manufacture of sulphite pulp	19		20	25	
245C	Manufacture of soda pulp	18		20	25	
245D	Manufacture of sulphate pulp	20		20	25	
246	Manufacture of paper (complete course)	32		25	32	
246A	Beating, refining, and paper machines	25		20	25	
246B	Paper machines	14		15	20	
SCIENCE						
1A	General science	16		10	15	
1B	General science	16		10	15	
SOCIOLOGY						
15	Social psychology	24	3	15	24	139
16	General sociology	24	3	15	24	140
17	Practical sociology	24	3	15	24	141
24	Social problems	24	3	15	24	2
25	Rural sociology	24	3	15	24	25
177	Social agencies and social legislation	16	2	10	16	177
SPANISH						
1	Elementary Spanish	32	4	20	32	1a
2	Elementary Spanish	32	4	20	32	1b
3	Intermediate Spanish	24	3	15	24	10a
4	Intermediate Spanish	24	3	15	24	10b
5	Spanish	16 or 24	2 or 3	10 or 15	16 or 24	21 in part
21	Elementary survey of Spanish literature	24	3	15	24	21 a or b
7	Don Quijote, Part I	24	3	15	24	104(I)
8	Don Quijote, Part II	24	3	15	24	104(II)
SPEECH						
1	Elementary speech writing	8		5	8	
30	Debate	8		5	8	
396	Speech teaching problems	16	2	10	16	396
TEACHERS' REVIEW COURSES						
62	Elementary algebra	10		5	10	
87	Physics	12		6	12	

SPECIAL COURSES

	Tuition in Wisconsin	Tuition outside Wisconsin
BUSINESS		
Complete course in bookkeeping and accounting	$155.35	$213.75
Private and general accounting	$ 66.25	$ 92.65
Cost accounting	$ 88.00	$122.40
Public accounting	$132.60	$183.00
Business law	$ 32.00	$ 33.60
Retailing	$ 46.74	$ 53.94
CIVIL ENGINEERING		
Surveying	$ 42.80	$ 62.40
Structural steel drafting	$ 44.50	$ 65.50
Reinforced concrete engineering	$ 73.80	$106.20
Structural steel engineering	$ 95.80	$153.80
Building design and construction	$ 79.30	$130.40
Structural engineering	$128.80	$206.10
ELECTRICAL ENGINEERING		
Meterman's course	$53.15 or $54.90	$85.95 or $87.70
Electrician's course	$54.15 or $55.90	$91.15 or $92.90
Electrical design	$117.17	$156.95
MECHANICAL ENGINEERING		
Shop and industrial mathematics	$ 20.85	$ 36.85
Mechanical drawing	$ 39.52	$ 50.52
Drafting	$ 63.82	$ 90.22
Machine design	$111.70	$154.97
Architectural drafting	$ 44.85	$ 55.45
Steam engineering	$ 40.85	$ 60.05
Steam power plants	$ 81.30	$119.70

EXTENSION CLASSES

While extension classes are organized in various communities of the State whenever it is feasible to do so and wherever a sufficient number of persons having a common interest in a given subject request such work, extensive class organization work has been developed only in the larger cities. Many of the courses given by class instruction involve university credit for properly qualified persons. Other courses are organized and given independent of all curricular requirements for degrees, but definitely planned for vocational or avocational purposes.

MILWAUKEE CENTER

CHARLES MALTADOR PURIN, Ph.D., *Professor of German, Director*
MALCOLM GILES LITTLE, M.A., *Assistant Director*

MALCOLM SHAW MACLEAN, Ph.D., *Professor of English*
CHARLES EDMUND YOUNG, Ph.D., *Professor of Romance Languages*
WILLIAM JOHN FULLER, B.A., *Associate Professor of Structural Engineering*
GEORGE AMBROSE PARKINSON, Ph.D., *Associate Professor of Mathematics*
MARION REXFORD SCHNAITTER, M.A., *Associate Professor of Economics*
GEORGE GALLOWAY TOWN, Ph.D., *Associate Professor of Chemistry*
HARRY THOMPSON AVEY, M.E., *Assistant Professor of Mechanical Engineering*
LEO STARR BALDWIN, B.S., *Assistant Professor of Drawing*
JOHN JOSEPH CREAMER, B.A., LL.B., *Assistant Professor of English*
SARAH KATHERINE LEHMANN, M.A., *Assistant Professor of English*
PETER STEPHEN MCGUIRE, Ph.D., *Assistant Professor of History*
MORRIS MARDEN, Ph.D., *Assistant Professor of Mathematics*
MILES J. MARTIN, Ph.D., *Assistant Professor of Physics*
WILLIAM EDWARD ROTH, Ph.D., *Assistant Professor of Mathematics*
META MARY STEINFORT, M.A., *Assistant Professor of Spanish*
CARL TAYLOR, M.A., *Assistant Professor of Speech*
HERBERT WILLIAM WESLE, B.S., *Assistant Professor of Topographic Engineering*
GEORGE HERMAN ABENDROTH, B.S., *Instructor in Civil Engineering*
FLORENCE LILLIAN AXEN, M.A., *Instructor in Mathematics*
LEON BATTIG, M.A., *Instructor in Mathematics*
R. F. K. BLAKE, M.A., *Instructor in English*
DONALD CLARK BOUGHTON, M.S., *Instructor in Zoology*
DUDLEY BROOKS, M.A., *Instructor in English*
LESTER THOMAS EARLS, M.S., *Instructor in Physics and Mathematics*
CHAUNCEY CLAYTON HALE, M.S., *Instructor in Chemistry*
MRS. ELISABETH KATZ HOLMES, B.A., *Instructor in English*
JOHN HOWARD JACOBSON, M.A., *Instructor in English*
EDWARD NOBLE KRAMER, M.S., *Instructor in Chemistry*
HILMAR CARL KRUEGER, B.A., *Instructor in History*
HARRY LEWIS KUNZE, M.A., C.P.A., *Instructor in Accounting*
MRS. IRENE ETTA LANGWILL, B.A., *Recorder*
GEORGE LELAND LEFFLER, M.A., *Instructor in Economics*
CARL RALPH OESTREICH, B.S., *Instructor in Civil Engineering*
VICTOR A. REINDERS, M.A., *Instructor in Chemistry*
CAROL JOSEPHINE SANDY, M.A., *Instructor in French and Spanish*
CLAIR NATHAN SAWYER, B.S., *Instructor in Chemistry*
MRS. FLORENCE CLARKE STEHN, M.A., *Instructor in French*
GRACIA TORINUS, M.A., *Instructor in English*
JOHN ISAAC VASS, M.A., *Instructor in Mathematics*
MRS. FRIEDA ANNE MARIE VOIGT, B.A., *Instructor in German*
ELSIE LAURA JAECK, B.A., *Librarian*
GEORGE DAUPLAISE, B.Ed., *Assistant in Chemistry*
ALICE VOELNER, *Assistant in Biology*

The work of the Extension Division in Milwaukee is carried on through day classes in which students take a full-time program of work, and evening classes in which they carry a part-time schedule of studies in the evening or late afternoon. The first unit of the new University Extension Building occupies a portion of the block between Sixth and Seventh streets, facing State street. It has fully equipped science laboratories, spacious classrooms, and a library.

The fees in both day and evening classes are computed on the basis of the number of credit hours carried, the rate being $5.00 per credit hour. This does not cover the cost of textbooks or laboratory charges.

DAY CLASSES

The day classes offer complete programs of the work of the freshman and sophomore years in Engineering and Letters and Science, including pre-commerce, pre-education, pre-journalism, pre-law, and pre-medicine.

With respect to their content, as well as with respect to general approach, the various courses offered in day classes are parallel to the courses listed under the same designations in the University at Madison. They have been approved by the respective residence departments at Madison and carry full credit toward a university degree.

In addition to the above credit courses, a two-year day class course in Building Design and Construction is offered, giving specialized, intensive training in the design and construction of buildings. It is of particular interest to men who wish to become building inspectors, construction superintendents, structural or architectural draftsmen, or structural designers. A certificate is given by the Extension Division upon the satisfactory completion of the course.

ADMISSION REQUIREMENTS. The requirements for matriculation in the day classes, except for the course in Building Design and Construction, are in all respects the same as in the University at Madison. The general requirements for admission to the course in Building Design and Construction are two years of high-school work or its equivalent, including two semesters of high-school algebra. Experience in engineers' offices, drafting rooms, or on construction work will be given consideration toward entrance requirements. Students who are especially well prepared will be allowed to enter the second semester.

EVENING CLASSES

The courses offered in evening classes may be classified under four distinct heads:

University Credit Courses
Business Certificate Courses
Engineering Certificate Courses
Liberal Education Certificate Courses

The University Credit Courses are open to those who wish to obtain credits toward a degree during their spare time. To obtain such credits students must have satisfied the entrance requirements of the University and must have the prerequisites for the courses taken.

With a few exceptions, the Business and Engineering Certificate Courses do not offer credits leading to a degree. On the completion of a three-year evening course of study, a certificate is given by the Extension Division. Certificates are offered in the following fields of commerce and engineering: General Business, Accounting, Marketing and Advertising, Finance and Credit, Industrial Management, Secretarial Work, Building Design, Machine Design, Structural Design, Radio Engineering.

The underlying purpose of the series of courses in Liberal Education is to give an opportunity for adults to acquire an education which will create a feeling for those things which make life richer and more significant. A certificate is given on the completion of ten courses from this group.

POSTGRADUATE MEDICAL EXTENSION

FRANCES BRYCE VAN ZANDT, B.S., *Librarian*
ALLEN GRANT DUNCAN, M.A., M.P., *Curator*

In cooperation with the Medical School of the University, the Extension Division offers the following services to members of the medical and associated professions of Wisconsin:

MEDICAL LIBRARY SERVICE. Books, periodicals, reprints, abstracts, and bibliographies on medical subjects are supplied upon request, free of cost except for postage both ways on material lent.

EXTRA-MURAL LECTURES. Addresses by members of the university medical faculty and associated preceptors are arranged for meetings of medical societies.

LECTURE-CLINICAL COURSES. Competent leadership is provided for practitioner groups organized at county or district centers for the clinical and theoretical study of modern developments in treatment.

CLINICAL CASE REPORTS. This service will be extended to physicians desiring information on cases of clinical importance studied at the University and other medical and surgical centers.

SHORT COURSES. From time to time university facilities will be made available and short courses organized in particular subjects, open to the medical and associate professions of the State.

DEPARTMENT OF DEBATING AND PUBLIC DISCUSSION

ALMERE LOUISE SCOTT, B.A., DIRECTOR

IDA MARIE GANGSTAD, B.A., *Assistant Professor of Library Methods*
LEONA ESSIE FREDERICA MCCUTCHEON, M.A., *Instructor in Debating and Public Discussion*
MINNIE HENRIETTA POPE, B.A., *Instructor in Debating and Public Discussion*
RUTH MARY ROWLAND, *Instructor in Debating and Public Discussion*
MAMIE AMELIA SANDERS, B.A., *Instructor in Debating and Public Discussion*
MRS. GEORGIA METZGER CORP, *Assistant in Debating and Public Discussion*
MRS. IONE BIRD MEYERS, *Assistant in Debating and Public Discussion*

PURPOSE

For the assistance and instruction of citizens who are interested in important social, educational, and political problems, the Department of Debating and Public Discussion fosters forum activities for deliberative study and discussion.

Inasmuch as the intelligent and active interest in and study of these questions among all classes of people tend essentially to the making of good citizens, the department issues suggestive and guiding bulletins, collects and maintains a loan library available through parcel post to residents of the State, and keeps in close touch through correspondence and personal interviews with community centers, civic clubs, farmers' clubs, women's and business men's organizations, parent-teacher associations, school and library boards, and literary societies of educational institutions.

GUIDED STUDIES

To meet a demand for group direction in serious study, the department offers Guided Studies. A registration fee of four dollars within Wisconsin and five dollars outside the State covers the cost of four sets of any of the studies. This fee also covers the privilege of guidance and directed study. For the accommodation of groups that wish to supply personal copies to members, additional sets are supplied at the cost of production.

Among the subjects on which studies are now available are: Parental Guidance and Education; Recent History of the United States; Browning; Contemporary Drama; Contemporary Novel; Novel of the Nineteenth Century; Shakespeare; American Diplomacy; Pan-Americanism; United States and World Politics; Political Parties and Practical Politics.

STUDY PROGRAMS. Topical programs are available on Africa, Child Nurture in the Home, China and Old Glassware, Modern Italy, and the Map of New Europe; others are in the process of preparation. These programs may be purchased outside of the state of Wisconsin at sixty cents for the first copy, for additional to ten, fifty cents each, and thirty-five cents each for ten or more; within the State, fifty cents for the first copy, thirty-five cents each for additional to ten, and twenty-five cents each for ten or more. In cooperation with public libraries and state library commissions, the department aims to make the necessary reference material available to study groups and to individuals.

BULLETINS

Several compact and useful bulletins have been issued as aids to debaters, including: Debating Societies — Organization and Procedure; Principles of Effective Debating; How to Judge a Debate; and Triangular Debating Leagues. As special aids to organizations, bulletins on farmers' clubs, civic clubs, and parent-teacher associations have been published. The Triangular Discussion League bulletin suggests a plan to encourage the study and the intelligent discussion of great current problems not suited to a two-sided contest, but rather suited to a general discussion which brings out the many sides and salient facts.

FORMULATED QUESTIONS. The bulletins which formulate subjects for debate, giving brief historical facts and arguments, concluding with a selected, classified bibliography, serve as an impetus to careful study and have proved helpful and time-saving. Such questions as the following have been thus presented: Chain Stores; Closed vs. Open Shop; Commission Plan of City Government; Initiative and Referendum; Municipal Home Rule; The Recall; and Unemployment Insurance. These publications are sent upon receipt of list price.

MIMEOGRAPHED MATERIAL. Cuttings for public speaking in schools and for special programs, and mimeographed articles not easily available, on Chain Stores, Installment Selling, Compulsory Automobile Insurance, and the Direct Primary, are available. The department will send lists to those interested.

LOAN OF MATERIAL

The loan package libraries include selected newspaper and periodical clippings, office-bound sections of periodicals, government documents, publications of organizations, copies of addresses, reprints, typewritten excerpts, books—in fact all forms of carefully selected available material dealing in a fair and balanced manner with the different phases of worthwhile subjects. In order that ma-

terial may be selected judiciously, it is essential that the request for a package library state definitely the purpose for which the information is desired, and the latest date upon which it would prove of value. The same material cannot be used to the best advantage by a rural school pupil and a member of a woman's club.

The department aims to cooperate in every possible way with local librarians. Requests from communities which have public libraries should state what is available locally and thus avoid unnecessary duplication and expense.

DEPARTMENT OF PUBLIC SERVICE

PURPOSE. The Department of Public Service is composed of bureaus which deal with the informal or non-consecutive type of service as distinguished from the more formal and systematic type of instruction. These bureaus are concerned with questions and problems of general interest and public welfare.

The department serves as a clearing house through which all reasonable inquiries of the people of the State on matters of collective import may receive consideration.

ORGANIZATION. The Department of Public Service operates through the following bureaus, each in charge of a specialist: Bureau of Lectures and Short Courses, Bureau of Visual Instruction, Bureau of Municipal Information, Bureau of Economics and Sociology, Bureau of Dramatic Activities, Bureau of Business Information, and Bureau of Landscape Design.

METHOD. The department seeks to serve the individual inquirer, the group, and the community in establishing contact with specific lines of information, through the accumulation of data and the presentation of such data in non-technical form from such diverse sources as the reports of government bureaus, commissions, and experimental stations; the proceedings of scientific societies; publications of an economic, a social, a political, or an ethical character.

PUBLICATIONS. Bureaus of the Department of Public Service issue from time to time bulletins on subjects of timely interest. These are free to residents of the state of Wisconsin.

EXHIBITS. In addition to the specific lines of activity included within the fields of the various bureaus, the Department of Public Service has found the use of traveling exhibits and demonstrations upon such subjects as child welfare, health, recreation, and community-center work of very great value.

SOCIAL SERVICE INSTITUTES. For several years the Extension Division has offered to the communities of the State various types of institutes designed to assist in the solution of local problems. The Extension Division conducts, in cooperation with county superintendents, institutes for teachers which are designed to train them for social leadership. Instruction in song leadership, dramatics, group games, folk dancing, and other forms of social activity has been given, through which teachers have been qualified for more efficient service in connection with parent-teacher associations and other community organizations.

BUREAU OF LECTURES AND SHORT COURSES

ROBERT B. DUNCAN, CHIEF

PURPOSE. For instruction and platform inspiration in communities where the lyceum need exists, the Bureau of Lectures and Short Courses organizes and supplies local programs.

SCOPE OF SERVICE. The University offers through this department: (1) single lectures or series of such lectures; (2) lecture, concert, recital, or reading programs, or a miscellaneous combination of these. Such programs are offered with the definite purpose of developing better taste and higher standards with reference to public entertainments, and an appreciation of art, music, and literature by presenting examples.

LECTURES. The field covered by the lecture course is a wide one, including topics in education, history, geography and travel, political economy, political science, sociology, business administration, the history and literature of ancient and modern peoples, including Greek and Roman, Scandinavian, German, Semitic, French, and English life and letters, the physical sciences, engineering branches, forestry, and physical training. Bulletins containing detailed information will be sent upon request.

TEACHERS' CONVENTIONS AND INSTITUTES. The Extension Division will provide speakers for these meetings as far as the regular work of the University will permit.

COMMENCEMENT ADDRESSES. This department arranges for commencement addresses to be delivered by members of the university staff and others available in this service. The charges will be arranged in each case, for the speaker desired, through the Extension Division.

SHORT COURSES AND INSTITUTES. A short course or institute is an intensive training program or course ranging in duration from one day to two weeks. The program consists of a specialized series of lectures, discussions, and demonstrations directed by leading speakers and teachers secured from the faculty of the University and from the State and country at large.

SPECIAL OCCASION LECTURES. This department furnishes speakers for special occasions, such as memorial and dedication exercises, convocation addresses in schools, and for commercial organizations, and civic and women's clubs.

EXPENSES. The local expenses include hall rent and advertising in the local papers, and the lantern and operator, where the lecture is illustrated. Full information concerning lecturers' fees will be supplied on application.

BUREAU OF VISUAL INSTRUCTION

JOHN ELMORE HANSEN, Ph.B., CHIEF
HELEN OSTERBIND, B.A., *Instructor.*
MRS. JANET MACQUEARY QUINTANA, B.A., *Instructor*

The Extension Division has for loan purposes, lantern slides, motion picture films, and other illustrative materials on nearly all educational subjects. These materials are available to individuals and institutions within the State for educational purposes. This service is organized in the Bureau of Visual Instruction.

which is making a thorough and systematic study of materials that may be used in illustrative teaching, or in instruction through the medium of the eye, and placing such materials within easy and constant reach of all schools and other civic organizations of the State. A complete catalog describing the material and service offered is mailed free upon request.

BUREAU OF MUNICIPAL INFORMATION

FORD H. MACGREGOR, M.A., CHIEF
CELIA HARRIMAN, B.A., *Instructor*

To meet the need for reliable information in the important field of local government, a Bureau of Municipal Information is maintained for the service of the municipal officials and citizens of the State. The Bureau collects and furnishes authentic information on all subjects of municipal government-organization and administration, home rule, commission government, the city manager plan, city planning and zoning, public works, utility rates, police schools, park management, and the practices of different cities in handling various problems. It supplies data and advises cities in connection with new and current problems such as airplane landing fields, radio regulation ordinances, transient merchant regulations, and licensing of filling stations and bulk storage of gasoline, the licensing of miniature golf courses, and other subjects of current municipal interest. It collects and maintains files of charters, ordinances, and official publications of the principal cities of the United States. It has correspondents in most of the American cities and in this way is able to furnish information as to which cities have passed an ordinance of a particular type, and what the success of such an ordinance has been. It issues information reports on important problems, answers inquiries, conducts special investigations, and attempts to assist municipal officials to improve municipal government in Wisconsin. It serves as a clearing house for municipal experiments and experiences, and as a means of bringing municipal officials into touch with the experts and specialists of the State best qualified to help them in the solution of their problems.

BUREAU OF ECONOMICS AND SOCIOLOGY

ROY JEFFERSON COLBERT, M.A., CHIEF

As university studies in the social sciences have grown in interest and importance, there has developed an increasing demand for information, counsel, and service in the practical application of economic and sociological principles in the community. The Bureau of Economics and Sociology was instituted in 1927 to afford a channel through which to perform such services systematically and effectively. It is a cooperative undertaking of the Departments of Economics and Sociology and the Extension Division and is intended to promote a better understanding of the social and economic resources of Wisconsin and to make readily available to the people of the State the University's knowledge, experience, and researches in the handling of social and economic problems.

The functions of the Bureau, as at present being developed, are: 1. To provide individuals, groups, and communities of the State with counsel, information, and services in its field, in cooperation with other organized agencies, public and private. Such counsel and services are extended only when there is a definite request and when those making the request undertake active cooperation and assistance. 2. To collect, organize, and publish data relative to the social and economic resources of the State, in cooperation with the Departments of Economics and Sociology and state governmental departments.

BUREAU OF DRAMATIC ACTIVITIES

ETHEL THEODORA ROCKWELL, B.A., CHIEF

In response to a growing demand for assistance in the selection and staging of plays and pageant-dramas in the schools, churches, and communities of the State, the Bureau of Dramatic activities was organized in 1927 as a cooperative agency of the Extension Division and the Department of Speech. In its functions the drama work of the former Bureau of Community Drama and Music of the Extension Division is resumed and expanded.

Correspondence on all questions relating to the arrangement and presentation of local-talent productions is invited. Specifically, the Bureau is prepared to render to schools, churches, clubs, little theaters, and communities of the State, upon request, the following services:

PLAY DIRECTING. As far as time permits, a representative of the Bureau will visit communities in the State to direct the actual staging of plays in all necessary details.

PAGEANT WRITING AND DIRECTING. Advice and local assistance will be rendered to communities contemplating the presentation of commemorative, historical, patriotic, or civic pageants.

ASSISTANCE IN CONDUCTING OR ORGANIZING COMMUNITY CHAUTAUQUAS OR PROGRAMS FOR FAIRS.

LENDING DRAMATIC MATERIAL. The Bureau has built up an extensive library of plays—long and short, modern and classical—suitable for children, high-school students, college students, and adult groups. Upon request a selection of books will be sent free of charge for examination.

ORIGINAL PLAY-WRITING. The Bureau desires to encourage the writing of original plays and will assist in conducting tournaments in play-writing in the schools and communities of the State.

ANNUAL DRAMATIC INSTITUTE. This institute, held the first two weeks of the regular summer session, gives intensive courses in play production, play writing, stage-craft design, pantomime, costume design, make-up, voice training, and children's dramatics. A small registration fee is charged.

WISCONSIN DRAMATIC GUILD. The Guild is a state organization sponsored by the Bureau. Its membership is made up of drama groups in high schools, colleges, and churches. Each year the Guild conducts a dramatic festival week in which tournaments are held and dramatic demonstrations are given.

BUREAU OF BUSINESS INFORMATION

HENRY ROWLAND ENGLISH, M.A., CHIEF

PURPOSE. This Bureau serves as an impartial agency through which the business men of Wisconsin may obtain accurate information on subjects related to their work. The School of Commerce co-operates with the Bureau in this work. Facts and figures from many governmental, university, and private sources are collected and interpreted.

ANSWERS TO INQUIRIES. Upon request the Bureau supplies available data on topics in the fields of accounting and statistics, retail store management, advertising and selling, business organization and management, federal and state income tax regulations, real estate, foremanship training, business correspondence, credits and collections, and business finance. When a request for information can not be answered completely by letter, published source material is lent to the inquirer.

PUBLICATIONS. The Wisconsin Retail Bulletin is issued monthly. It is distributed without charge to Wisconsin merchants who request it. This publication contains significant retail news, modern merchandising ideas, and summaries of business conditions in state and nation.

Lists of recommended books are being prepared and distributed, covering the various fields of business. From time to time other publications containing information of interest to Wisconsin business men will be issued.

RETAIL CONFERENCES. Each year retail conferences are conducted in a number of Wisconsin cities by members of the Bureau staff. Practical ideas on retail merchandising, retail selling and advertising, and retail credits and collections are presented through addresses and round table discussions, as well as by individual conferences in the stores.

FIELD ORGANIZATION

CHESTER ALLEN, DIRECTOR

MARSHALL CONANT GRAFF, M.A., *District Representative, Appleton*
BENNO WALTER MEYER, B.S.A., *District Representative, LaCrosse*
GEORGE ALEXANDER TYLER, Ph.B., *Field Representative, Madison*
NELSON DAVID CONNERS, B.A., *Field Representative, Milwaukee*
MARY KATHERINE FARRELL, B.A., B.M., *Field Representative, Madison*
EDWARD MILTON GORROW, *Field Representative, Appleton*
OTTO LOUIS KRASSELT, B.A., *Field Representative, Eau Claire*
WILLIAM HENRY H. LIESCH, *Field Representative, Oshkosh*

For convenience and efficiency of administration the State is divided into districts in which field representatives are permanently located to organize and to make known the many opportunities available to each individual and community through the Extension Division.

Persons living anywhere in the State are thus able to have a personal conference in their own city with a university representative and are able to secure conveniently complete information regarding all the services of the Extension Division, such as, correspondence-study courses; local classes; package libraries, including medical; lectures and short courses; lantern slides and motion picture films; municipal information; dramatic activities; and information on problems of business, economics, and sociology.

The field representatives are ready at all times to give assistance in organizing these activities for the use of the local community and may be reached promptly through the Field Organization office at Madison.

PART VIII—
OTHER DIVISIONS OF INSTRUCTION

SUMMER SESSION
PHYSICAL EDUCATION
MILITARY SCIENCE

SUMMER SESSION

SCOTT H. GOODNIGHT, DEAN

The Summer Session, instituted thirty-three years ago as a period of study and review for teachers, has become an integral part of the university year, with nearly all departments represented. The courses range through all grades of undergraduate work to the most advanced graduate instruction and investigation. The work for teachers and for graduate students receives major emphasis, but very many undergraduate students of this and other colleges now avail themselves of the opportunity thus presented to shorten the period of their college residence or to make up deficiencies in either preparation or course requirements. They have the advantage in summer of being free from many of the distractions (inter-collegiate games, fraternity rushing, etc.) which obtain during the semesters. At the same time there is no lack of social life and wholesome recreation during the summer.

Courses, both academic and professional, are offered for graduates and for undergraduates in letters and science, education, engineering, medicine, law, and agriculture, for teachers in colleges, agricultural schools, high schools, and technical schools, and for special students, as lawyers, doctors, chemists, writers, social workers, farmers, and practicing engineers. Virtually all the courses carry full academic credit. All the library, laboratory, and other facilities of the University are available during the summer, and the opportunities for thesis and advanced investigative work are particularly favorable at this time. A special bulletin describing the various courses is issued annually, copies of which may be obtained upon application to the Dean.

UNDERGRADUATES. The admission requirements for a student who desires credit toward a degree at Wisconsin are the same for the summer session as for the other sessions at the University; these are described in detail beginning with page 33. A student who desires to graduate from the University and who comes with advanced standing from a normal school or from another college or university, should submit a complete official record of his preparatory work and college credits to the advanced standing committee of the college he expects to enter.

A student who wishes to secure credit toward graduation at some other institution, but who is not a candidate for a degree at Wisconsin, need not comply with the entrance requirements but may register upon presentation of a satisfactory statement of status and aims. Forms for such statements are provided in the summer session bulletin. Upon registration by this method, a student may enroll in any course or courses, which, in the estimation of the instructor in

charge, he is able to carry to advantage. Upon satisfactory completion of such work, application may be made to the Registrar for a transcript of credits stating the number of hours of work carried and the grades earned. Credit toward graduation at this University, however, will be given only after complete matriculation by one of the regular methods.

GRADUATES. A general statement of work in the Graduate School may be found on page 388 of this catalog. The Graduate School also publishes a special bulletin containing detailed information.

The University has instituted special nine-week summer session courses for graduate students only. In 1930 over 60 courses of strictly graduate grade were offered, enabling graduate students to earn one-half semester of residence credit toward a higher degree. To be eligible to carry these courses, a student must be enrolled in the Graduate School and must have had his candidacy for a higher degree approved. No auditors are permitted in the nine-week courses. It is probable that in future summers the number and range of the nine-week courses will be increased.

The inauguration of nine-week courses does not affect the privilege of doing graduate work in the six-week session, except that the number of graduate courses offered in the latter is somewhat decreased.

SPECIAL STUDENTS AND AUDITORS. Adults who desire to pursue college work for their profit or pleasure, but without reference to a degree, and those who desire merely to visit lecture courses in subjects which are of special interest to them, without being held responsible for the work expected of students working for credit, may register in the summer session as auditors, taking such courses as may be open to them, as indicated in the summer session bulletin. Auditors pay the same fee as other students and enjoy the same privileges, except that of being included in recitation and theme work.

CREDITS. The maximum number of credits which may be earned toward a degree at Wisconsin is six for the six-week session, eight for the ten-week session of the Law School, and one for each week of pre- or post-session or special work for which the student is properly registered. In the Graduate School, credit is by period of residence only, a six-week session yielding one-third of a semester and a nine-week session yielding one-half a semester of residence credit toward a higher degree.

SUMMER SESSION FEES

INCLUDING TUITION, INCIDENTAL, AND INFIRMARY (BUT NOT LABORATORY) FEES

The same fees are charged to both residents and non-residents of Wisconsin.

I. For undergraduates and graduates in all colleges and schools, except the Graduate School, the basic rate is $4.50 per week plus special fee of $2.00 for the Infirmary and $1.50 for the Union.

Classification	Period	Tuition	Infirmary and Union	Total
Railway Engineering	2 weeks	$ 9.00	.....	$ 9.00
Field Courses	4 weeks	18.00	.....	18.00
Chemical Engineering	5 weeks	22.50	3.50	26.00
General Session—Undergraduates	6 weeks	27.00	3.50	30.50
Law School	10 weeks	45.00	3.50	48.50

II. For graduates admitted to registration in the Graduate School, the rate is $5.00 per week plus Infirmary and Union fees.

General Session Graduate School	6 weeks	$30.00	$3.50	$33.50
Special Courses Graduate School	9 weeks	45.00	3.50	48.50

Pre-and Post-Session Fees

Undergraduate: $4.50 per week. If registrant was not in Summer Session, $8 for first week and $4.50 for each succeeding week.

Graduate: $5 per week. If registrant was not in Summer Session, $8.50 for first week, and $5 for each succeeding week.

SPECIAL FEES. Graduate students previously enrolled in the University and who during the summer wish to engage in independent research without earning credit in any form shall register in the Summer Session, paying a fee of $5, plus laboratory or library fees as their work may necessitate.

Graduate students pursuing no courses but who are candidates for an oral examination during the session, may register after the third week of the session for a fee of $10, but may earn no credit.

Refunds for the six-week session are authorized as follows: if the student withdraws between opening day and first Friday, 80%; between first Saturday and second Wednesday, 60%; between second Thursday and third Monday, 40%; between third Tuesday and third Saturday, 20%; after the third Saturday, no refund.

OTHER EXPENSES. In courses involving laboratory work, additional fees are charged; these correspond closely to the laboratory fees charged for the same courses taken during the academic year. Other expenses for the six-week session may be estimated from the following: room-rent, $15–$30; board, $40–$55; books and classroom materials, $8–$15; incidental expenses, including laundry, $16–$60; total, not including fees or traveling expenses, $78–$160.

PHYSICAL EDUCATION

The Departments of Physical Education have jurisdiction over all athletic, aquatic, and gymnastic activities. Their aims are: (1) to promote the physical development of the students by (a) contributing to their health, organic vigor, and good physical habits, (b) providing an incentive and an opportunity for every student to engage in some physical activity at least one hour daily as a balance to the sedentary demands of university life, and (c) conserving the social and moral values of games and sports and securing to every student the fullest opportunity for their practice; (2) to train physical educators and play leaders; and (3) to promote a more effective organization of play and administration of physical education throughout the state of Wisconsin.

EXEMPTIONS AND DEFERMENTS

All applications for deferment of or exemption from physical training for men must be made at the office of the Director of the Men's Gymnasium; women will apply to the Director of the Women's Department in Lathrop Hall. In no case will permission be granted to defer work for more than one semester at a time and no deferred work will be allowed to extend into the senior year.

I. EXEMPTIONS PROVIDED FOR BY THE RULES OF THE UNIVERSITY

1. Students who are physically unfit, as certified by the Department of Student Health.
2. Normal-school graduates and those who enter the University with college credits sufficient to give them junior standing.

II. EXEMPTIONS UNDER THE POLICY OF THE DEPARTMENT

1. Students from institutions of college or university rank who have taken accredited courses in physical education, providing proper credentials are presented.
2. Adult special students over 23 years of age who are not candidates for degrees.
3. Other cases, at the discretion of the Director.

III. DEFERMENTS REQUIRED TO BE MADE UP IN THE DEPARTMENT

1. Self-supporting students where the hours of labor actually conflict with hours of required work.
2. All cases not falling under any of those previously mentioned.

MEDICAL AND PHYSICAL EXAMINATIONS

The organic condition, stage of physical development, and degree of motor efficiency attained by each entering freshman and sophomore are determined at the opening of the college year by a series of examinations and tests made by the Department of Student Health and the appropriate Department of Physical Education. An endeavor is made to determine the student's exact organic condition with a view to outlining for him a proper regimen of exercise, diet, rest, and work. Students are classified on an organic scale and are permitted to engage only in sports and games for which they are physically fitted. No student is

permitted to participate in competitive games either of intercollegiate or intramural grade unless physically fit therefor, as determined by the examination. All candidates for football and other teams must be examined by and secure the permit of the Department of Student Health as well as that of the Department of Physical Education before reporting for practice with their squads.

VOLUNTARY EXERCISE

All students are urged to take at least one hour of recreative exercise each day and the facilities of the entire department are open for this purpose whenever not required for prescribed activities. Advice and direction may be secured by any student at any time. All advanced practice courses are open to any student fitted to take them.

MEN'S DEPARTMENT

GEORGE E. LITTLE, DIRECTOR

EQUIPMENT

The men's gymnasium, 200 by 100 feet, with an annex 225 by 84 feet, is located on the shore of Lake Mendota. On the ground floor are the offices, locker rooms, showers and swimming pool. The second floor is an unobstructed hall 165 by 98 feet, used for military science, intramural activities, and varsity basketball. The main gymnasium hall, 165 by 65 feet, is located on the third floor and includes the usual gymnasium equipment, wrestling room, and handball courts. The annex is equipped with a 12-lap cinder track, a baseball cage, and a rowing room.

The outdoor facilities of the department include the university athletic field of 33 acres at Camp Randall; a concrete stadium seating 42,000; a quarter-mile track with a 220-yard straightaway; the varsity football field within the quarter-mile track, and five additional football fields; a varsity baseball diamond, two freshman diamonds, and six additional practice fields; and 24 tennis courts. The new intramural fields comprise thirteen acres of ground; included in this area are four regulation football fields serving a dual purpose (three regulation baseball diamonds are laid out on this area in the spring), thirteen tennis courts, a sixth-mile track, 120-yard straightaway, an area for high-jumping, pole-vaulting, and javelin throwing, and three diamond-ball courts. The construction of a golf course is also being considered.

The lower campus, an open playground of two acres located directly in front of the men's gymnasium, is used for the required activities of the department during the early fall and spring. During the winter months this campus is flooded and used for varsity and intramural hockey.

The new field house, 234 by 205 feet, is located at the southwest corner of Camp Randall. The track facilities in this building include an eighth-mile track, two 60-yard straightaways, and a moulder's clay surface for field events. Basketball facilities include an exhibition and a practice court, both with removable floors in order to permit football practice in the fall and baseball in the spring, during periods of inclement weather. The field house seats 8,000 spectators, with provisions for an increase up to 12,000.

Extensive water sports are promoted during the spring and summer months. Lake Mendota, which adjoins the campus, affords excellent opportunities for

swimming, canoeing, and crew. The university boat house, just back of the men's gymnasium on the lake shore, is equipped with eight-oared shells, four-oared barges, and "war" canoes, and provides storage room for canoes belonging to students. Two modern, high-speed launches of 100 and 125 horse-power, supplied with complete life-saving equipment, are kept in constant commission for instant service throughout the boating season.

Outdoor winter sports are particularly encouraged. There are opportunities for skating and hockey on the rinks maintained by the department on Lake Mendota and on the lower campus. A ski jump of 115 feet has been constructed, which is one of the best in this part of the country. The University also maintains a toboggan slide. Lake Mendota offers excellent opportunities for ice boating.

REQUIREMENTS FOR MEN

Freshman and sophomore men are required to take three hours a week of either physical education, military science, or band instruction. The requirement in physical education may be satisfied through participation in team sports, intramural sports, or physical education classes. These may be selected from the list of activities given below. All men electing any phase of physical education must register at the men's gymnasium at the regularly appointed time at the beginning of each semester.

The regulation indoor suit for men consists of a white sleeveless shirt with "Wisconsin" across the front, white running pants with cardinal trim, supporter, sweat socks, and rubber soled shoes. The outdoor suit consists of heavy shoes, long khaki trousers, and a plain gray sweat shirt.

The gymnasium fee is $2.00 each semester, required of each student taking either optional, required, or elective work in the department. Freshmen and sophomores are assigned cubicles with a combination padlock. A deposit of one dollar is required for this lock, refund being made when the student returns the lock.

VARSITY SPORTS

FALL	WINTER	SPRING
Baseball	Basketball	Baseball
Basketball	Crew	Crew
Crew	Fencing	Cross-country
Cross-country	Gymnastics	Football
Fencing	Ice hockey	Golf
Football	Skating	Tennis
Gymnastics	Skiing	Track
Swimming	Swimming	
Track	Track	
Wrestling	Wrestling	

INTRAMURAL SPORTS

Football	Basketball	Baseball
Football (touch)	Bowling	Diamond ball
Cross-country	Boxing	Golf
Tennis	Hockey	Tennis
	Swimming	Track
	Track (indoor)	
	Water-polo	
	Wrestling	

PHYSICAL EDUCATION CLASSES

Basketball	Basketball	Baseball
Corrective	Boxing	Corrective
Cross-country	Corrective	Cross-country
Fencing	Fencing	Gym
Football (touch)	Gym	Swimming (advanced)
Gym	Handball	Tennis
Soccer	Swimming (advanced)	Track
Swimming (beginners only)	Track	
Track	Tumbling, apparatus, and stunts	
Tumbling, apparatus, and stunts	Volleyball	
Volleyball		

NOTE: All non-swimmers electing intramural sports or physical education classes are assigned to a beginners' swimming class the first semester. All students taking physical education are required to be able to swim a distance of fifty yards by the end of the sophomore year.

ATHLETIC COMPETITION FOR MEN

Interclass and intercollege tournaments and contests are conducted in all games and sports under the supervision and control of the department. In the conduct of the men's activities the department has the co-operation of the intramural athletics committee of the Athletic Board, consisting of six students representing Agriculture, Commerce, Engineering, Law, Letters and Science, and Medicine.

The University is a member of the Western Intercollegiate Conference Athletic Association and maintains representative teams in all intercollegiate sports. No student may be a member of an intercollegiate team unless (1) he is eligible according to the requirements of the Student Life and Interests Committee, (2) has been a year in the University, (3) has no unsatisfied failures, conditions, or incompletes, (4) has received a weighted average of at least .8 of a grade-point in the work of the previous semester, and (5) is carrying full work.

Intramural and intercollegiate sports are under the government of the Athletic Council, a subcommittee of the Faculty Committee on Student Life and Interests.

WOMEN'S DEPARTMENT

BLANCHE M. TRILLING, DIRECTOR

EQUIPMENT

The Women's Department is housed in Lathrop Hall. The main gymnasium is two stories high, with floor 118 by 60 feet, visitors gallery, and running track. A small gymnasium located adjacent to the main gymnasium, is used for smaller classes. Another small gymnasium, a dance studio, and a lecture room are on the fifth floor. An additional lecture room and a game room are located on the first floor. Each room is suitably equipped for the type of class conducted there. Two floors of one wing contain dressing rooms, showers, and lockers, designed for the accommodation of 1,000 students. In the basement are four bowling alleys, the swimming pool 60 by 26 feet, well lighted and ventilated, and supplied with filtered and chlorinated water. Just off the swimming pool are dressing rooms, showers, and hair-drying apparatus.

CONTESTS AND TOURNAMENTS FOR WOMEN

The Women's Athletic Association cooperates with the Department in the conduct of women's activities. "Sports-for-all" is the objective towards which the Women's Athletic Association is working. The activities are numerous and diverse so that every girl may enjoy some form of exercise.

Intramural activities interest large numbers of girls; class teams are active during the entire year in all the various sports; the W.A.A. Cottage on Lake Mendota affords excellent opportunities for week-end parties and picnics; Outing Club promotes interest in such activities as hiking, skiing, coasting, tobogganing, and ice skating; Dolphin Club stimulates interest in swimming, diving, and water games; Orchesis is an advanced dancing class organized to give opportunity beyond the regular scheduled class work.

REQUIREMENTS FOR WOMEN

The equivalent of two hours a week is required in each season of all freshman and sophomore women, to be elected from the list of activities given below.

The college year is divided into four terms, (1) Fall—September to November; (2) Winter—November to February; (3) February to April; (4) Spring—April to June. At the beginning of each of these terms, all women taking elective or required work must register in Lathrop Hall for their work for the coming term. This must be done at the appointed time regardless of whether physical and medical examinations have been taken.

FALL	WINTER*	SPRING
Archery	Basketball	Archery
Corrective work	Baseball	Baseball
Dancing	Bowling	Canoeing
Field hockey	Corrective work	Corrective work
Horseshoes	Dancing	Dancing
Golf	Fencing	Field and track
Health work	Fundamental gymnastics	Golf
Riding	Golf	Health work
Swimming	Health work	Riding
Tennis	Ice hockey	Swimming
Volley ball	Outdoor sports	Tennis
	Riding	
	Skating	
	Skiing	
	Swimming	

*A study of the laws of personal and general hygiene is included in the winter work.

The required swimming test must be passed before the end of the sophomore year. All students who are not physically fit to participate in the sport program are required to enroll in corrective or health classes.

For women a uniform suit is required and should be purchased in the fall in Madison; the cost is about $5.00. Regulation rubber sandals are required for those enrolled in swimming.

The gymnasium fee $2.00 each semester, required of each student taking either required, optional, or elective work in the department.

MILITARY SCIENCE

TOM FOX, *Major of Infantry USA, Commandant and Professor of Military Science*

GEORGE EDWIN FINGARSON, *B.A., Captain of Infantry USA, Assistant Professor of Military Science*

WILLIAM FRANCIS DALTON, *Captain of Infantry USA, Assistant Professor of Military Science*

DONALD CHARLES BURNETT, LL.B., *Captain of Infantry USA, Assistant Professor of Military Science*

FRANK CELESTINE MEADE, *First Lieutenant Signal Corps USA, Assistant Professor of Military Science*

HARRY LOVEJOY ROGERS, JR., *First Lieutenant of Infantry USA, Assistant Professor of Military Science*

FREDERICK WILLIAM POST, *First Sergeant USA Retired, Assistant to the Commandant.*

OBJECT AND SCOPE OF INSTRUCTION

The object of the military instruction is to train students for the performance of the duties of commissioned officers, should their services be needed by the country. The instruction is necessary in order to prepare them to perform those duties intelligently and enables them to be thus partly trained with the least practicable interference with their civil careers. It is hoped that by this system there may be available, in time of national emergency, an increased number of educated men trained in military science and tactics, to lead the units of the large armies upon which the safety of the country will depend.

The courses in military training prepare for leadership in civil life as well as in the military service, for the same qualities are demanded in both. The tactful handling of men, the ability to cooperate with others, the organization of effort and resources are common factors of success in either military or civil life. Military training develops efficiency, patriotism, leadership, and those qualities of manliness so essential in all walks of life.

The courses provide the ground work upon which to build military character and proficiency, and are designed to develop the greatest possible initiative on the part of the student. They also provide that the cadet officers and non-commissioned officers shall participate in the administration and training and share in the responsibilities thereof.

REQUIREMENT

Freshman and sophomore men are required to take three hours a week of either military science, physical education, or band instruction. If military science is elected, it must be pursued continuously for two years, unless deferment of the course is secured from the Military Department. However the two years must be completed in any case prior to graduation unless excused because of permanent physical disability.

Students entering from schools where they have had the basic ROTC course may take the advanced course in the freshman year in fulfillment of the general option in military science, but without academic credit. In the sophomore year the advanced course may be elected for academic credit as well as in fulfillment of the option.

RESERVE OFFICERS' TRAINING CORPS

The Department of Military Science comprises Infantry and Signal Corps units of the Reserve Officers' Training Corps, organized under the National Defense Act of June 3, 1916. This act provides for a progressive course of military training consisting of two years of basic and two years of advanced work. Three hours a week are required in the basic course and five in the advanced course.

Upon completion of the sophomore year of the basic course, those students who are selected for further military training by the President of the University and the Commandant may elect to take the work of the advanced course. This necessitates a written agreement on the part of the student that he will continue the work, taking it five hours a week for two years, and attend one summer camp of not more than six weeks' duration.

Upon the execution of this agreement, the War Department furnishes to members of the advanced course, in addition to uniforms and equipment, commutation of subsistence at the rate of about $9 a month for twenty-one months. Students enrolling in the advanced course must begin the work in such course at least two years prior to normal completion of the students' academic course, save in exceptional cases, and then only upon the fulfillment of certain conditions. Students who once begin either the basic or advanced course and later withdraw from college are under no obligation to the government whatever, unless they reenter this institution at a later date, in which case they are required to continue their military science course.

Students are paid at the rate of $21 a month while attending advanced course camps. All transportation to and from the camp and the expenses at camp are paid by the government.

Upon satisfactory completion of the advanced course, including the prescribed camp training, graduates who are twenty-one years of age are eligible for appointment by the President of the United States as members of the Officers' Reserve Corps, United States Army. Such graduates who are not yet twenty-one years of age are given certificates of eligibility for a commission. Upon reaching the age of twenty-one, these students are commissioned as Second Lieutenants, Officers' Reserve Corps, without any mental or physical examination.

UNIFORMS

Basic course students make one deposit of $10.00 upon beginning the course. Upon completion of the two-year course each student is refunded $5.00 and is permitted to retain his uniform. There is no additional cost, all arms and equipment being furnished by the Federal Government. Each advanced course student deposits $7.50 and in return receives an excellent uniform suitable for wear after he receives his commission in the Reserve Corps. He retains this uniform upon completion of the course.

PERSONNEL AND EQUIPMENT

The instruction in the Department of Military Science is conducted by a corps of six Regular Army officers selected by the War Department from the Infantry and Signal Corps and, in addition, selected non-commissioned officers of these branches, highly trained in their profession. A considerable amount of equipment has been provided by the Federal Government in order that instruction may be both complete and practical.

The department maintains representative teams in rifle and pistol shooting. During the past three years the ROTC Rifle Team has placed second in the Sixth

Corps Area matches and habitually attained an excellent rating in national and other competitions. The ROTC Pistol Team was organized during the past year and succeeded in winning a majority of its matches during its first season. Both squads receive training in shooting for about five months during the year, and fire correspondence matches with all the leading schools and colleges in the United States, as well as several shoulder-to-shoulder and special matches.

Two drill teams are maintained by the department, one composed of selected advanced course students and the other of basic course students selected from the honorary basic company. Both compete with teams of other institutions and also appear in exhibition drills on occasions. In spring drill competitions conducted annually by the Wisconsin Reserve Officers' Association, the Advanced Course Drill Team placed second in 1929 and 1930. In 1931 that team was the winner and Basic Course Team placed fifth among nine teams competing.

Scabbard and Blade is a national honorary fraternity of 75 chapters to which cadet officers are eligible for membership. Company A, First Regiment, was founded at this University in 1904.

COURSES OF INSTRUCTION

BASIC COURSES

1. First-Year Basic Infantry. Yr. The National Defense Act and the ROTC, military courtesy and discipline, military hygiene and first aid, drill and command, rifle marksmanship, scouting and patroling. Captain Fingarson.

3. First-Year Basic Signal Corps. Yr. The National Defense Act and the ROTC, military courtesy and discipline, military hygiene and first aid, drill and command, military telegraph, army organization, military telephones. Lieut. Meade.

21. Second-Year Basic Infantry. Yr. Drill and command, musketry, automatic rifle, scouting and patroling, combat principles (rifle squad). Lieut. Rogers.

23. Second-Year Basic Signal Corps. Yr. Drill and command, military telegraph, military telephones, radio sets, pistol and personal equipment. Lieut. Meade.

ADVANCED COURSES

131. First-Year Advanced Infantry. Yr; 3 cr. Map reading and military sketching, drill and command, machine gun, 37 mm. and 3″ mortar, combat principles (rifle section and platoon). Captain Burnett.

133. First-Year Advanced Signal Corps. Yr; 3 cr. Military sketching and map-reading, drill and command, message center, codes and ciphers, communication engineering, tactical principles, and principles of signal communication. Lieut. Meade.

141. Second-Year Advanced Infantry. Yr; 3 cr. Military law and Officers' Reserve Corps regulations, military history and policy, administration, field engineering, drill and command, combat principles (rifle and machine-gun company and howitzer-company platoon). Captain Dalton.

143. Second-Year Advanced Signal Corps. Yr; 3 cr. Military law and Officers' Reserve Corps regulations, military history and policy, administration and supply, field engineering, drill and command, communication engineering, signal corps tactics. Lieut. Meade.

PART IX—ASSOCIATED SCIENTIFIC INSTITUTIONS

FOREST PRODUCTS LABORATORY
STATE LABORATORY OF HYGIENE
UNITED STATES WEATHER BUREAU
WASHBURN OBSERVATORY
WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY
STATE TOXICOLOGICAL LABORATORY
STATE OF WISCONSIN GENERAL HOSPITAL
WISCONSIN PSYCHIATRIC INSTITUTE
STATE HISTORICAL SOCIETY
WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS

FOREST PRODUCTS LABORATORY

C. P. WINSLOW, DIRECTOR

The Forest Products Laboratory is a scientific institution engaged in research for the Forest Service, United States Department of Agriculture, in cooperation with the University of Wisconsin. The final objective of the research activities of this organization is to secure maximum economy and efficiency in the production and utilization of forest products with a view to prolonging the present timber supply and encouraging the practice of forestry through greater financial returns. The staff of the laboratory cooperates with that of the University of Wisconsin in the courses of lectures and research outlined below. The laboratory offers unusual facilities for research in the field of forest products and possesses very complete scientific and technical equipment for this purpose. In its investigations it approximates closely commercial conditions and cooperates extensively with the various manufacturing establishments in testing out its research on a commercial basis.

The technical investigations of the laboratory are as follows:

(1) Mechanical Properties of Wood. Investigations of strength, stiffness, hardness, and other mechanical properties of commercial woods; effect of treatments on strength; tests on fabricated materials and manufactured articles; the development of grading rules for structural timbers.

(2) Seasoning of Wood. Determination of best methods of air drying and kiln drying to eliminate losses; design and operation of dry kilns; studies of commercial kilns; physical properties of woods.

(3) Shipping Containers. Study of wooden and fiber shipping containers, with special reference to design and specifications to develop containers which will deliver the contents to the consumer in a satisfactory condition at a minimum total cost.

(4) Plywood, Glues, and Laminated Stock. Study of plywood manufacturing problems; strength and design of plywood; development and improvement of glues; study of new uses for laminated construction in commercial work.

(5) By-Products and Chemical Studies. Research on the methods of production and utilization of by-products, such as alcohol, turpentine, rosin, acetate, etc., obtained from various forms of wood and wood waste; and general wood chemistry.

(6) Wood Preservation. Research on fungi which attack structural timbers, with investigations aimed at practical means of prevention; the efficiency of various wood-preserving processes and preservatives.

(7) Pulp and Paper. The suitability of woods and other fibrous materials for pulp, paper, and fiber specialties; studies in the chemistry and engineering of pulping and paper-making processes; chemical and physical studies of pulps and papers.

(8) Silvicultural Relations. Identification of wood; the effect of growth conditions on the structure of wood; and the relation of the structure of wood to its properties.

(9) Technical Studies of Wood-Using Industries. Study of the economic utilization of wood with a view to eliminating waste; lumber grades and specifications; methods of measuring, manufacturing, and marketing logs, lumber and small dimension stock; development of efficient uses of wood.

The lectures and research are offered by the staff of the laboratory to both undergraduates and graduates. Several courses on various technical activities are given in the Extension Division, as announced on page 416.

STUDENT RESEARCH ASSISTANTSHIPS

Students who show unusual ability in research may be appointed as student research assistants in this laboratory by the Forest Service or by the Bureau of Plant Industry, in accordance with the regulations of the United States Civil Service Commission, at a salary not exceeding $40 per month. Application for these assistantships must be made to the director of the Forest Products Laboratory. The number of students thus appointed will largely depend upon the funds available and the number of suitable problems taken up by the laboratory for solution. Students may choose one of the problems as major or minor work for a thesis as part of the requirements for a higher degree.

LECTURE AND LABORATORY COURSES

These courses do not supply the needs of students desiring to take up the study of forestry as a profession. Such students should enter one of the regular forestry schools.

FORESTRY AND WOOD TECHNOLOGY

HARRY DONALD TIEMANN, M.E., M.F., *Lecturer in Forest Products*
FREDERICK LINCOLN BROWNE, Ph.D., *Lecturer in Forest Products*
ELOISE GERRY, Ph.D., *Lecturer in Forest Products*
ARTHUR KOEHLER, M.S., *Lecturer in Forest Products*
LORRAINE JOSEPH MARKWARDT, C.E., *Lecturer in Forest Products*
JOHN A. NEWLIN, B.S., *Lecturer in Forest Products*
CLARICE AUDREY RICHARDS, Ph.D., *Lecturer in Forest Products*
THOMAS ROY TRUAX, M.S., *Lecturer in Forest Products*

1. GENERAL FORESTRY. I; 2 cr. Open to all students with the exception of freshmen in Letters and Science. General introductory course. The first part is devoted to an outdoor study of trees and to lectures concerning their growth and the use of their products. The remainder of the course takes up the natural forest conditions of the United States, and the history of the development of a forest policy. There are no prerequisites to this course. 11 TT. Mr. Tiemann.

101. PROPERTIES OF WOOD. I; 2 cr. Open to all students. Relation of the structure of wood to its properties. Physical, mechanical, and chemical properties; pulping characteristics; gluing characteristics; relation of defects and fungi to wood properties. Prerequisite: Forestry 1. This course is of particular value to students in architecture, engineering, manual training, and agriculture, and to students desiring to go into the lumber or wood-using industries. May be preceded or followed by Course 102. Offered 1931-32 and in alternate years. 4:30 TT. Mr. Koehler and staff.

102. WOOD TECHNOLOGY. II; 2 cr. Open to all students. Includes a study of the structure of wood; identification of commercial species of wood. A logical sequence to course 101, but may be taken independently. Especially suited for students who expect to go into some wood-using business, or for students planning to take a course in forestry elsewhere. 11 TT. Mr. Tiemann.

119. DISEASES OF TIMBER. I; 2 cr. The course is designed to familiarize the student with the fungous defects in wood products. Opportunity is given to study the morphology of the casual organisms, their temperature and moisture relations, and methods of controlling them. The technique of sectioning and staining wood and isolating the causal organisms is included. Offered 1931-32 and in alternate years. Lect. and lab. 1:30-5:30 W. Miss Richards.

CHEMISTRY OF FOREST PRODUCTS

ERNEST BATEMAN, Ph.B., *Lecturer in Forest Products*
MARK WILDER BRAY, B.A., M.S., *Lecturer in Forest Products*
FREDERICK LINCOLN BROWNE, Ph.D., *Lecturer in Forest Products*
CARLETON EDGAR CURRAN, Ph.D., *Lecturer in Forest Products*
LEE FRED HAWLEY, Ph.D., *Lecturer in Forest Products*
GEORGE MCMONIES HUNT, B.S., *Lecturer in Forest Products*
CLARICE AUDREY RICHARDS, Ph.D., *Lecturer in Forest Products*
GEORGE JOSEPH RITTER, Ph.D., *Lecturer in Forest Products*
EARL CHARLES SHERRARD, Ph.D., *Lecturer in Forest Products*

103. INDUSTRIAL CHEMISTRY APPLIED TO FOREST PRODUCTS. II; 2 cr. Includes course of lectures descriptive of industrial chemical processes that use wood and wood waste, such as pulp and paper, wood distillation, and wood preservation, and the chemistry of various forest products. Prerequisites: Chemistry 120, 121. 4:30 TT. Mr. Hawley, Mr. Bateman, Mr. Sherrard, Mr. Ritter, Mr. Curran, Mr. Bray.

200. RESEARCH IN FOREST PRODUCTS CHEMISTRY. Yr; *cr.

Coal tars, wood tars, and wood preservatives. Mr. Bateman.

The production of ethyl alcohol from wood waste; carbohydrates and fermentation. Mr. Sherrard.

Wood distillation, wood extraction, and general wood chemistry. Mr. Hawley, Mr. Ritter.

The chemical action of bacteria and fungi on wood and pulp. Mr. Bray, Miss Richards.

Pulp and paper. Mr. Curran, Mr. Bray.

Wood preservation and glues. Mr. Hunt, Mr. Browne.

STATE LABORATORY OF HYGIENE

W. D. Stovall, Director, Professor of Hygiene

The State Laboratory of Hygiene, located in the Service Memorial Institutes Building on the university campus, is at once a university laboratory and the central laboratory for the State Board of Health. The staff is occupied in teaching, in the development of laboratory tests which are of assistance in the diagnosis and control of communicable diseases, in other laboratory procedures with which sanitary science is concerned, and in special investigation.

Last year 63,447 specimens for the diagnosis of diptheria, typhoid fever, anthrax, rabies, tuberculosis, whooping cough, and other diseases were received from physicians, health officers, public health nurses, and others throughout the state. The facilities of the laboratory are used by three-fourths of the physicians in the state. Prophylactic vaccines are distributed free from the laboratory, and silver nitrate ampules are prepared for free distribution by the State Board of Health.

For the convenience of physicians and health officers, cooperative laboratories have been established in Beloit, Green Bay, Kenosha, Oshkosh, Rhinelander, Superior, and Wausau. The state contributes a portion of the funds required for the operation of each of these laboratories, and the respective cities supply the remainder. These branch laboratories are under the supervision of the director of the State Laboratory of Hygiene, acting for the State Board of Health.

The principal work of both the central and the branch laboratories is in the development and improvement of procedures and new methods for diagnosing, preventing, and controlling communicable diseases, and in the dissemination of information of this sort into every community of the state, thereby directly or indirectly touching the welfare of every citizen.

UNITED STATES WEATHER BUREAU

Eric R. Miller, Meteorologist in Charge

The University of Wisconsin has cooperated with the national weather services throughout its history. The first meteorological observations at Madison were made by Professors S. H. Carpenter and J. W. Sterling for the Smithsonian Institution from 1853 to 1864. The services of students were enlisted in the making of these observations, and the names of John Muir and James L. High and other distinguished alumni are found in the meteorological journals kept at Madison. The observations were revived in 1869 by Professor W. W. Daniells, the pioneer professor of agriculture at the University. The Signal Corps, U. S. Army, carried on the observations at Madison from October 1878 to April 1883. On the termination of this governmental office, its instruments were turned over to the Washburn Observatory where the observations were continued until December 1904.

The demands of the public for weather information had become too heavy to be met by the astronomical observatory, so that in September 1904 a branch of the national weather bureau was again established at Madison, in North Hall, where the original observations had been begun 51 years earlier.

This office is fully equipped with standard apparatus, and receives telegraphic reports daily. Daily forecasts and weather bulletins are distributed to the press and to aviators and are mailed to the public in central and southwestern Wisconsin. The office is open to the public from 9 a. m. to 4 p. m. daily, except Sundays and holidays.

WASHBURN OBSERVATORY

JOEL STEBBINS, DIRECTOR, PROFESSOR OF ASTRONOMY

The Washburn Observatory was established in the year 1878 through the munificence of the late Governor Cadwallader C. Washburn. Although its obligations and opportunities as a branch of a teaching university have not been ignored, the energies of its staff from the beginning have been directed mainly to astronomical research. Among the lines of research cultivated are the measurement of the positions and motions of the heavenly bodies, the discovery and measurement of double stars, with investigations of their orbits, the study of changes of latitude and the amount and character of the atmospheric refraction, the determination of the amount of the aberration of light, problems of stellar-color, proper motions of faint stars, a systematic investigation of the parallaxes of all accessible stars which have large proper motions, and the photo-electric photometry of variable stars.

The principal instrument of the observatory is a refracting telescope of 15.6 inches aperture, constructed by Alvan Clark & Sons, and provided with a micrometer, a spectroscope, and a photo-electric photometer. The meridian circle by A. Repsold & Sons has a Clark objective with an aperture of five inches. There are also a sidereal clock by Hohwü, two mean clocks by Howard, and chronographs by Fauth and Gaertner. The clocks are compared daily with the radio time signals from Washington.

In the student observatory are a ten-inch refractor with a modern mounting, and a three-inch transit instrument of the broken-telescope type by Bamberg. These instruments, while primarily intended for instruction, are well adapted to and are employed for certain classes of original work. The observatory also possesses a considerable number of subsidiary instruments, such as portable telescopes, photometers, chronometers, sextants, engineers' transits, an altazimuth, a universal instrument, a personal equation machine, calculating machines, photographic and meteorological apparatus, and nautical charts and instruments.

The Woodman Astronomical Library established in connection with the observatory, and supported from the income of a fund given by the late Cyrus Woodman, possesses a large and valuable collection of works upon astronomy and kindred subjects.

The results of important investigations conducted at the Washburn Observatory are published by the state, and fifteen volumes, representing the more important work done, have been issued.

Students of sufficient technical attainment are admitted to the observatory and take part in the investigations in progress. Meritorious original work of such students may be included in the publications of the observatory. For the courses of instruction in astronomy see page 107.

WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY

E. F. BEAN, DIRECTOR OF SURVEY AND STATE GEOLOGIST

This Survey has always been closely associated with the University, alike in its inception and operation. Its origin dates from a motion offered by Dr. C. R. Van Hise to the Wisconsin Academy of Sciences in 1893, calling for the appointment of a committee to secure legislation establishing such a survey. The committee, with Dr. Van Hise as chairman, took up the task and finally secured the establishment of the Survey by the legislature of 1897. The president of the University has regularly been the president of the commissioners of the Survey and Dean E. A. Birge was its director from the beginning until 1919, when, as president of the University, he became one of the commissioners. The offices and laboratories of the Survey are in university buildings.

The Survey was at first organized in two divisions—Geology and Natural History; the Legislature of 1909 added a third division by establishing a Soil Survey of the state. From the first much attention was given to highways and a Highway Division was organized in 1907; active work in this field was carried on until 1911, when the legislature created the Highway Commission and made the State Geologist one of its members.

The Geology Division was in charge of Dr. W. O. Hotchkiss from 1906 to 1925; since that date Mr. E. F. Bean has been State Geologist. This is the largest division of the Survey and has issued numerous maps and reports on the general and economic geology of the state. It has investigated also such subjects as water power, under ground waters, peat, and clays. At present, work is being done on the Keeweenawan rocks of northern Wisconsin, where copper is the chief mineral possibility. Careful surveys are made of materials available for road construction, with a success which has been worth to the state many hundreds of thousands of dollars annually. The study of underground waters has made the Survey an authority on the the supply of water from artesian wells. Topographic maps of the state which are necessary for all engineering undertakings, are being made in cooperation with the United States Geological Survey. The geography and physical geography of the state have been studied, and numerous bulletins have shown the connection between the geological and the social history of the several regions of Wisconsin.

The Soils Division is carrying on a survey which will result in a complete soil map of the state. The work, which is in charge of Professor A. R. Whitson, is done in cooperation with the United States Department of Agriculture and the College of Agriculture of the University. Soils are studied with reference to their best agricultural use and the fertilizer and other treatment necessary to make them most productive, including a study of the limestones, marls, and by-products from manufacturing plants available as a source of lime. Special attention is given the adaptability of particular soils to special crops such as potatoes, tobacco, and canning crops. Numerous maps and bulletins showing the nature and distribution of the types of soils and their agricultural uses have been published. A reconnaissance survey of the northern part of the state has been completed and detailed county surveys covering a large part of the southern half of the state have been made. A general map and report on the soils of the state was published in 1927.

The Natural History Division is in immediate charge of Dr. Birge, President-Emeritus of the University. It has issued numerous bulletins on specific topics relating to the botany and zoology of the state. Its main continuous work has been on the inland lakes. Many hydrographic maps have been made, as well as studies of the temperatures of the lakes, the chemical composition of their waters, and the plants and animals inhabiting them. The main problem to which all these studies lead is that of the nature and quantity of the fundamental food supply of the lakes, its variation with season and year, and the resulting economic value of the lakes.

During the summer months the Survey employs university students as assistants in field work. This arrangement enables students to gain practical experience during their university careers. The close cooperative relationship existing between the University and the Survey is very valuable to both.

STATE OF WISCONSIN GENERAL HOSPITAL

R. C. Buerki, Superintendent

The State of Wisconsin General Hospital is established in connection with the Medical School of the University of Wisconsin. The University Infirmary and the Mary Cornelius Bradley Memorial Hospital, previously established, are integral parts of the Hospital (Sec. 36.21, Stat. 1923). The new Children's Orthopedic Hospital (Sec. 36.32, Stat. 1929) is closely affiliated.

The main hospital building is designed as a memorial to those who served in the World War. It was built and equipped from the balance in the Service Recognition Fund (Chapter 20, Spl. S., 1920).

The chief purposes of the hospital are defined as follows: (1) Primarily for the care of persons afflicted with a malady, deformity, or ailment of a nature which probably can be remedied by hospital service and treatment, who would be unable otherwise to secure such care. (2) For such instruction of medical students, physicians, and nurses and for such scientific research as will promote the welfare of the patients committed to its care and assist in the application of science to the alleviation of human suffering (Sec. 36.31, Stat. 1923).

In addition, a limited number of patients able to pay for care are also admitted. The hospital is therefore primarily interested in the type of case who is unable to pay for hospital care and who can be benefited by care. All types of cases are accepted at the hospital with the exception of frank pulmonary tuberculosis. These cases, it is felt, can best be treated in the local sanatoria and as soon as a patient who has been admitted to the hospital is diagnosed as such he is recommended for transfer. During the last six years over 35,000 different patients coming from all sections of the state have received treatment at the State of Wisconsin General Hospital. The present bed capacity of the hospital is over 500.

The new Orthopedic Hospital will increase the number of orthopedic cases that can be hospitalized at the University. In this unit adequate facilities are provided not only for the actual medical and surgical care necessary, but also classroom space for general education and occupational therapy. It is planned to cooperate with the local schools for crippled children throughout the state by returning the patient to his community as early as possible, thereby reducing the cost of care to both state and county.

STATE TOXICOLOGICAL LABORATORY

R. P. Herwick, State Toxicologist

The office of state toxicologist was established in 1923 by act of the legislature. In many instances prior to the establishment of this office, cases of apparent criminal poisoning were not investigated because of the inability of the county to employ trained and competent experts. The high cost of such assistance was sufficient to make it almost prohibitive for some of the less densely populated counties. To prevent miscarriage of justice in such instances, and to render expert assistance available to all district attorneys, the legislature created this offce.

The chief function of the State Toxicologist is to assist the district attorneys in the detection of criminal poisoning. There are also other ways in which this office assists in protecting the people of Wisconsin.

This office has been of aid to various state departments, such as the State Department of Agriculture in connection with the poisoning of stock and other domestic animals; the State Industrial Commission in connection with cases of suspected industrial poisoning; the State Conservation Commission in the detection of poisoning of wild game; and the State Board of Health in cases of food poisoning. In general, it is the duty of the State Toxicologist to protect the people of the state from criminal or accidental poisoning, so far as he is able. The State Toxicologist also assists the staff of the Wisconsin General Hospital in the diagnosis and treatment of cases of poisoning.

The laboratory of the State Toxicologist is located in the Service Memorial Institutes Building in conjunction with the laboratories of the Department of Pharmacology of the Medical School.

WISCONSIN PSYCHIATRIC INSTITUTE

W. F. Lorenz, Director, Professor of Neuropsychiatry

The Wisconsin Psychiatric Institute was originally developed under the Board of Control of the state of Wisconsin. It was started in 1915 at Mendota, but on July 1, 1925, was transferred by legislative act to the University. Its principal purpose is to investigate causes of insanity and allied conditions which directly or indirectly result in state care and, in addition, to initiate and promote measures of relief and prevention when practically possible.

As the result of an investigation started in 1915, syphilis was found to be a large single factor in causing both insanity and mental enfeeblement in the state of Wisconsin. In an effort to meet this situation in a practical way, an attempt was made to assist the physicians throughout the state to recognize and thoroughly treat syphilis with the hope of preventing the late consequences of this disease. A blood-examining service was instituted and made available, without cost, to physicians of Wisconsin. Since 1915, over 431,580 individual tests have been made for practicing physicians of Wisconsin. This number does not include the service that has been rendered to state institutions; with this number added the total exceeds 674,602. The results of this effort accounts, in great measure, for the reduction of paresis in Wisconsin. This is shown by the admission rate to state hospitals, for while in 1915, and previously, the admission rate for this form of insanity was over 12%, since 1924 it has continued at less than 6%.

In addition, cerebro-spinal fluid is examined without charge for practicing physicians of Wisconsin, and, more recently, a chemical blood examination has been added as a service to physicians. This latter effort was made possible as the result of an extensive investigation from which was developed a blood preservative that permits shipment of this material by mail without deterioration.

All the laboratory work combined makes available to practicing physicians highly specialized laboratory procedures which are valuable aids to him in recognizing and treating diseases and, incidentally, because the effort is centralized, it promotes technical efficiency and is most economical.

The Institute also serves the State Board of Control as a special institution for the investigation of medical and medico-social problems arising in the administration of the state charitable and penal institutions. The Director of the Institute serves as a medical consultant to the Board of Control.

The medical personnel of the Institute comprises the staff of the Department of Neuropsychiatry in the Medical School of the University. Its four members administer this department in the State of Wisconsin General Hospital and teach nervous and mental diseases to medical students. For this purpose it has available 40 beds in the Bradley Memorial Hospital. During the year ending December, 1930, there were admitted 572 new cases and 104 re-admissions covering a wide range of cases and including practically every known variety of mental and nervous disorder. The psychiatric cases constitute about 35% of the admissions. The neurological cases afford ample material for study of central nervous system syphilis (140 cases), including a large group of congenital cases, upon which special work is being done, encephalitis (25 cases 1929-30), brain tumor (22 cases), and among the less common disorders, pellagra, Huntington's chorea, myasthenia gravis, and the neuritic form of progressive muscular atrophy. Owing to the practice of bedside instruction which each medical student gets, this volume and variety offers an unusual opportunity for clinical instruction. It also provides that which few general hospitals offer,—training in this specialty for nurses, internes, and resident physicians.

A service which this department affords the community is developing into unusual proportions. Through the outpatient department there has been an increasing demand for guidance in cases of conduct disorder. From the criminal and juvenile courts, the Juvenile Protective Association, the Public Welfare Association, the Children's Home Finding Society, the Public Health Nursing Association are referred many behavior problems. This service is being extended to other communities outside of Madison.

In cooperation with the University Department of Student Health many students are examined and advised. This consultation service, in not only psychiatry but in neurology also, is extended to all departments of the State of Wisconsin General Hospital.

The wealth of material in nervous and mental diseases offers many problems for research, and definite contributions have been made, particularly in the field of therapy.

STATE HISTORICAL SOCIETY

JOSEPH SCHAFER, SUPERINTENDENT

This Society, organized in the early part of 1849, in the course of its more than eighty years of activity, has attained an enviable position among the educational institutions of the state and nation. The Society maintains on the campus of the University the State Historical Library containing 255,000 volumes and 275,000 pamphlets; also the Historical Museum on the fourth floor of the library building; and an active research and publications staff dealing with Wisconsin history. Its publications include the *Wisconsin Magazine of History*, a quarterly now in its thirteenth volume; *Wisconsin Historical Collections*, of which thirty volumes have been issued in addition to a general index of volumes I-XX; the *Proceedings*, separate annual publications containing reports with occasional historical papers; *Bulletins of Information* numbers 1–97; *The Calendar Series* of which three volumes of calendars of the Draper papers have been published; *An Economic History of Wisconsin* by Frederick Merk; *The Wisconsin Domesday Book, General Series*, Volumes I and II, and *Town Studies*, Volume I; *Wisconsin History Series, The French Regime in Wisconsin and the Northwest*, Kellogg; *Wisconsin's Gold Star List*, Gregory; *The Intimate Letters of Carl Schurz; Carl Schurz, Militant Liberal* (biography), Schafer.

The State Historical Library is unequaled in the field of Western history and has one of the most important newspaper and periodical collections in the United States. In local history, biography, American travels, etc., it is exceptionally well equipped. The printed colonial records and government documents, state and federal, are equally satisfactory. For the study of upland Virginia, North and South Carolina, and Georgia, as well as Kentucky and Tennessee and the old Northwest, in the Colonial and Revolutionary period, the Draper manuscripts in this library are the richest collection extant. Resources for the study of the slavery question and the Civil War are notable and there is a vast amount of manuscript material on Western economic history, particularly the trade in lumber and furs.

For English history and government, the library has ample sets of official publications, including the Rolls Series, the Calendars of State Papers, the Blue Books, the reports of the Historical Manuscripts Commission, and other reports of the Records Commission; also the parliamentary proceedings, and the publications of many historical societies. For the study of Dutch history and institutions the Tank collection offers special resources.

This library contains one of the three greatest collections of newspapers in the United States and it has the fullest files of labor papers to be found anywhere in the country. It is the custodian of the extensive collection of labor and employers' papers, convention proceedings, agreements, etc., secured through the American Bureau of Industrial Research. Transcripts of unique manuscript material are constantly being added to this collection. Mr. William E. Walling, of Chicago, has presented important collections of books, papers, and pamphlets dealing with modern European socialism and social problems. Special attention is called to the Schlueter collection of books, papers, and manuscripts, acquired from Mr. Herman Schlueter, of New York City. It is one of the riches collections in existence relating to the early history of socialistic movements in Germany and certain phases of similar movements in the United States and other countries, and is said to contain documents that cannot be found even in the archives of the Social Democratic party in Germany. It is indispensable for any exhaustive scientific work in this field.

WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS

LOWELL E. NOLAND, SECRETARY, ASSOCIATE PROFESSOR OF ZOOLOGY

The act incorporating the Wisconsin Academy of Sciences, Arts, and Letters was approved by the State Legislature on March 16, 1870. The charter states that the general objects shall be to encourage investigation and to disseminate correct views in the various departments of science, literature, and the arts.

Among the various special objects mentioned in the charter and in the constitution of the Academy are the publication of the results of investigations and the formation of a library. The former object is attained through a regular publication known as the Transactions; in the sixty-one years of its existence the Academy has published thirty-two volumes of its Transactions. This publication is sent to all active members gratis, and it is also sent to similar societies in all parts of the world in exchange for the publications issued by them; in this manner a large, valuable, and rapidly growing library has been secured. This library is deposited in the university library and its books are loaned on the same terms as those of the latter.

Throughout its existence the Academy has been closely associated with the University in various ways. Several of the leading charter members belonged to the university faculty and a large percentage of the past and present active members have come from the faculty of the University. Ten of the twenty-one individuals who have served as presidents of the Academy were members of the university faculty at the time of their election.

Meetings are held annually, ordinarily during the spring recess of the University. The Academy is affiliated with the American Association for the Advancement of Science.

MUSEUMS

The museums of the University are principally illustrative collections for use in connection with the work of instruction in the various departments. Worthy of special mention are the collection of chemical products; the extensive drug collection of the Pharmacy Department; the herbarium, containing a rich array of Wisconsin flowering plants, fleshy fungi, and mosses; the geological museum, containing very extensive collections of minerals, rocks, ores, and fossils, including thin sections; and the valuable collections of the Department of Art History and Criticism, which embraces a series of prints illustrating the development of the graphic arts and a very large number of facsimile and photographic reproductions of paintings and drawings by artists of all periods.

The State Historical Museum which, though not administered by the University, is open to the use of its students for purposes of study and research, makes a specialty of the archaeology and social history of the western Indians and of the western pioneer life, especially in Wisconsin, and is notable for its collections illustrating the early history of the upper Mississippi valley. The art collections contain modern pictures of merit, a collection of Piranesi etchings of classical ruins, and a collection of good prints and reproductions valuable for study.

PART X—STATISTICAL TABLES

DEGREES ACCORDING TO COURSES

	1854–1930	1930
NUMBER OF FIRST DEGREES GRANTED 1854–1930	28,406	1,478
PRESENT COURSES		
General Course B.A., 1904–1930	10,004	646
Course in Commerce, B.A., 1904–1930	1,883	84
Course in Journalism, B.A., 1914-1930	544	48
Course in Humanities, B.A., 1922–1930	55	8
Normal Course, Ph.B., 1898–1930	1,033	32
General Course, Ph.B., 1917-1930	524	72
Chemistry Course, B.S., 1909–1930	345	20
Chemistry-Commerce Course, B.S., 1927–1930	21	9
Physical Education Course, B.S., 1920–1930	282	53
Applied Arts Course, B.S., 1922–1930	204	36
Industrial Education Course, B.S., 1922–1930	61	4
Medical Science Course, B.S., 1909–1930	665	42
Hygiene Course, B.S., 1927–1930	12	5
Four-Year Pharmacy Course, B.S., 1895–1930	154	14
Three-Year Pharmacy Course, Ph.G., 1884–1930	495	12
Music Course, B.M., 1917–1930	189	28
Four-Year Course in Agriculture, B.S., 1878–1930	1,612	54
Home Economics Course, B.S., 1909–1930	1,046	82
Two-Year Course in Agriculture, 1910–1930	241*	3*
Law Course, LL.B., 1869–1930	2,672	93
Civil Engineering Course, B.S., 1876–1930	1,097	44
Mechanical Engineering Course, B.S., 1876–1930	904	28
Electrical Engineering Course, B.S., 1892–1930	1,217	44
Chemical Engineering Course, B.S., 1903–1930	386	15
Mining Engineering Course, B.S., 1910–1930	134	3
Metallurgical Engineering Course, B.S., 1930	2	2
COURSES DISCONTINUED		
Ancient Classical Course, B.A., 1854–1903	470	
Modern Classical Course, B.L., 1886–1903	548	
English Course, B.L., 1887–1903	459	
Civil Historical Course, B.L., 1893–1903	383	
General Science Course, B.S., 1886–1903	722	
Geology Course, B.S., 1914	1	
School of Music, M.G., 1898–1916	134	
School of Commerce (B.L., 8; B.S., 1), 1902–1903	9	
Normal Course, 1865–1868	25	
Metallurgical Engineering Course, B.M.E., 1876–1896	16	
General Engineering Course, B.S., 1901–1910	96	
Manual Arts Course, B.S., 1921	2	
Two-Year Course in Home Economics, Ag.G., 1920–1922	8*	
Two-Year Course for Supervisors of Music, 1910–1925	173*	
Three-Year Course for Supervisors of Music, 1925	4*	
NUMBER OF HIGHER DEGREES GRANTED IN COURSE 1875–1930	6,695	553
Master of Arts, M.A., 1879–1930	2,947	218
Master of Letters, M.L., 1882–1903	97	
Master of Science, M.S., 1882–1930	1,400	97
Master of Science, Engineering, M.S., 1922–1930	134	21
Engineer, 1875–1930	423	7
Master of Agriculture, M.Agr., 1893	1	
Master of Pharmacy, M.Phar., 1894 and 1902	2	
Master of Philosophy, M.Ph., 1902–1930	275	44
Master of Public Health, M.P.H., 1915–1916	4	
Doctor of Public Health, D.P.H., 1912–1915	2	

Doctor of Philosophy, Ph.D., 1892–1930	1,278	128
Doctor of Medicine, M.D., 1927–1930	132	38

KINDS OF DEGREES

NUMBER OF FIRST DEGREE GRANTED, 1854-1930		28,406
Bachelor of Arts, 1854–1930	12,956	
Bachelor of Philosophy, 1898–1930	1,557	
Bachelor of Letters, 1876–1903	1,398	
Bachelor of Science, 1873–1930	8,964	
Bachelor of Metallurgical Engineering, 1876–1896	16	
Bachelor of Laws, 1869–1930	2,672	
Bachelor of Music, 1917–1930	189	
Graduate in Music, 1896–1916	134	
Normal Course, 1865–1868	25	
Graduate in Pharmacy, 1884–1930	495	
Graduate in Agriculture (Two-Year Course) 1910–1930	249*	
Music Supervisor, 1910–1925	177*	
NUMBER OF HIGHER DEGREES GRANTED IN CSURSE, 1875-1920		6,695
Masters, 1879–1930	4,860	
Engineer, 1875–1930	423	
Doctor of Public Health, 1912–1915	2	
Doctor of Philosophy, 1892–1930	1,278	
Doctor of Medicine, 1927–1930	132	
GRALD TOTAL OF FIRST AND HIGHER DEGREES GRANTED1854-1930		35,101

HONORARY DEGREES

	1856–1930	1930
Doctor of Letters, 1910–1930	19	1
Doctor of Laws, 1866–1930	128	5
Doctor of Science, 1910–1930	24	1
Doctor of Philosophy, 1883–1887	4	
Doctor of Medicine, 1856	1	
Master of Arts, 1867–1929	32	
Master of Science, 1877	1	
Civil Engineer, 1877–1915	4	
Mechanical Engineer, 1898–1928	2	
Bachelor of Arts, 1885	1	
Bachelor of Mechanical Engineering, 1887	1	
	217	7

*Not included in totals because not considered as degrees.

SUMMER SESSION, 1930

	GRADUATES												UNDER-GRADUATES			GRAND TOTAL		
	Six-Week Session			Nine-Week Session			Not Registered in Graduate School			Total Graduates								
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Letters and Science*	471	509	980	302	109	411	175	385	560	948	1,003	1,951	858	1,741	2,599	1,806	2,744	4,550
Engineering	2	0	2	0	0	0	6	0	6	8	0	8	222	0	222	230	0	230
Agriculture	47	42	89	13	2	15	6	29	35	66	73	139	32	103	135	98	176	274
Law													112	5	117	112	5	117
GRAND TOTAL	520	551	1,071	315	111	426	187	414	601	1,022	1,076	2,098	1,224	1,849	3,073	2,246	2,925	5,171
Deducting students in attendance during the regular year:																		
Letters and Science*	90	35	125	84	19	103	11	6	17	185	60	245	407	360	767	592	420	1,012
Engineering	0	0	0	0	0	0	1	0	1	1	0	1	178	0	178	179	0	179
Agriculture	17	3	20	6	0	6	0	1	1	23	4	27	14	40	54	37	44	81
Law													43	1	44	43	1	44
Total Deducted	107	38	145	90	19	109	12	7	19	209	64	273	642	401	1,043	851	465	1,316
NET TOTAL	413	513	926	225	92	317	175	407	582	813	1,012	1,825	582	1,448	2,030	1,395	2,460	3,855

*Includes Medicine, Nursing, Music, Library School, and Industrial Workers.

SUMMARY OF STUDENTS BY ACADEMIC

	Men	Women	Total	Men	Women	Total
GRADUATE SCHOOL	Fellows			Scholars		
1. Letters and Science	43	14	57	17	7	24
2. Engineering	12	0	12	1	0	1
3. Agriculture[a]	42	8	50	6	0	6
4. School of Education[b]	1	3	4	1	0	1
5. Total Graduate School	98	25	123	25	7	32
PROFESSIONAL SCHOOLS	Fourth Year			Third Year		
6. Law				134	4	138
7. Medicine	40	5	45	47	4	51
UNDERGRADUATES	Seniors			Juniors		
COLLEGE OF LETTERS AND SCIENCE COURSES						
8. General Course B.A.	494	496	990	302	289	591
9. General Course Ph.B.	117	15	132	104	10	114
10. Chemistry Course	40	5	45	41	4	45
11. Chemistry-Commerce Course	3	2	5	10	0	10
12. Course in Humanities	4	4	8	4	7	11
13. Hygiene Course	0	9	9	0	15	15
14. Normal Course	3	36	39	1	7	8
15. Pharmacy—3 yr. course				21	3	24
16. Pharmacy—4 yr. course	6	0	6	3	2	5
17. Premedical Course	15	2	17	88	7	95
18. Experimental College						
Schools						
19. Commerce	148	12	160	110	22	132
20. Journalism	41	41	82	35	24	59
21. Music	7	32	39	7	31	38
22. Total, 8-21 incl.	878	654	1,532	726	421	1,147
COLLEGE OF ENGINEERING						
23. Chemical	26	0	26	37	0	37
24. Civil	66	0	66	62	0	62
25. Electrical	68	0	68	85	1	86
26. Mechanical	57	0	57	58	0	58
27. Mining	9	0	9	9	0	9
28. Total, 23-27 incl.	226	0	226	251	1	252
COLLEGE OF AGRICULTURE						
29. Long Course—4 yr.	77	2	79	56	2	58
30. Middle Course—2 yr.						
31. Home Economics	0	85	85	0	72	72
32. Total, 29-31 incl.	77	87	164	56	74	130
SCHOOL OF EDUCATION[b]						
[c]*33. Teachers' Certificates only*	*80*	*322*	*402*			
34. School of Education	1	14	15	38	162	200
35. Art Education	17	26	43	10	36	46
36. Industrial Education	3	0	3	4	0	4
37. Physical Education	21	32	53	32	31	63
38. Total, 34-37 incl.	42	72	114	84	229	313
SCHOOL OF NURSING						
[c]*39. Hygiene Course*	*0*	*9*	*9*	*0*	*15*	*15*
40. Graduate Nurse				0	26	26
[c]*41. Total 39 and 40*	*0*	*9*	*9*	*0*	*41*	*41*
42. LIBRARY SCHOOL	0	8	8			
43. Total Undergraduates (22, 28, 32, 38, 40, 42)	1,223	821	2,044	1,117	751	1,868
44. GRAND TOTAL—Graduates, Undergraduates, and Professional (5, 6, 7, 43)						
45. TWICE COUNTED (See table p. 456)						
46. NET GRAND TOTAL—Graduates, Undergraduates, and Professional (44 minus 45)						

[a]Two Home Economics Fellows and twenty-four Home Economics graduates.
[b]For total enrollment in School of Education see table p. 455.
[c]Figures in italics are not carried into totals because already included in table.

CLASSES, COURSES, AND SEX
YEAR, 1930-31

Men	Women	Total	Men	Women	Total	Totals Men	Totals Women	Totals Total	Item
Graduates									
546	262	808				606	283	889	1
51	0	51				64	0	64	2
126	38	164				174	46	220	3
67	58	125				69	61	130	4
790	358	1,148				913	390	1,303	5
Second Year			First Year						
67	3	70	105	8	113	309[e]	15	324	6
91	4	95	112	13	125	290	26	316	7
Sophomores			Freshmen						
468	492	960	576	603	1,179	1,847	1,888	3,735[d]	8
98	14	112	100	19	119	420	58	478[d]	9
29	4	33	41	4	45	151	17	168	10
10	0	10	16	0	16	39	2	41	11
2	8	10	2	13	15	12	32	44	12
0	13	13	0	9	9	0	46	46	13
0	1	1				4	44	48	14
13	0	13	21	0	21	56	3	59[d]	15
7	1	8	7	0	7	24	3	27[d]	16
109	6	115	139	10	149	353	25	378[d]	17
66	0	66	72	0	72	138	0	138	18
						258	34	292	19
						76	65	141	20
6	29	35	9	26	35	34	131	165[d]	21
808	568	1,376	983	684	1,667	3,412	2,348	5,760[d]	22
57	0	57	48	3	51	169	3	172[d]	23
76	1	77	73	0	73	279	1	280[d]	24
88	0	88	97	0	97	340	1	341[d]	25
79	0	79	108	0	108	303	0	303[d]	26
10	0	10	10	0	10	38	0	38	27
310	1	311	336	3	339	1,129	5	1,134[d]	28
88	0	88	90	3	93	313	7	320[d]	29
4	0	4	7	0	7	11	0	11	30
0	88	88	0	80	80	0	325	325	31
92	88	180	97	83	180	324	332	656[d]	32
						80	*322*	*402*	33
						39	176	215	34
13	35	48	17	47	64	58	144	202[d]	35
1	0	1				8	0	8	36
20	36	56	52	43	95	126	142	268[d]	37
34	71	105	69	90	159	231	462	693[d]	38
0	*13*	*13*	*0*	*9*	*9*	*0*	*46*	*46*	*39*
0	27	27	0	22	22	0	75	75	40
0	*40*	*40*	*0*	*31*	*31*	*0*	*121*	*121*	*41*
						0	40	40	42
1,244	755	1,999	1,485	882	2,367	5,096	3,262	8,358	43
						6,608	3,693	10,301	44
						269	31	300	45
						6,339	3,662	10,001	46

[d]Includes adult specials or unclassified or both not itemized except on special table p. 457.
[e]Includes one third year special and two first year specials.

ADDITIONAL ENROLLMENT—COLLEGE OF AGRICULTURE

	Men	Women	Total
Short Course			
Second Year	45	0	45
First Year	74	1	75
Total	119	1	120
Deducting those in attendance during the regular year	1	0	1
Net Total	118	1	119
Winter Dairy Course	37	0	37
Net Total, Short and Dairy Courses	155	1	156

NET ENROLLMENT—REGULAR YEAR, SUMMER SESSION, AND DAIRY COURSES

	Men	Women	Total
Regular Year	6,339	3,662	10,001
Summer Session	1,395	2,460	3,855
Short and Dairy Courses	155	1	156
GRAND NET TOTAL, Excluding Extension Students	7,889	6,123	14,012

EXTENSION DIVISION (Extra-Mural College)

	Men	Women	Total
Correspondence Study Department	5,259	3,633	8,892*
Extension Classes	5,156	3,366	8,522
Milwaukee Center (resident students)	547	147	694

* This total enrollment comprises those who have enrolled for correspondence instruction within the fiscal year up to May 1, 1931, and also those carried over who had enrolled prior to July 1, 1930, but whose registrations were then in force and whose time limit for completion of work had not terminated. Correspondence study enrollments are made at any time throughout the year. Extension classes include registrations to June 1, 1931.

SCHOOL OF EDUCATION, 1930-31

	Men	Women	Total
TEACHERS' CERTIFICATES			
GRADUATES			
L S Scholar	1	0	1
L S Graduate	7	9	16
Agric. Graduate	3	0	3
Total	11	9	20
SENIORS			
General Course, B.A.	48	235	283
General Course, Ph.B.	13	5	18
Chemistry Course	1	0	1
Course in Humanities	0	2	2
Normal Course	0	17	17
School of Commerce	2	1	3
School of Journalism	1	5	6
School of Music	5	21	26
School of Education			
Art Education	8	22	30
Industrial Education	3	0	3
Physical Education	21	32	53
Agriculture			
Long Course	10	0	10
Home Economics	0	36	36
Total	112	376	488
Grand Total, Teachers' Certificates	123	385	508
COURSES			
Art Education	58	144	202
Industrial Education	8	0	8
Physical Education	126	142	268
School of Education (Includes graduates)	108	237	345
GRAND TOTAL, Teachers' Certificates and Courses	423	908	1,331
Twice Counted	32	54	86
NET TOTAL	391	854	1,245

TWICE COUNTED STUDENTS, 1930-31

The item of 300 students twice counted occurs because of double classification as follows:

	Men	Women	Total	
Law 1 and L S Grad	1	0	1	
Law 1 and L S 4	52	3	55	
Law 1 and Gen C 4	14	1	15	
Law 1 and S C 4	2	0	2	
Law 1 and S J 4	0	1	1	
Law 2 and L S Grad	1	0	1	
Law 2 and E Grad	1	0	1	
Law 2 and L S 4	8	0	8	
Law 2 and Gen C 4	3	0	3	
Law 2 and S J 4	0	1	1	
Law 2 and C E 4	1	0	1	
Law 3 and L S Grad	1	0	1	
Law 3 and L S 4	5	0	5	
Law 3 and L S 3	2	0	2	
Total		91	6	97
Med 1 and L S Grad	5	5	10	
Med 1 and L S 4	80	4	84	
Med 1 and Gen C 4	1	0	1	
Med 1 and L S 3	15	1	16	
Med 2 and L S Grad	21	1	22	
Med 2 and L S 4	54	2	56	
Med 2 and Gen C 4	1	0	1	
Med 3 and L S Grad	1	0	1	
Total		178	13	191
Library School and L S 4		0	8	8
Gr N 2 and L S Grad	0	1	1	
Gr N 3 and L S Grad	0	1	1	
Gr N 3 and H E 4	0	2	2	
Total		0	4	4
GRAND TOTAL		269	31	300

SPECIAL STUDENTS, 1930-31

	Unclassified			Audelt Specials								
				2nd Year			1st Year			Total		
	Men	Wo-men	Total	Men	Wo-men	Total	Men	Wo-men	Total	Men	Wo-men	Total
College of Letters and Science												
General Course, B.A.				2	2	4	5	6	11	7	8	15
General Course, Ph.B.				0	0	0	1	0	1	1	0	1
Course in Pharmacy, 3 yr.				0	0	0	1	0	1	1	0	1
Course in Pharmacy, 4 yr.				0	0	0	1	0	1	1	0	1
Premedical Course				0	0	0	2	0	2	2	0	2
Music	4	13	17	0	0	0	1	0	1	1	0	1
Library School	0	32	32									
School of Education												
Art Education				0	0	0	1	0	1	1	0	1
Physical Education				0	0	0	1	0	1	1	0	1
College of Agriculture												
Long Course				1	0	1	1	0	1	2	0	2
College of Engineering												
Chemical Engineering				1	0	1	0	0	0	1	0	1
Civil Engineering				0	0	0	2	0	2	2	0	2
Electrical Engineering				0	0	0	2	0	2	2	0	2
Mechanical Engineering				0	0	0	1	0	1	1	0	1
Totals	4	45	49	4	2	6	19	6	25	23	8	31

SUMMARY OF STUDENTS BY STATES, FOREIGN COUNTRIES, AND SEX

Regular Year, Summer Session Only, and Short and Dairy Courses

State or Country	Total Different Students			Regular Year 1930–31			Summer Session 1930			Short and Dairy Courses 1930–31		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
1. Alabama	8	6	14	4	5	9	4	1	5	0	0	0
2. Arizona	10	3	13	5	1	6	5	2	7	0	0	0
3. Arkansas	21	25	46	5	11	16	16	14	30	0	0	0
4. California	15	30	45	12	18	30	3	12	15	0	0	0
5. Colorado	12	14	26	10	10	20	2	4	6	0	0	0
6. Connecticut	21	7	28	17	4	21	4	3	7	0	0	0
7. Delaware	3	0	3	2	0	2	1	0	1	0	0	0
8. District of Columbia	7	23	30	5	9	14	2	14	16	0	0	0
9. Florida	14	14	28	8	2	10	6	12	18	0	0	0
10. Georgia	4	14	18	1	6	7	3	8	11	0	0	0
11. Idaho	12	4	16	10	2	12	2	2	4	0	0	0
12. Illinois	733	833	1,566	536	425	961	193	408	601	4	0	4
13. Indiana	135	189	324	58	83	141	77	106	183	0	0	0
14. Iowa	78	138	216	53	65	118	25	73	98	0	0	0
15. Kansas	51	75	126	26	28	54	25	47	72	0	0	0
16. Kentucky	25	36	61	17	11	28	7	25	32	1	0	1
17. Louisiana	14	35	49	2	4	6	12	31	43	0	0	0
18. Maine	8	2	10	5	0	5	3	2	5	0	0	0
19. Maryland	5	11	16	3	3	6	2	8	10	0	0	0
20. Massachusetts	28	29	57	23	24	47	5	5	10	0	0	0
21. Michigan	98	182	280	57	81	138	41	101	142	0	0	0
22. Minnesota	94	112	206	68	49	117	26	63	89	0	0	0
23. Mississippi	15	19	34	6	4	10	9	15	24	0	0	0
24. Missouri	82	150	232	42	48	90	40	102	142	0	0	0
25. Montana	24	20	44	15	13	28	9	7	16	0	0	0
26. Nebraska	49	44	93	27	21	48	22	23	45	0	0	0
27. Nevada	1	2	3	0	1	1	1	1	2	0	0	0
28. New Hampshire	3	3	6	3	2	5	0	1	1	0	0	0
29. New Jersey	43	52	95	37	23	60	6	29	35	0	0	0
30. New Mexico	5	3	8	2	0	2	3	3	6	0	0	0
31. New York	216	182	398	177	127	304	39	55	94	0	0	0
32 North Carolina	8	8	16	5	2	7	3	6	9	0	0	0
33. North Dakota	19	24	43	14	12	26	5	12	17	0	0	0
34. Ohio	160	226	386	97	96	193	62	130	192	1	0	1
35. Oklahoma	25	41	66	14	16	30	11	25	36	0	0	0
36. Oregon	16	6	22	13	5	18	3	1	4	0	0	0
37. Pennsylvania	94	151	245	63	62	125	30	89	119	1	0	1
38. Rhode Island	7	2	9	5	0	5	1	2	3	1	0	1
39. South Carolina	7	9	16	3	2	5	4	7	11	0	0	0
40. South Dakota	34	31	65	18	14	32	16	17	33	0	0	0
41. Tennessee	14	29	43	6	12	18	8	17	25	0	0	0
42. Texas	31	58	89	8	24	32	23	34	57	0	0	0
43. Utah	7	3	10	6	2	8	1	1	2	0	0	0

44.	Vermont	3	1	4	2	0	2	1	1	2	0	0	0
45.	Virginia	9	10	19	7	3	10	2	7	9	0	0	0
46.	Washington	14	4	18	11	2	13	2	2	4	1	0	1
47.	West Virginia	13	25	38	6	8	14	7	17	24	0	0	0
48.	Wisconsin	5,432	3,209	8,641	4,696	2,305	7,001	592	903	1,495	144	1	145
49.	Wyoming	4	1	5	1	1	2	3	0	3	0	0	0
50.	Total, United States	7,731	6,095	13,826	6,211	3,646	9,857	1,367	2,448	3,815	153	1	154
1.	Alaska	1	0	1	1	0	1	0	0	0	0	0	0
2.	Australia	2	0	2	2	0	2	0	0	0	0	0	0
3.	Bolivia	1	0	1	1	0	1	0	0	0	0	0	0
4.	Brazil	1	0	1	1	0	1	0	0	0	0	0	0
5.	Bulgaria	1	0	1	1	0	1	0	0	0	0	0	0
6.	Canada	35	10	45	26	2	28	9	8	17	0	0	0
7.	Chile	1	1	2	1	0	1	0	1	1	0	0	0
8.	China	39	1	40	33	1	34	6	0	6	0	0	0
9.	Colombia	1	0	1	1	0	1	0	0	0	0	0	0
10.	Costa Rica	0	1	1	0	1	1	0	0	0	0	0	0
11.	Cuba	1	0	1	1	0	1	0	0	0	0	0	0
12.	Egypt	1	0	1	1	0	1	0	0	0	0	0	0
13.	England	2	2	4	2	2	4	0	0	0	0	0	0
14.	France	1	4	5	1	4	5	0	0	0	0	0	0
15.	Germany	11	2	13	8	2	10	1	0	1	2	0	2
16.	Hawaii	6	1	7	3	0	3	3	1	4	0	0	0
17.	Ireland	0	1	1	0	0	0	0	1	1	0	0	0
18.	India	3	0	3	2	0	2	1	0	1	0	0	0
19.	Iraq	1	0	1	1	0	1	0	0	0	0	0	0
20.	Japan	5	1	6	4	1	5	1	0	1	0	0	0
21.	Jugoslavia	1	0	1	1	0	1	0	0	0	0	0	0
22.	Korea	2	0	2	2	0	2	0	0	0	0	0	0
23.	Mexico	6	0	6	6	0	6	0	0	0	0	0	0
24.	New Zealand	1	0	1	1	0	1	0	0	0	0	0	0
25.	Nicaragua	1	0	1	1	0	1	0	0	0	0	0	0
26.	Norway	1	0	1	1	0	1	0	0	0	0	0	0
27.	Panama Canal Zone	0	1	1	0	1	1	0	0	0	0	0	0
28.	Peru	1	0	1	1	0	1	0	0	0	0	0	0
29.	Persia	2	0	2	2	0	2	0	0	0	0	0	0
30.	Philippine Islands	13	0	13	9	0	9	4	0	4	0	0	0
31.	Poland	2	0	2	2	0	2	0	0	0	0	0	0
32.	Porto Rico	2	0	2	1	0	1	1	0	1	0	0	0
33.	South Africa	3	1	4	2	0	2	1	1	2	0	0	0
34.	Spain	0	1	1	0	1	1	0	0	0	0	0	0
35.	Switzerland	1	0	1	1	0	1	0	0	0	0	0	0
36.	Syria	1	0	1	1	0	1	0	0	0	0	0	0
37.	Turkey	7	0	7	6	0	6	1	0	1	0	0	0
38.	Ukraine	1	0	1	1	0	1	0	0	0	0	0	0
39.	Uruguay	0	1	1	0	1	1	0	0	0	0	0	0
40.	Total, Countries outside U. S.	158	28	186	128	16	144	28	12	40	2	0	2
41.	Total, Wisconsin	5,432	3,209	8,641	4,696	2,305	7,001	592	903	1,495	144	1	145
42.	Total, Other States	2,299	2,886	5,185	1,515	1,341	2,856	775	1,545	2,320	9	0	9
43.	Grand Total	7,889	6,123	14,012	6,339	3,662	10,001	1,395	2,460	3,855	155	1	156

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